When I Grow Up

AUSTIN
Independent School District

E³ ALLIANCE
EDUCATION EQUALS ECONOMICS

WORKFORCE
SOLUTIONS Capital Area
Connecting People to Jobs

EVACUATE! STARTING AT THE PUMP

MATH TEKS OBJECTIVES

§111.28	8b.1	(A) apply mathematics to problems arising in everyday life, society, and the workplace
	8b.1	(B) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reason ableness of the solution.
	8b.6	(A) describe the volume formula V = Bh of a cylinder in terms of its base area and its height
	8b.7	(B) use previous knowledge of surface area to make connections to the formulas for lateral and total surface area and determine solutions for problems involving rectangular prisms, triangular prisms, and cylinders

COLLEGE AND CAREER READINESS AND INVESTIGATING CAREERS TEKS OBJECTIVES

§127.1.	(1)	The student investigates one or more careers within the 16 career clusters. The student is expected to:
		(A) identify the various career opportunities within one or more career clusters; and
		(B) identify the pathways within one or more career clusters.
	(2)	The student investigates career pathways in one or more of the 16 career clusters. The student is expected to:
		(C) describe the technical-skill requirements for careers
	(4)	The student investigates labor market information. The student is expected to:
		(B) classify evidence of high-skill, high-wage, or high-demand occupations based on analysis of labor market information;
§127.3.	(1)	The student explores career assessments as related to college and career planning. The student is expected to:
		(C) research trending fields related to career interest areas;

Instructional Directions   **This activity is designed to take 25 – 45 minutes as presented below.**

1. This lesson would follow after students are familiar with formulas for surface area of circle and rectangle.

2. Discuss with students the various preparations needed for an evacuation and what needs to be done when we return from the evacuation. What are some of the things we do at home if we had to leave in an emergency situation? What needs to be done when we return? How do they think their parents might need to prepare at work? If some of your students have parents who work in these occupations, they may be able to share any knowledge they may have.

3. Have students complete Blackline Master M1a.1 and problem solve how they will determine the surface area of this vessel. Guide them through questioning to find that the vessel is a rectangle and two circles. The height of the vessel is one side of the rectangle and the circumference of the circle is the other side. Have students make this connection to the surface area formula for a cylinder.

Learning Outcome(s)   Students will be able to use real data to measure, estimate, and hypothesize on real needs and results. Students will determine surface area of a fuel storage tank to determine how much cleaning solution is needed to start the pump up again after a shut down and give a cost estimation.

Related Occupations/Industry   Environmental Engineers; Firefighters; Maintenance & Repair Workers

Deliverables	Completed Blackline Master M1a.1
Resources Needed	Blackline Master M1a.1

IDEAL
- Integrate actual local business and adapt the lesson to use their actual fuel storage tank sizes, metrics, and calculated surface area for the vessels; blue prints or schematics of ocal plant vessels with all the measurements needed would be useful

LIMITED
- Blackline Master M1a.1

Vocabulary or Concepts (New and/or Challenging)
- Surface area
- Unit Conversions
- Cost estimation
- Proportions

MODIFICATIONS & EXTENSIONS

Story telling: bring in occupation representatives to provide depth to scenarios (historical actual scenarios related to flood or other emergency evacuations and recovery); students may be asked to interview family, industry experts, or other individuals who have been through a similar scenario and can offer suggestions for other similar calculations to be discovered

Use algebraic reasoning by providing the surface area or volume, removing one dimension and having students determine the missing dimension; have students determine labor costs; convert units; determine volume of vessel

Simplify: Provide tank dimensions in feet.

EVACUATE! STARTING AT THE PUMP

Gas stations across central Texas are preparing to open following a major flood in Central Texas. Each station must test their underground fuel storage tanks to determine if water or debris seeped into the container during the flood. If gasoline that contains water is pumped into a car it can do a lot of damage to the vehicle; damage that the gas station may be liable to pay for. A gas station has just determined that there is water in one of their underground fuel tanks. In order to get the pump running again, the gas station needs to clean out the fuel storage tank. We need to determine how much cleaning solution will be needed to coat the surface of the tank.

r = 24"

h = 72"
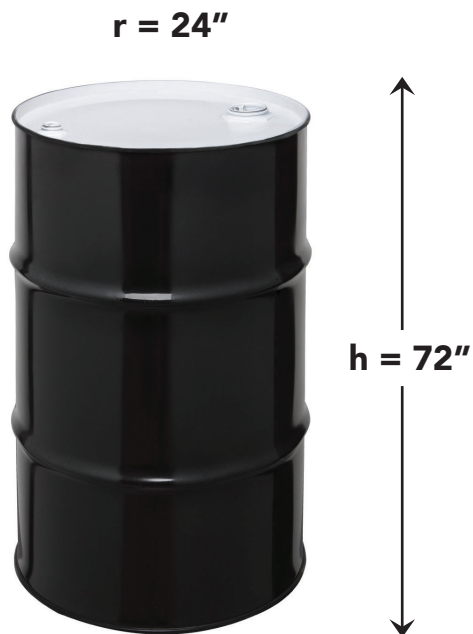
1. What formula(s) will we need to use to find the surface area of this vessel?

2. The solution used to clean this vessel uses 1 gallon per 1000 sq.ft. How will we find out how much of the cleaning solution we will need?

3. What will the cost of the cleaning solution be to clean this tank, if the solution costs $34.99 per gallon?

EVACUATE! BLOOD JOURNEY

MATH TEKS OBJECTIVES

§111.26 - §111.28	6b.1, 7b.1 6b.1, 7b.1	(A) apply mathematics to problems arising in everyday life, society, and the workplace (B) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution.

§111.26	6b.3 6b.3 6b.4 6b.5 6b.5	(D) add, subtract, multiply, and divide integers fluently (E) multiply and divide positive rational numbers fluently (B) apply qualitative and quantitative reasoning to solve prediction and comparison of real-world problems involving ratios and rates (B) solve real-world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole, including the use of concrete and pictorial models (A) represent mathematical and real-world problems involving ratios and rates using scale factors, tables, graphs, and proportions

§111.27	7b.3 7b.4	(B) apply and extend previous understandings of operations to solve problems using addition, subtraction, multiplication, and division of rational numbers. (D) solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems

COLLEGE AND CAREER READINESS AND INVESTIGATING CAREERS TEKS OBJECTIVES

§127.1	(1) (2) (4)	The student investigates one or more careers within the 16 career clusters. The student is expected to: (A) identify the various career opportunities within one or more career clusters; and (B) identify the pathways within one or more career clusters. The student investigates career pathways in one or more of the 16 career clusters. The student is expected to: (C) describe the technical-skill requirements for careers The student investigates labor market information. The student is expected to: (B) classify evidence of high-skill, high-wage, or high-demand occupations based on analysis of labor market information;
§127.3	(1)	The student explores career assessments as related to college and career planning. The student is expected to: (C) research trending fields related to career interest areas;

Instructional Directions

This activity is designed to take 25 – 45 minutes as presented below.

1. Using Blackline Master M1b, students will use real data to calculate a resource need. Have students read the prompt at the top of the page and clarify any information needing additional explanation.

2. The data in this lesson is extracted from The American Red Cross website; however, if a local blood bank has similar related information, the teacher is encouraged to modify the lesson with appropriate data as she/he sees fit.

Reference: http://www.redcrossblood.org/donating-blood

Learning Outcome(s)

Students will need to solve problems data involving ratios, rates, percents and proportions. Specifically, students will make calculations and inferences, approximate, and hypothesize to determine the amount of blood needed to respond to the emergency scenario following a natural disaster.

Related Occupations/Industry

Health Care: Medical & Clinical Laboratory Technologists; RNs, LVNs, and Doctors
Please consult http://www.wfscapitalarea.com/YouthServices/CareerPlanning.aspx for more information.

Deliverables

Completed Blackline Master M1b

Resources Needed

Blackline Master M1b

IDEAL
- Integrate Blood Bank with a representative visiting classroom (with a mobile blood unit) or field trip to a blood bank
- Have beakers available to measure out the volume of blood needed per person or taken from a blood donor

LIMITED
- Paper-based

Vocabulary or Concepts (New and/or Challenging)
- Ratio
- Rate
- Proportions
- Pints
- Percent

MODIFICATIONS & EXTENSIONS

- Have students convert between units of measure. For example, convert pints to cups or pints to gallons.
- Story telling of a time when blood was needed or donated
- Find factual information on blood donation: How much blood is in the human body? How much blood is donated per year? How much blood is needed in a year? Who needs donated blood? Blood types? Blood screening? Iron?
- Organize and host your own blood drive
- Play a blood game

    http://www.redcrossblood.org/donating-blood/donor-zone/games/blood-type

    http://www.redcrossblood.org/donating-blood/donor-zone/games/find-a-word

Simplify: Keep all numbers whole numbers, rounding if necessary

Name: _____

Period: _____

Date: _____

EVACUATE! STARTING AT THE PUMP

The American Red Cross has been called into a local area after a wildfire. There is a real need for blood, so they are sending a mobile blood unit to all the intermediate and high schools in our area to get donations from the community. Each eligible donor (in Texas, age 17 and older) can donate one pint of blood per eight weeks. More than 44,000 blood donations are needed every day. The average red blood cell transfusion requires about 3 pints of blood, however, 1 pint of blood can save up to 3 lives.

1. If our school district is able to collect 123 pints per day, how many pints will we collect in a school week?

2. How many lives could that potentially save?

3. The average adult has 10 pints of blood in his body, what percentage would a person donate per donation?

4. If our school district is able to collect 123 pints per day, what percentage would our district contribute to the need of blood? In a week?

Source: http://www.redcrossblood.org

EVACUATE! A TEMPORARY HOME

MATH TEKS OBJECTIVES		
§111.26	6b.1	(A) apply mathematics to problems arising in everyday life, society, and the workplace
	6b.1	(B) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution
	6b.1	(C) select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems
	6b.1	(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate
	6b.3	(E) multiply and divide positive rational numbers fluently
	6b.4	(H) convert units within a measurement system, including the use of proportions and unit rates
	6b.8	(D) determine solutions for problems involving the area of rectangles, parallelograms, trapezoids, and triangles and volume of right rectangular prisms where dimensions are positive rational numbers
	6b.5	(B) solve real-world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole, including the use of concrete and pictorial model

COLLEGE AND CAREER READINESS AND INVESTIGATING CAREERS TEKS OBJECTIVES		
§127.1	(1)	The student investigates one or more careers within the 16 career clusters. The student is expected to:
		(A) identify the various career opportunities within one or more career clusters; and
		(B) identify the pathways within one or more career clusters.
	(2)	The student investigates career pathways in one or more of the 16 career clusters. The student is expected to:
		(C) describe the technical-skill requirements for careers
	(4)	The student investigates labor market information. The student is expected to:
		(B) classify evidence of high-skill, high-wage, or high-demand occupations based on analysis of labor market information;
§127.3	(1)	The student explores career assessments as related to college and career planning. The student is expected to:
		(C) research trending fields related to career interest areas;

Instructional Directions

This activity is designed to take 45 – 75 minutes as presented below.

1. By applying the content knowledge to a real-life scenario regarding shelter for a flood evacuation, students will complete Blackline Master M1c.

2. This lesson would be best after students understand how to find the area of a rectangle.

3. Consider the floor space of the shelter as a rectangle. An introductory lesson might only consider a portion of the available space at the shelter, such as the basketball court itself.
4. Have students determine what percent of the floor space should be cleared out to allow walking space between the cots. Because the walking space is an unknown variable at the beginning of the lesson, this will affect the amount of available space for cots and answers may vary

5. It is up to the teacher to decide how to implement the dimensions desired in the lesson. The worksheet considers the dimensions of Owen Goodnight Middle School.

6. If a cot is 75" x 26" or 1950 sq. in., each cot takes up (approximately) 13.5 sq. ft. Therefore, lined end-to-end, 4,265–4,267 cots would fit in the available space. However, because this would not allow any room for walking in between the cots, how much space do we allow for a walking path and how many cots can we realistically fit in the space?

Learning Outcome(s)

Students will be able to use real data to measure, estimate, and hypothesize on real needs and results. Students will calculate area and percentages.

Related Occupations/Industry

Construction & Building Inspector; Engineer; Accountant and Auditor.
Please consult *http://www.wfscapitalarea.com/YouthServices/CareerPlanning.aspx* for more information.

Deliverables

Completed Blackline Master M1c

Resources Needed

Blackline Master M1c

MODIFICATIONS & EXTENSIONS

- Show students real pictures of disaster relief from the 2015 Memorial Day floods in Central Texas by visiting this website:
  https://www.flickr.com/photos/centexredcross/sets/72157653033520020
- Use algebraic reasoning by removing a dimension of the cot and providing the area of the cot and having students determine the missing dimension

EVACUATE! A TEMPORARY HOME

After the 2015 Memorial Day flood in Central Texas, many people were displaced because they lost their homes. The community reached out to the victims of this disaster in many ways. One significant contribution the community made was to house the evacuees at the various shelters. One challenge was sleeping arrangements.

In an ideal situation, each person would have their own cot. Some people were relocated to the Owen Goodnight Middle School gymnasium as a temporary shelter. If the gym floor of the Owen Goodnight Middle School is approximately 74' x 42', and a cot is 75" L x 26" W. How many cots could we fit in this space? Use the box below to sketch the space and write out any necessary calculations.

Now, we need to consider that we cannot fill the entire gymnasium floor with cots. We must allocate some clear space to provide walking room between cots.

1. What percentage of the floor space should we free up to allow walking space between cots?

2. How much available space for cots does this remove?

3. How many cots will we be able to reasonably fit in the remaining available space?

PLANNING AN EVENT

Have students plan an event of their choice and determine how the space should be utilized complete with drawings of the various items that will take up space at the event. For example, if they are planning a party in the space, they will need to know how much space each table will take, how many people will be able to sit at each table and therefore how many people can be hosted.

This project should focus on extending the idea of understanding the use of area as it accommodates available resources. However, teachers might encourage creativity in the end product through a demonstration of their event in a presentation, poster, or other demonstrable product.

EVACUATE! TO EACH THEIR ROLL

MATH TEKS OBJECTIVES		
§111.26	6b.1	(A) apply mathematics to problems arising in everyday life, society, and the workplace
	6b.1	(B) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution
	6b.1	(C) select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems
	6b.1	(E) create and use representations to organize, record, and communicate mathematical ideas
	6b.3	(E) multiply and divide positive rational numbers fluently
	6b.4	(H) convert units within a measurement system, including the use of proportions and unit rates
	6b.8	(D) determine solutions for problems involving the area of rectangles, parallelograms, trapezoids, and triangles and volume of right rectangular prisms where dimensions are positive rational numbers

COLLEGE AND CAREER READINESS AND INVESTIGATING CAREERS TEKS OBJECTIVES		
§127.1.	(1)	The student investigates one or more careers within the 16 career clusters. The student is expected to:
		(A) identify the various career opportunities within one or more career clusters; and
		(B) identify the pathways within one or more career clusters.
	(2)	The student investigates career pathways in one or more of the 16 career clusters. The student is expected to:
		(C) describe the technical-skill requirements for careers
	(4)	The student investigates labor market information. The student is expected to:
		(B) classify evidence of high-skill, high-wage, or high-demand occupations based on analysis of labor market information;
§127.3.	(1)	The student explores career assessments as related to college and career planning. The student is expected to:
		(C) research trending fields related to career interest areas;

Instructional Directions

This activity is designed to take 30 – 60 minutes as presented below.

1. Pass a roll of toilet paper (or several) around the classroom and ask each student to quickly take as much paper off the roll as they would need for a visit to the restroom.

2. Have students follow the **Blackline Master M1e**. If needed, help students measure with a ruler, being sure they understand how to measure accurately.

3. Review area of a rectangle if needed so students can answer question 4.

4. Question 6 on the worksheet would be an opportunity to set up a proportion to calculate the conversion.

5. If possible, have the students take the toilet paper they took from the roll and line the hallway outside the classroom.

Learning Outcome(s)	Students will be able to use real data to measure, estimate, and hypothesize real needs and results. By measuring/calculating surface area and determining how many rolls are needed, they can calculate cost estimations. With this information, they can hypothesize the total use and cost of a basic product need during an emergency situation.
Related Occupations/Industry	Construction & Building Inspector; Engineer; Accountant and Auditor Please consult *http://www.wfscapitalarea.com/YouthServices/CareerPlanning.aspx* for more information.
Deliverables	Completed Blackline Master M1b
Resources Needed	Blackline Master M1b 2-3 rolls of toilet paper Ruler
Vocabulary or Concepts (New and/or Challenging)	Square feet Square inches Area

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MODIFICATIONS & EXTENSIONS

- Students can take the estimated toilet paper used and roll it out to cover a gym floor. This will help them see how much we use and/or waste.
- Integrate actual local business who manufacture paper/toilet paper to explain to the students the manufacturing, cost, and distribution of their product.
- Integrate a waste management professional to come talk to students about what happens after the flush.
- Have family do activity at home. Discuss ways the family can conserve.
- Bring in occupation representatives to provide depth to scenarios (historical actual scenarios in which resources were critically limited)
- Measure in one unit (customary) then convert to another (metric); Measure to nearest 1/8" or 1/16"; extend the lesson to multiple times of use per day and/or over a period of days
- **Simplify:** Use only whole numbers with rounding if needed

EVACUATE! TO EACH THEIR ROLL

Instructions: Quickly take as much toilet paper as you think you might use when you go to the restroom and pass the toilet paper around until everyone has some (careful not to rip it).

1. Count how many individual squares of toilet paper you took and write it here: _____

2. Carefully measure one square of toilet paper to the nearest inch. Be sure to measure all sides and record it below.

3. How many square inches of toilet paper did you use?

4. Assume everyone in the classroom used the same amount of toilet paper you did, how many square inches did the class use?

5. How many square feet is that?

6. Now, assume there are 27,000 temporary residents are at the Frank Erwin Center which is being used as a temporary shelter after a wildfire destroyed many Central Texas homes. Assume that each of the 27,000 temporary residents used the same amount of toilet paper you did, how many square inches of toilet paper would that be? How many square feet would that be?

7. How many rolls of toilet paper would be needed to cover the floor of the Frank Erwin Center (which has an area of 23,400 ft2) if each roll covered 275 square feet?

30 SECONDS

MATH TEKS OBJECTIVES

§111.26	6b.1	(A) apply mathematics to problems arising in everyday life, society, and the workplace
	6b.1	(E) create and use representations to organize, record, and communicate mathematical ideas
	6b.12	(A) represent numeric data graphically, including dot plots, stem-and-leaf plots, histograms, and box plots
	6.b12	(B) use the graphical representation of numeric data to describe the center, spread, and shape of the data distribution
	6b.12	(C) summarize numeric data with numerical summaries, including the mean and median (measures of center) and the range and interquartile range (IQR) (measures of spread), and use these summaries to describe the center, spread, and shape of the data distribution
	6B.13	(A) interpret numeric data summarized in dot plots, stem-and-leaf plots, histograms, and box plot

COLLEGE AND CAREER READINESS AND INVESTIGATING CAREERS TEKS OBJECTIVES

§127.1.	(2)	The student investigates career pathways in one or more of the 16 career clusters. The student is expected to:
		(A) research the academic requirements for one or more of the careers in an identified cluster;
		(B) research the certification or educational requirements for careers; and
	(3)	The student investigates the professional skills needed for college and career success. The student is expected to:
		(A) apply core academic skills to meet personal, academic, and career goals;
		(B) investigate the importance of co-curricular, extracurricular, career preparation, and extended learning experiences;
		(C) investigate the steps required to participate in a variety of career and educational opportunities, including, but not limited to, entry-level employment, military service, apprenticeships, community and technical colleges, and universities;
		(D) identify professional associations affiliated with a career pathway;
		(E) recognize the value of community service and volunteerism; and
		(F) demonstrate characteristics required for personal and professional success such as work ethics, integrity, dedication, perseverance, and interacting with diverse populations.
	(5)	The student investigates job-seeking skills. The student is expected to:
		(C) participate in a mock interview.
§127.3.	(3)	The student evaluates skills for personal success. The student is expected to:
		(A) use interpersonal skills to facilitate effective teamwork;
		(C) use effective time-management and goal-setting strategies;
	(6)	The student develops skills for professional success. The student is expected to:
		(A) demonstrate effective verbal, nonverbal, written, and electronic communication skills;

Instructional Directions	**This activity is designed to take 25 – 90 minutes as presented below.**
	1. Decide whether or not you want to give students time to prepare their 30-second commercial, or if you want them to be able to do it without much thought (just like if they were meeting the CEO in the elevator unexpectedly).
	2. Instruct students that they will be holding their conversation using the "30-Second Commercial" while their back is to the clock and their partner watches time for them.
	3. Once a student thinks they have been talking for 30 seconds, they can ask their partner to stop the clock. The students will then record the actual time on the table.
	4. The student recording the time can ask questions of their partner for a true conversation to take place. Partners will then switch roles and record the second time.
	5. Once all students are done, have students announce their times for all students to record on table. Be sure students understand how to correctly create a stem and leaf plot as well as calculating central tendencies and range.
Learning Outcome(s)	Students will be able to estimate time and use the collected data to appropriately display data in Stem and Leaf Plot as well as find mean, median, mode, and range
Deliverables	Completed Blackline Master M2
Resources Needed	Blackline Master M2 Clock/stop watch Writing utensil
Vocabulary or Concepts (New and/or Challenging)	• Stem and leaf plot • Mean • Median • Mode • Range • Outlier • Shape of data: symmetrical, skewed, peaks

MODIFICATIONS & EXTENSIONS

Simplify: Use only whole numbers with rounding if needed; use a calculator

30-SECOND COMMERCIAL

What would you say if you were about to interview for a job and you ended up meeting the CEO of the company on the elevator ride up to the office?

People looking for a job are often asked to summarize their experience and interests in a short speech. Sometimes this is called an "elevator speech" or "30-second commercial" because it is the short time recruiters or other hiring managers allow applicants to "sell" themselves before their attention is distracted or disinterest occurs.

Practice your own 30 -second commercial with a partner and make sure you include the following details:

- Information about your education (what you have completed and where you want to go)
- Three unique skills
- At least one notable accomplishment related to the job you might want
- Details on what would make you a good match for this ideal job

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Name: _____
Period: _____
Date: _____

30-SECOND COMMERCIAL

How well can people judge the time it takes for 30 seconds to pass?

Instructions: Work with a partner to engage in a conversation about your careers, using your 30-second commercial as material. One partner should watch the clock and the other should speak. Once the speaker thinks 30 seconds have passed, he/she should stop speaking and let the timer know when he/she is done.

The timer should record how much time actually passed (in seconds) here: _____.

Switch roles so each has had a turn.

Record data from the entire class:

Student Name	Actual Time	Student Name	Actual Time

30-SECOND COMMERCIAL

Record data on the Stem & Leaf chart below.

STEM	LEAF

KEY:

1. **Analyze data:** What is the center of the data: mean, median and mode?

2. **Analyze data:** What is the variability of the data (also known as range)? Identify any outliers.

3. **Analyze data:** Describe the shape of the data using symmetry, skewed and/or number of peaks.

4. **Interpret the results:** Give two descriptive statements that could provide an answer to the question "How well can people judge the time it takes for 30 seconds to pass?"

5. **Analyze the results:** Did you use your 30 seconds as efficiently as possible? If not, what might you add or remove to deliver the best commercial for yourself during this time?

PLAN A VACATION

MATH TEKS OBJECTIVES

§111.27	7b.1	(A) apply mathematics to problems arising in everyday life, society, and the workplace
	7b.1	(B) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution
	7b.1	(C) select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems
	7b.3	(A) add, subtract, multiply, and divide rational numbers fluently
	7b.3	(B) apply and extend previous understandings of operations to solve problems using addition, subtraction, multiplication, and division of rational numbers
	7b.4	(D) solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems
	7b.5	(C) solve mathematical and real-world problems involving similar shape and scale drawings

COLLEGE AND CAREER READINESS AND INVESTIGATING CAREERS TEKS OBJECTIVES

§127.3.	(4)	The student recognizes the impact of college and career choices on personal lifestyle. The student is expected to:
		(A) prepare a personal budget reflecting the student's desired lifestyle; and
		(B) use resources to compare and contrast salaries of at least three careers in the student's interest area.
	(5)	The student demonstrates an understanding of financial management. The student is expected to:
		(A) compare the advantages and disadvantages of different types of money management services;
		(B) simulate opening and maintaining different types of financial accounts;
		(C) simulate different methods of withdrawals and deposits;
		(H) examine the effects of poor credit scores as they relate to personal finance and career opportunities.
	(6)	The student develops skills for professional success. The student is expected to:
		(D) recognize the importance of a healthy lifestyle, including the ability to manage stress;

Instructional Directions

Depending on the parameters chosen by the teacher, this lesson can take 45 minutes – 2 hours and may be a good project-based lesson that can be assigned in part as homework. Or, each worksheet (Blackline Master M3.1 and M3.3) can be addressed on separate class days.

There are various ways to implement this lesson. The idea is that it should inspire both informed decision making and creativity while supporting the prevailing concepts of budgeting and consequence.

1. Teachers will distribute **Blackline Master M3.1** and have students read through the project parameters. Their budget must be completed on the accompanying Vacation Planner worksheet (**Blackline Master M3.3**). A pencil is recommended for completion to allow for correcting errors in calculation.

Instructional Directions 2. The teacher may choose to implement as is with the provided approximations for travel expenses, or they can choose to enhance or adapt the lesson with any of the following options (or others of their own choosing):

A. Have student complete the Reality Check activity (found online at texasrealitycheck.com). Have them establish their budget based on one month's salary in their resulting career.

B. Add in luxuries. Students may want to have a "nicer" vehicle that has added perks or they may use a more fuel-efficient vehicle to save money for other items. Either way, they need to research their decision and provide accurate and verifiable data on costs. A rental car website might be a good resource, for example. Sources should be cited.

They may find travel deals for air- or rail-fare that they can incorporate. The budget must still remain the same: $5,000 or whatever their monthly salary might be (see A. above).

C. Make it a Family Planning experience. The 7–8 Grade Career Exploration TEKS also include objectives that focus on teamwork and collaboration. Pairing students together as "parents" or into small groups as "families" would allow them to plan a vacation in collaboration while they work on their budgeting and prioritization skills.

Learning Outcome(s) Students will be able to plan a vacation using a budget. Students will have to estimate expenses (costs), make adjustments based on value judgments, and evaluate outcomes based on goals.

Related Occupations/Industry Students will be exploring budgeting as it applies to lifestyle decisions and outcomes.
The activity also integrates the need to research options prior to decision making. Therefore, the most applicable occupations are: Accountant & Auditors, Bookkeeping, Accounting & Auditing Clerks, Budget Analysts (*http://www.wfscapitalarea.com/YouthServices/CareerPlanning.aspx#85348-business-management--administration*).

Deliverables Completed Blackline Masters M3.1 and M3.3

Resources Needed Blackline Masters M3.1, M3.2 and M3.3

IDEAL
- Internet access to maps/research
- Travel Agent/Hospitality SME

LIMITED
- Teacher provides more parameters (such as costs for hotels)
- Ruler
- Map/Atlas

Vocabulary or Concepts (New and/or Challenging)
- Budget
- Miles per gallon
- Miles per hour
- Scale bar (map)
- Scale drawing (map)

MODIFICATIONS & EXTENSIONS

- Go home and talk to parents/guardians about life decisions and circumstances (talking about vacation planning might not always be appropriate based on context)

- Decisions, Decisions game

Name: _____

Period: _____

Date: _____

PLAN A VACATION

You and your family will be taking a 7-day vacation and your parents have told you that you can make all the choices! Where to go? What to see? Where to stay? How long will you be away? What to eat? This is going to be fun!

But, you have to stay within some parameters. First, decide how long your trip will last. For every day that you are on vacation, you must consider the following parameters. This is a driving trip, so you must include the cost of travel by car. You will also need to stay in a hotel. Finally, everyone needs to eat. Complete the questions below. Then review the rules (parameters) for your trip. Plan your vacation in your head then start making decisions for your trip. Fill in the boxes on your Vacation Planner once confirmed. Make sure you stay in budget!

So, where would you like to go? _____

How far is your destination? _____ miles

How many people are on your trip? _____ age 10+   _____ age 0–9 yrs

Your trip must include all the following:

1. **Budget:** $5,000

2. **Transportation:** use your ruler and map/atlas to determine where you will travel, cost of gas, time it will take to travel. Try not to drive more than 600 miles a day. This may require you to stop and stay overnight somewhere on the way.

> Fuel $2.15 per gallon
> Car gets 18 miles per gallon
> Car drives 70 miles per hour (on average)

3. **Lodging:** (based on 4-person occupancy, $10 for additional occupant; maximum of 5 occupants per room per day)

> $69 for 2 double beds
> $99 for 2 double beds, sofa, and continental breakfast
> $149 for 2 queen beds, sofa, and continental breakfast

4. **Meals:** each family member is required to have at least 2 meals per day (one of those meals must be dinner).
> $5 Breakfast per person
> $7 Lunch per person
> $15 Dinner per person

5. **Entertainment:** what activities will you do on your visit?

VACATION PLANNER

How many people on vacation? _4_

	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7		TOTALS
Starting in Austin, TX	Drive to Gulfport, MS	Drive to Orlando, FL				Drive to Gulfport, MS	Drive to Austin, TX		
TRANSPORTATION									
Distance	566 miles	570 miles				570 miles	566 miles	2,272 miles	miles traveled
Travel Time (miles/70 mph)	8.1 hours	8.1 hours				8.1 hours	8.1 hours	32.4 hours	hours on the road
Cost (miles/18 mpg x $2.15)	$67.61	$68.08				$68.08	$67.61	$271.38	travel costs
LODGING									
Days Inn: 2 double Beds + Breakfast	$99.00							$99.00	lodging costs
Sports Resort @ Disney: 2 Qn. Beds + Breakfast		$149.00	$149.00	$149.00	$149.00			$596.00	
Hilton Riverside: 2 Qn. Beds + Breakfast						$149.00		$149.00	
Meals (meals total x 4)	$80.00	$88.00	$88.00	$88.00	$88.00	$88.00	$80.00	$600.00	meal costs
	lunch, dinner	breakfast, lunch, dinner	breakfast, lunch, dinner	breakfast, lunch, dinner	breakfast, lunch, dinner	breakfast, lunch, dinner	breakfast, lunch		
ENTERTAINMENT									
Admission Tickets for 4 Days ($279 per ticket)		$1,116.00						$1,116.00	entertainment
Souvenirs for the Kids ($25 each)			$50.00	$50.00	$50.00			$150.00	
Tickets for a River Bardge Cruise ($32 x 4)						$128.00		$128.00	
							TOTAL EXPENSES	$3,109.38	

VACATION PLANNER

How many people on vacation? _____

	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	TOTALS
Starting in _____								
TRANSPORTATION								
Distance								miles traveled
Travel Time (miles/70 mph)								hours on the road
Cost (miles/18 mpg x $2.15)								travel costs
LODGING								
								lodging costs
Meals (meals total x 4)								meal costs
	lunch, dinner	breakfast, lunch, dinner	breakfast, lunch, dinner	breakfast, lunch, dinner	breakfast, lunch, dinner	breakfast, lunch, dinner	breakfast, lunch	
ENTERTAINMENT								
								entertainment
							TOTAL EXPENSES	

MINIATURE CENTRAL TEXAS PROJECT

MATH TEKS OBJECTIVES

§111.22	6b.1	(A) apply mathematics to problems arising in everyday life, society, and the workplace;
	6b.1	(C) select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;
	6b.1	(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate
	6b.1	(E) create and use representations to organize, record, and communicate mathematical ideas;
	6b.1	(F) analyze mathematical relationships to connect and communicate mathematical ideas;
	6b.1	(G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication;
	6b.4	(B) apply qualitative and quantitative reasoning to solve prediction and comparison of real-world problems involving ratios and rates
	6b.12	(A) represent numeric data graphically, including dot plots, stem-and-leaf plots, histograms, and box plots
	6b.12	(C) summarize numeric data with numerical summaries, including the mean and median (measures of center) and the range and interquartile range (IQR) (measures of spread), and use these summaries to describe the center, spread, and shape of the data distribution

COLLEGE AND CAREER READINESS AND INVESTIGATING CAREERS TEKS OBJECTIVES

§127.3.	(3)	The student evaluates skills for personal success. The student is expected to:
		(A) use interpersonal skills to facilitate effective teamwork;
		(B) use problem-solving models and critical-thinking skills to make informed decisions;
		(C) use effective time-management and goal-setting strategies;
		(D) identify skills that can be transferable among a variety of careers;
		(F) make oral presentations that fulfill specific purposes using appropriate technology; and
		(G) identify entrepreneurial opportunities within a field of personal interest.
	(6)	The student develops skills for professional success. The student is expected to:
		(A) demonstrate effective verbal, nonverbal, written, and electronic communication skills;
		(C) model characteristics of effective leadership, teamwork, and conflict management;
		(E) explore characteristics necessary for professional success such as work ethics, integrity, dedication, perseverance, and interactions with diverse populations

Instructional Directions **This activity is designed to take 60–90 minutes of instructional time and 6–8 hours of project time based on chosen depth of activity. The lesson components should be separated and delivered as best suited for your instructional needs.**
This lesson can be delivered in two ways:

1. Show the video "Miniature Earth" found on You Tube at *http://tinyurl.com/yvurqu*. Then, have students review **Blackline Master M4.2** "Miniature Central Texas" Scaled Data. Ask students to write down three careers they see as critical to future societal needs before and after the video. Lead a short discussion about their initial thoughts and thoughts after viewing the video. Add additional questions of your own to enhance the discussion as time permits. This lesson can then be used to introduce other lessons that focus on high-skill, high-growth jobs for our region or initial research into one of these careers.

Instructional Directions

2. A more in-depth variation on this lesson can be done over a series of class periods where students would have time to view the video, create a data collection and analysis research project, and make informed conclusions about their research. Access to a computer with internet access is ideal.
By scaling the statistics, the numbers should have more meaning to the students than data that is based on national or global data. Have students compare the numbers used in the video and relate the same numbers to their everyday life (if you are on a campus of about 1000 students this would be a good connection).Plot as well as find mean, median, mode, and range

3. Go over the project expectations with students and clarify any questions. Consider also providing students a timeline for due dates and class work days on the project.

4. Students will choose a research question in one of the following "world issue" areas:
- (Un-)Employment
- Educational Attainment
- Income
- Transportation & Commuting
- Cost of Living
- Accessibility to Resources
- Distribution/Availability of Career
- Technology
- Health & Mortality

5. Hand students the Miniature Central Texas Project Plan (Blackline Master M4.1). Discuss pros and cons of working as an individual or as a partner group. Have student choose an area they would like to investigate. Once they have done this, discuss how to develop an effect quantitative question for research.
For example: If a student chooses Transportation & Commuting, a good effective quantitative question could be "How many cars do you know of that your family has owned?". All responses need to be a single numerical response and a question that their peers can answer readily when surveyed. Questions should not be "double-barreled" (i.e. How many dogs and cats do you have?), where two numbers would be required to answer the question.

6. Hand students Final Project Plan sheet as their final approved question for research. Once teacher has these questions, create surveys either on paper or in a tool such as Google Forms or Survey Monkey. It is best to survey 50–100 peers for an appropriate sample size. Set aside adequate time for students to respond to all the survey questions. Depending on the sample size, this may take up to one or two class periods. Discuss with students about answering the questions to the best of their ability. Once the surveys are complete, give each student their raw data (responses to survey).

7. Students should then compile mean, median, and mode for the data and should graph their data using a dot plot, stem-and-leaf plot, histogram, or box plot as appropriate. Graphing tools in Excel or other software might be used depending on how technologically-driven you want the exercise to be. The data should be summarized in either a final paper or project relating their data analysis to a conclusion or conclusions about their world issue.

Learning Outcome(s)

Students will be able to relate the community at large in proportion to their immediate community within their classrooms. They will practice creating and analyzing ratios and proportions as well as functions of quantitative (raw) data. Graphed data may be an outcome of the project.

Deliverables

Formal essay or project board detailing research question, method, data collection, and conclusions.

Resources Needed

IDEAL
- Computer
- Internet
- Excel
- PowerPoint
- Google Forms/Survey Monkey

LIMITED
- This project is possible without internet or technology access but may need to be scaled down to a smaller sample size to make implementation easier. Paper-based data collection, distribution, and analysis would be the immediate adaptation.

Vocabulary or Concepts (New and/or Challenging)

- Mean
- Median
- Mode
- Range
- Dot Plot
- Box Plot
- Stem-ad-Leaf Plot
- Histogram
- Ratio
- Proportion
- Graph
- Data
- Raw Data
- Research Question
- Sample

Name: _____
Period: _____
Date: _____

CENTRAL TEXAS COMMUNITY PROJECT PLAN

THE PLAN

Area of Interest (check one):

- ❑ Employment / Unemployment
- ❑ Educational Attainment
- ❑ Income
- ❑ Transportation & Commuting
- ❑ Cost of Living

- ❑ Accessibility to Resources
- ❑ Distribution / Availability of Careers
- ❑ Technology
- ❑ Health & Mortality

THE PLAN

I Want to Work (check one):

Alone

With a partner. My partner will be _____ .

Phone #: Cell _____   Home _____
Email: _____

THE PROBLEM

State your research question:

_____
_____
_____
_____

METHOD

Descriptive/Survey – This method will be used by all students for this project.

CENTRAL TEXAS COMMUNITY PROJECT PLAN
(Every student required to turn in a partner plan)

RESEARCH QUESTION

(Must be an effective question one of your classmates can answer and is quantifiable; no number ranges, only individual number responses): _____
_____
_____

PLEASE READ AND CHECK THE APPROPRIATE BOXES

- ❑ I am aware of this major grade and the due dates.
- ❑ My child is choosing to do this project alone.

    – OR –

- ❑ My child is choosing to do this project with a partner.

    Partner's Name _____

    Partner's Home and Cell Numbers _____

    Partner's e-mail Address _____

- ❑ I understand that my child will be given 12 class days to complete this project (ample time if student(s) stays on task). Students are welcome to come work on their project during tutorials. If the project is not completed in class, they will have to complete it on their own outside of school.

Parent Signature _____ (5 Point Bonus)

_____ Teacher initials and date if final plan approved

    – OR –

_____ My plan needs to be revised and turned back into the teacher by _____

in order for me to receive a grade for this assignment.

REVISED QUESTION:

_____
_____
_____

IF CENTRAL TEXAS WERE A VILLAGE OF 100 PEOPLE

The U.S. Census Bureau estimates that metro Austin had 1,889,094 residents in 2015. That's a hard number for some to fathom, especially when one considers all the demographic, social and economic characteristics of 1.9 million people. But if Austin were a village of 100 people, that might be easier to grasp. Based on recently released census data, if Austin were a village of 100 people this is how our hamlet would look:

GENDER

- 50 would be Male
- 50 would be Female

AGE AND DISABILITY

- 21 Children under the age of 15
- 14 residents between the ages of 15 and 24
- 56 adults in their prime earning years, ages 25–64
- 9 of the adults would be 65 years old and older
- 9 Austinites would have disabilities

AGE AND DISABILITY
(among the residents over the age of 16)

- 70 would be in the workforce
- 65 would hold jobs
- 7 would be unemployed

OCCUPATIONS

- 18 would work in Management, Business and Financial Services
- 9 would work in Computer, Engineering and Science
- 13 would work in Education, Legal, Community Services, Arts and Media
- 5 would work in Healthcare Practitioner and Technical Fields
- 16 would work in Service Occupations (Healthcare Support, Protective Service, Food Prep, Building and Grounds Cleaning and Maintenance)
- 24 would work in Sales and Office-Related Occupations
- 8 would work in Natural Resources, Construction and Maintenance
- 7 would work in Production, Transportation and Material Moving

LANGUAGE

- 72 Austinites would speak only English at home
- 28 would speak a language other than English

BIRTHPLACE

- 85 would have been born in the U.S.
- 15 would have been born overseas
- 1 would have been born in Europe
- 1 would have been born in Africa
- 4 would have been born in Asia
- 9 would have been born in Latin America
- 10 of the 15 villagers would not be U.S. citizens

ETHNICITY

- 5 Asians
- 7 Blacks
- 32 Hispanics (may include other ethnicities)
- 78 Whites
- 3 persons of mixed race

EDUCATION

- 5 would have less than a ninth grade education
- 6 would have not completed high school
- 20 would have a high school diploma
- 31 would have some college or an associate's degree
- 25 would have graduated college
- 13 would have a graduate degree

TRANSPORTATION

- 76 would drive alone to work every day
- 10 would carpool
- 2 would take public transportation
- 4 would travel by other means
- 7 would work at home

HEALTH CARE

- 84 would have health insurance coverage
- 16 would be uninsured

The village numbers are derived from the Census Bureau's 2015 American Community Survey. When calculating the village, the residents were rounded to the nearest whole number.

Blackline Master M4.2

ON THE JOB: PROVE THE PROFESSION
(Group & Justify Activity)

SCIENCE TEKS OBJECTIVES

| §112.18 | 2., 7.2, 8.2 | (E) analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends. |
| | 3., 7.3, 8.3 | Scientific investigation and reasoning. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to: (A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student. |

MATH TEKS OBJECTIVES

| §111.26 | 6B.1 | (A) apply mathematics to problems arising in everyday life, society, and the workplace |
| | 6b.14 | (H) compare the annual salary of several occupations requiring various levels of post-secondary education or vocational training and calculate the effects of the different annual salaries on lifetime income |

COLLEGE AND CAREER READINESS AND INVESTIGATING CAREERS TEKS OBJECTIVES

§127.1	(2)	The student investigates career pathways in one or more of the 16 career clusters. The student is expected to: (A) research the academic requirements for one or more of the careers in an identified cluster;
§127.3	(1)	The student explores career assessments as related to college and career planning. The student is expected to: (B) explore the 16 career clusters; (C) research trending fields related to career interest areas
	(2)	The student analyzes college and career opportunities. The student is expected to: (C) develop an awareness of financial aid, scholarships, and other sources of income as well as college savings to support college and career advancement; (E) demonstrate decision-making skills related to school and community issues, programs of study, and college and career planning;
	(3)	The student evaluates skills for personal success. The student is expected to: (B) use problem-solving models and critical-thinking skills to make informed decisions; (D) identify skills that can be transferable among a variety of careers;

Instructional Directions	**This activity is designed to take 15 – 25 minutes as presented below.**
	1. The teacher should distribute the cards, **Blackline Master S1a.1**, to students individually or in groups.
	2. Students review pictures of people working and find common characteristics to formulate relationships.
	3. Arrange pictures into groups based on the identified relationships.
	4. Students must justify to others (peers and/or instructor) the groups made.
	5. The teacher may elect to use **Blackline Master S1a.2** to collect responses.
	6. Have students calculate the lifetime earnings for his/her chosen/assigned occupation and compare his/her lifetime earning to those he/she groups with.
Learning Outcome(s)	The students will be able to justify his/her decisions based on observations, inferences and schema. There are no "right or wrong" answers if quality justification can be made.
	The students will be able to calculate and compare lifetime income for a variety of occupations that require various levels of post-secondary training.
Related Occupations/Industry	Computer Systems Analysts, Primary, Secondary & Special Education School Teachers, Accountants & Auditors, Computer User Support Specialists, Electricians, Registered Nurses, Software Developers, Systems Software, Software Developers, Applications, Police & Sheriff's Patrol Officers, Welders, Cutters, Solderers & Brazers, Radiologic Technologists & Technicians, Physicians, Auto Service Mechanics & Technicians, Licensed Practical & Licensed Vocational Nurses, Plumbers, Pipefitters & Steamfitters, Computer Programmers, Physical Therapists, Paralegals & Legal Assistants, Educational, Vocational & School Counselors, Network & Computer Systems Administrators
	Students can utilize the Bureau of Labor Statistics Occupational Outlook Handbook (*https://www.bls.gov/ooh/*), High Skill, High Growth Jobs resource: *http://www.wfscapitalarea.com/Portals/0/all-content/Youth%20Services/ WhenIGrowUpHighSkillHighGrowthJobsCapitalArea.pdf*, as well as the Student Career Profiles: *http://www.wfscapitalarea.com/YouthServices/CareerPlanning.aspx*
Deliverables	Peer review or teacher review of groupings. Oral justifications of groupings.
Resources Needed	**Blackline Master S1a.1** *Note: While this is designed to achieve Science TEKS objectives, this activity could be completed in any subject matter classroom in the intermediate school level.*
Vocabulary or Concepts (New and/or Challenging)	• Relationships • Attributes • Classification • Rationalize/Rationalization • Justify/Justification

MODIFICATIONS & EXTENSIONS

• As time allows, a variation on this activity would allow students to make as many groupings as possible within an allotted amount of time (no more than five minutes is recommended). Students would then compare groups and would cross off any groups that are similar to those discovered by other students. The student/group with the most unique groupings "wins."

• Have students take or collect pictures of professions in action, including people, tools, products, and services from each profession. Have them present as a poster board or online project board presentation of their classifications.

• After student observes pictures, conduct a teacher-led discussion to find common features seen in pictures.

• Give students group names for career clusters and have them put pictures in the given categories.

• Students can put pictures into sub-groups within the categories that they have made.

• Students can hypothesize careers/industries represented with answers on the back of pictures.

• Students can hypothesize careers/industries represented with no answers on the back of pictures.

• Students can hypothesize/discuss/research the type of education required for this profession.

• Students can reference High Skill, High Growth Jobs resource: *http://www.wfscapitalarea.com/Portals/0/all-content/Youth%20Services/WhenIGrowUpHighSkillHighGrowthJobsCapitalArea.pdf*, as well as the Student Career Profiles: *http://www.wfscapitalarea.com/YouthServices/CareerPlanning.aspx*.
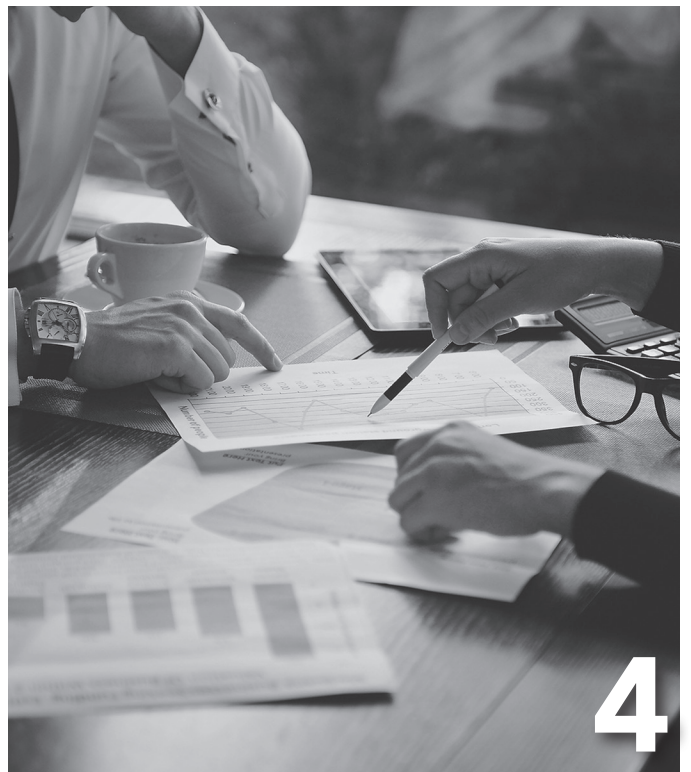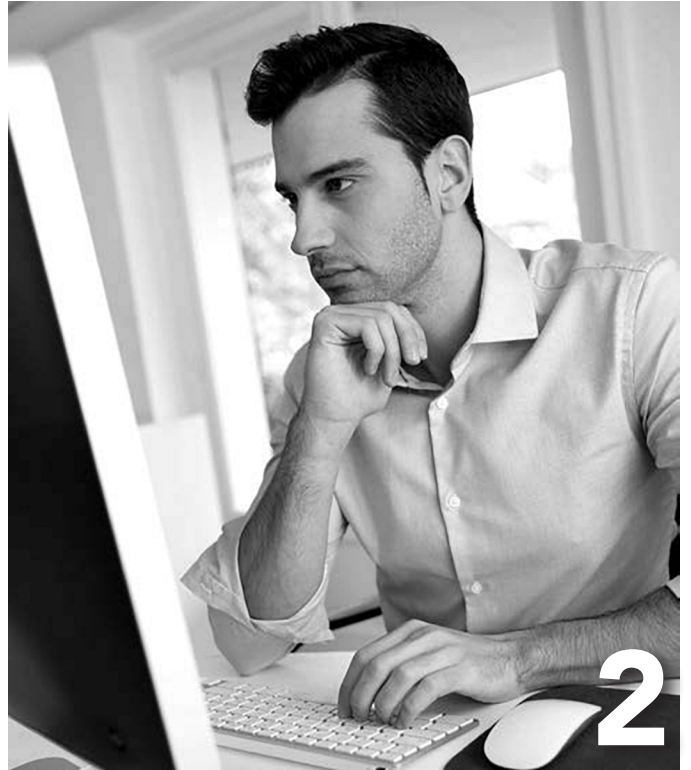
COMPUTER SYSTEMS ANALYSTS

Computer systems analysts solve computer problems and apply computer technology to meet the needs of an organization. They analyze user requirements, procedures, and problems to automate or improve existing systems, and review computer systems capabilities, workflow, and scheduling limitations.

Median Hourly Wage:	$41.50
Jobs in 2014:	8,230
Estimated Jobs in 2024:	11,550
Employment Growth:	40.3%
Annual Average Job Openings:	435
Minimum Education:	Bachelor's degree

2

PRIMARY, SECONDARY, & SPECIAL EDUCATION SCHOOL TEACHERS

Teachers who work in the public school education system teach grades kindergarten through 12. Some teachers can work in private or charter schools, which may serve special needs or gifted children.

Median Hourly Wage:	$26.50
Jobs in 2014:	14,210
Estimated Jobs in 2024:	19,510
Employment Growth:	37.3%
Annual Average Job Openings:	860
Minimum Education:	Bachelor's degree

1

ACCOUNTANTS & AUDITORS

Accountants and auditors decide how much money should be spent and advise management on key business decisions. They also check to ensure records are accurate and controls protect against fraud and waste.

Median Hourly Wage:	$34.67
Jobs in 2014:	9,010
Estimated Jobs in 2024:	11,600
Employment Growth:	28.7%
Annual Average Job Openings:	500
Minimum Education:	Bachelor's degree

4

COMPUTER USER SUPPORT SPECIALISTS

Computer user support specialists provide technical assistance to computer users by solving problems including retrieving lost documents or helping them rid their computers of viruses.

Median Hourly Wage:	$24.13
Jobs in 2014:	6,800
Estimated Jobs in 2024:	8,970
Employment Growth:	31.9%
Annual Average Job Openings:	305
Minimum Education:	Some college, no degree

3

5

6

7

8

ELECTRICIANS

Electricians are in short supply and demand continues to grow in response to an ever-increasing population and as a growing number of baby boomers retire. The shortage of electricians translates into outstanding career opportunities to individuals entering into the workforce.

Median Hourly Wage: $23.18
Jobs in 2014: 2,730
Estimated Jobs in 2024: 3,970
Employment Growth: 45.4%
Annual Average Job Openings: 165
Minimum Education: HS Diploma/GED + Apprenticeship

6

REGISTERED NURSES

A registered nurse (RN) is a nurse who has graduated from a nursing program at a university or college and has passed a national licensing exam. A registered nurse helps individuals, families, and groups to achieve health and prevent disease.

Median Hourly Wage: $32.28
Jobs in 2014: 10,850
Estimated Jobs in 2024: 14,700
Employment Growth: 35.6%
Annual Average Job Openings: 640
Minimum Education: Bachelor's degree preferred

5

SOFTWARE DEVELOPERS, SYSTEMS SOFTWARE

Software developers, systems software, coordinate the construction, maintenance, and expansion of an organization's computer system.

Median Hourly Wage: $50.61
Jobs in 2014: 4,520
Estimated Jobs in 2024: 5,860
Employment Growth: 29.6%
Annual Average Job Openings: 200
Minimum Education: Bachelor's degree

8

SOFTWARE DEVELOPERS, APPLICATIONS

Software developers, applications, develop applications that allow people to do specific tasks on a computer or another device.

Median Hourly Wage: $48.79
Jobs in 2014: 8,970
Estimated Jobs in 2024: 12,370
Employment Growth: 37.9%
Annual Average Job Openings: 470
Minimum Education: Bachelor's degree

7

9

10

11

12
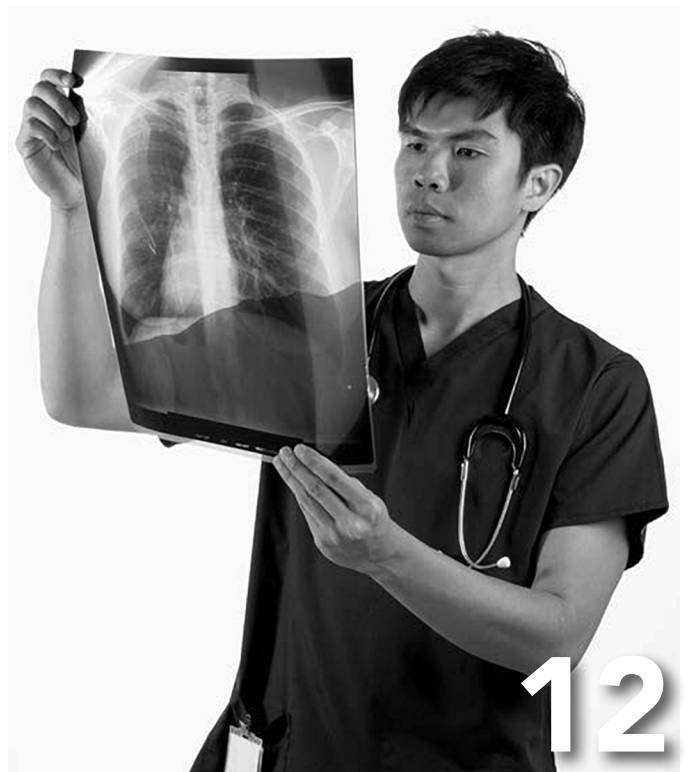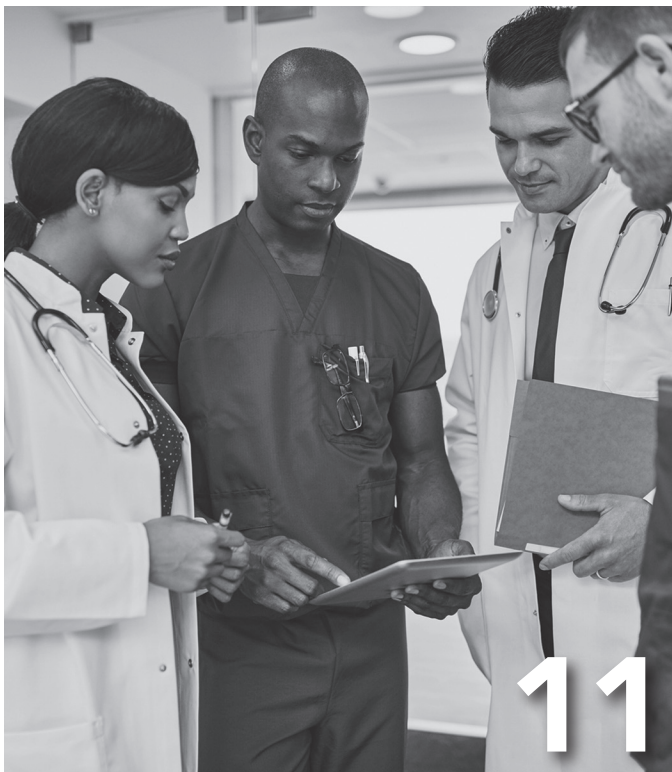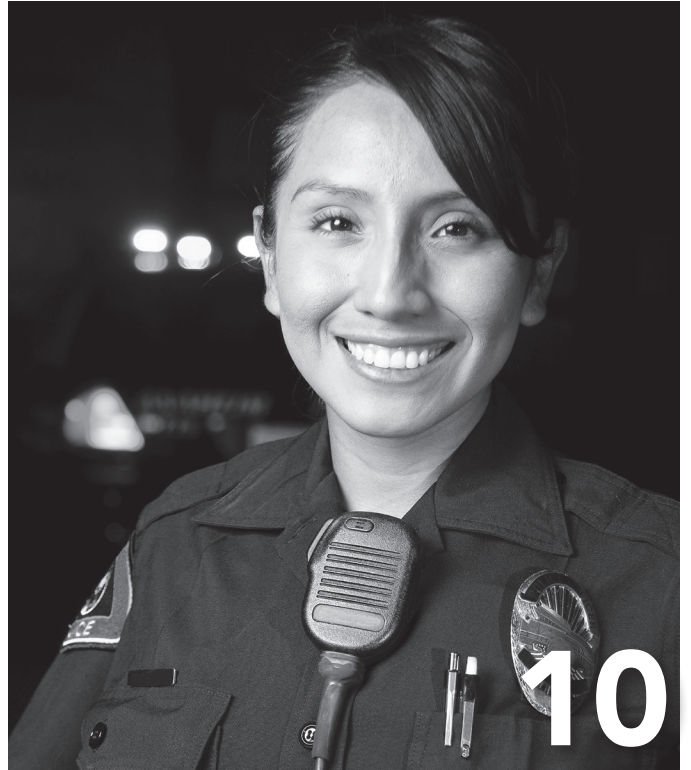
POLICE & SHERIFF's PATROL OFFICERS

Police & sheriff's patrol officers maintain order and protect life and property by enforcing local, tribal, State or Federal laws and ordinances.

Median Hourly Wage:	$34.90
Jobs in 2014:	2,580
Estimated Jobs in 2024:	3,220
Employment Growth:	24.8%
Annual Average Job Openings:	150
Minimum Education:	HS Diploma/GED + On-the-job Training

10

WELDERS, CUTTERS, SOLDERERS, & BRAZERS

Welders, cutters, solderers, and brazers can use their skills to pursue careers in high-demand occupations such as: welder-pipefitter and other pipe trades, structural welder, welder-fitter, maintenance mechanics, scaffold builders, and millwrights.

Median Hourly Wage:	$20.08
Jobs in 2014:	980
Estimated Jobs in 2024:	1,170
Employment Growth:	19.4%
Annual Average Job Openings:	50
Minimum Education:	HS Diploma/GED + On-the-job Training

9

RADIOLOGIC TECHNOLOGISTS & TECHNICIANS

Radiologic technologists perform imaging tests to assist in diagnosing patients. Some radiologic technologists specialize in computerized tomography (CT) and magnetic resonance imaging (MRI).

Median Hourly Wage:	$27.94
Jobs in 2014:	3,767
Estimated Jobs in 2024:	5,388
Employment Growth:	41.4%
Annual Average Job Openings:	215
Minimum Education:	Associate's degree

12

PHYSICIANS

Physicians diagnose and treat injuries or illnesses. They examine patients, take medical histories, prescribe medications and order, perform and interpret diagnostic tests.

Median Hourly Wage:	$132.59
Jobs in 2014:	1,550
Estimated Jobs in 2024:	2,040
Employment Growth:	31.6%
Annual Average Job Openings:	90
Minimum Education:	Doctoral or professional degree

11

13

14

15

16
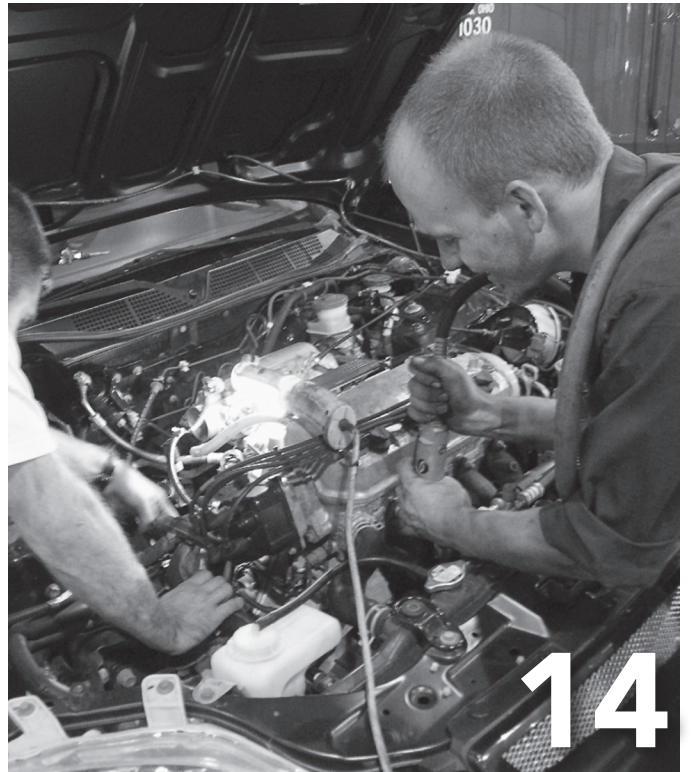
AUTO SERVICE MECHANICS & TECHNICIANS

Auto service mechanics and technicians inspect, maintain and repair cars and light trucks.

Median Hourly Wage:	$22.65
Jobs in 2014:	2,770
Estimated Jobs in 2024:	3,400
Employment Growth:	22.7%
Annual Average Job Openings:	140
Minimum Education:	Postsecondary non-dregree award

14

LICENSED PRACTICAL & LICENSED VOCATIONAL NURSES

Licensed vocational nurses (LVNs), referred to as licensed practical nurses in some other states, care for the sick, injured, convalescent, and disabled under the direction of physicians and registered nurses.

Median Hourly Wage:	$22.84
Jobs in 2014:	2,490
Estimated Jobs in 2024:	3,250
Employment Growth:	30.5%
Annual Average Job Openings:	145
Minimum Education:	Postsecondary non-dregree award

13

PLUMBERS, PIPEFITTERS, & STEAMFITTERS

Plumbers, pipefitters, and steamfitters are among the largest and highest-paid construction occupations. Plumbers, pipefitters, and steamfitters install, maintain, and repair many different types of pipe systems that carry water, steam, air, or other liquids or gases.

Median Hourly Wage:	$23.95
Jobs in 2014:	2,140
Estimated Jobs in 2024:	3,020
Employment Growth:	41.1%
Annual Average Job Openings:	120
Minimum Education:	HS Diploma/GED + Apprenticeship

16

COMPUTER PROGRAMMERS

Computer programmers write and test code that allows computer applications and software programs to function properly.

Median Hourly Wage:	$41.69
Jobs in 2014:	3,270
Estimated Jobs in 2024:	3,370
Employment Growth:	3.1%
Annual Average Job Openings:	90
Minimum Education:	Bachelor's degree

15

17

18

19

20
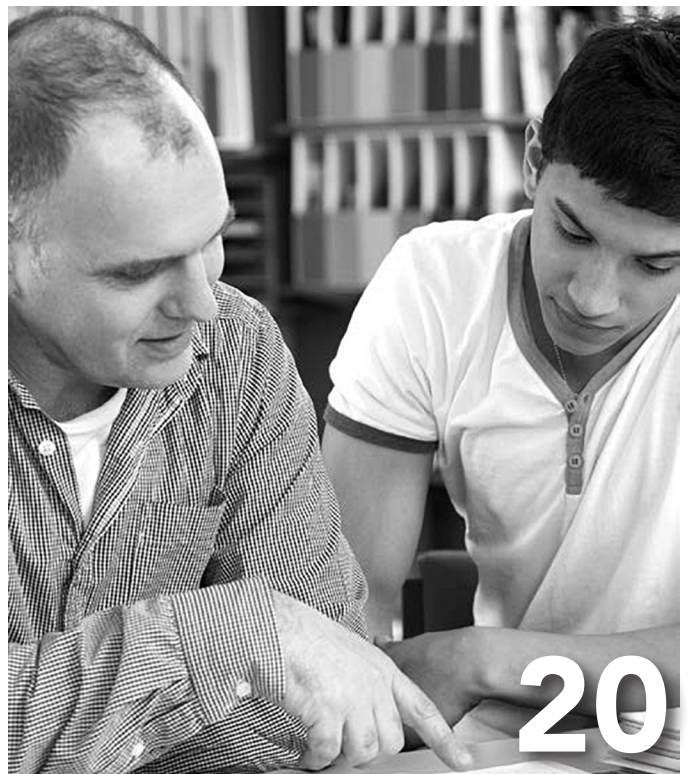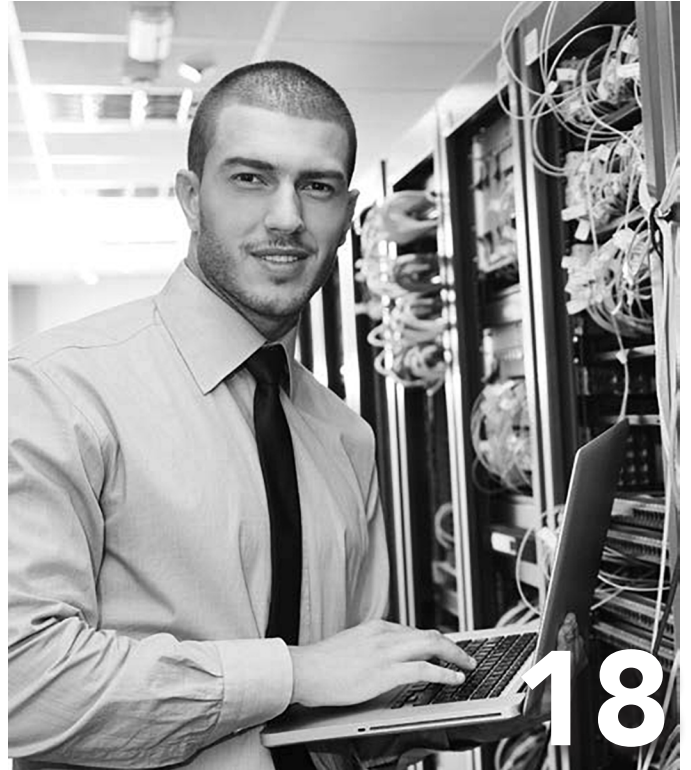
PHYSICAL THERAPISTS

Physical therapy is the method of treatment that varies case by case and can be anything from therapeutic exercise and functional training to the use of adaptive devices and equipment or even various forms of electrotherapy.

Median Hourly Wage:	$42.25
Jobs in 2014:	900
Estimated Jobs in 2024:	1,240
Employment Growth:	37.8%
Annual Average Job Openings:	60
Minimum Education:	Doctoral or professional degree

18

PARALEGALS & LEGAL ASSISTANTS

Paralegals, also referred to as legal assistants, assist lawyers by researching legal precedent, investigating facts, or preparing legal documents.

Median Hourly Wage:	$23.33
Jobs in 2014:	2,640
Estimated Jobs in 2024:	3,410
Employment Growth:	29.2%
Annual Average Job Openings:	135
Minimum Education:	Associate's degree

17

EDUCATIONAL, VOCATIONAL, & SCHOOL COUNSELORS

Plumbers, pipefitters, and steamfitters are among the largest and highest-paid construction occupations. Plumbers, pipefitters, and steamfitters install, maintain, and repair many different types of pipe systems that carry water, steam, air, or other liquids or gases.

Median Hourly Wage:	$26.78
Jobs in 2014:	1,290
Estimated Jobs in 2024:	1,660
Employment Growth:	28.7%
Annual Average Job Openings:	60
Minimum Education:	Master's degree

20

NETWORK & COMPUTER SYSTEMS ADMINISTRATORS

Network and computer systems administrators are professionals that analyze, design and test local area networks (LAN), wide area networks (WAN), Internet, intranet, and other data communications systems

Median Hourly Wage:	$43.55
Jobs in 2014:	3,720
Estimated Jobs in 2024:	4,850
Employment Growth:	30.4%
Annual Average Job Openings:	165
Minimum Education:	Bachelor's degree

19

Name: _____
Period: _____
Date: _____

ON THE JOB: PROVE THE PROFESSION
(Group & Justify Activity)

Review the pictures of people working and find common characteristics to formulate relationships. Arrange pictures into groups based on the identified relationships. You must justify your decisions based on observations, inferences and schema. There are no "right or wrong" answers if quality justification can be made. Make any notes below that may help you justify or prove your answers.

NAME OF GROUP	CARDS IN GROUP	REASON FOR GROUPING
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

ON THE JOB: SOUNDS OF THE WORK WORLD
(Name that Sound)

SCIENCE TEKS OBJECTIVES

§112.18	6.2, 7.2, 8.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and field investigations. The student is expected to:
	    (A) design and implement experimental investigations by making observations, asking well-defined questions, formulating testable hypotheses, and using appropriate equipment and technology;
	    (B) collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers;
	6.3, 7.3, 8.3 Scientific investigation and reasoning. The student uses critical thinking, scientific reasoning, and problem-solving to make informed decisions and knows the contributions of relevant scientists. The student is expected to:
	    (A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, to encourage critical thinking by the student.

COLLEGE AND CAREER READINESS AND INVESTIGATING CAREERS TEKS OBJECTIVES

§127.1	(2)	The student investigates career pathways in one or more of the 16 career clusters. The student is expected to: (B) research the certification or educational requirements for careers;
	(4)	The student investigates labor market information. The student is expected to: (B) classify evidence of high-skill, high-wage, or high-demand occupations based on analysis of labor market information; and

§127.3	(1)	The student explores career assessments as related to college and career planning. The student is expected to:
		    (B) explore the 16 career clusters;
		    (C) research trending fields related to career interest areas;

	(2)	The student analyzes college and career opportunities. The student is expected to: (E) demonstrate decision-making skills related to school and community issues, programs of study, and college and career planning; and

	(3)	The student evaluates skills for personal success. The student is expected to:
		    (A) use interpersonal skills to facilitate effective teamwork;
		    (B) use problem-solving models and critical-thinking skills to make informed decisions;

	(6)	The student develops skills for professional success. The student is expected to: (C) model characteristics of effective leadership, teamwork, and conflict management;

Instructional Directions	**This activity is designed to take 30–45 minutes as presented below.** This lesson can be delivered in two ways: 1. Set up sounds with appropriate volume for each student to hear sound clips of the 10 Workforce Solutions high-skill, high-growth jobs provided. (this could be one source to listen to as a class or an individual device that students could listen to with earphones). 2. Provide chart for students to first record the hypothesis of the sounds they hear from the recording. Guiding questions: What do you think makes this sound? What type of job might have this sound in its environment? Encourage students to record observations that inform their research in the notes box on their worksheets. 3. Give students copies of the Workforce Solutions High-Skill, High-Growth Jobs List *http://www.wfscapitalarea.com/Portals/0/all-content/Youth%20Services/WhenIGrowUpHighSkillHighGrowthJobsCapitalArea.pdf* and have the students hypothesize what job is associated with each sound. Play sounds again at your discretion. 4. Reviewing answers as a group or class will give students an opportunity to justify their thoughts. Students could compare answers with a partner before the class wide discussion.
Learning Outcome(s)	The students will use observation skills to record hypotheses of sounds heard and then hypothesize about the type of job where that sound may be heard. Students will understand that observations are not just by sight.
Related Occupations/Industry	These jobs have been selected: • Plumber (flushing toilet) • Truck Driver (large machine/truck moving – use Heavy Equipment sound) • Electrical Power Line Installer/Repairer (buzzing electrical lines) • Registered Nurse (heart monitor) • Dentist (tooth drilling) • Pharmacy Technician (pills being manipulated) • Radiologic Technologist (x-ray or MRI machine) • Respiratory Therapist (breathing) • Accountant (calculations on a keyboard/calculator)
Deliverables	Completed Blackline Master S1b
Resources Needed	Sound clips of the jobs listed above: • *http://www.wrksolutions.com/for-individuals/career-exploration/when-i-grow-up/middle-school-grades-6-8* • Device to project sound • Blackline Master S1b • Workforce Solutions High-Skill, High-Growth Jobs List & Student Career Profiles
Vocabulary or Concepts (New and/or Challenging)	• Observations • Quantitative observations • Qualitative observations • Auditory

MODIFICATIONS & EXTENSIONS

• Students hypothesize smells that could be associated with each job above or others.
• Students hypothesize on sounds aloud. Pictures of each job could be associated with each job. Match the sound to the picture. (see Blackline
• Masters for lessons S1a and S1d)
• Students make recordings of their own world to share and have others hypothesize.
• **Simplify:** Students are given a list of the sounds and they choose which sound they hear after listening to each clip.
• **Simplify:** Students hypothesize the sounds but are given a list of jobs associated with the sounds and they match the sound to the job.

Name: _____

Period: _____

Date: _____

ON THE JOB: SOUNDS OF THE WORK WORLD

(Name that Sound)

Hypothesize about the sounds you observe as you listen to audio clips from the world of our region's workplaces. Then look at the High-Skill, High-Growth Jobs List and Student Career Profiles and hypothesize the job that could be associated with that sound. Make any notes that may help you justify or prove your answers.

DESCRIPTION OF SOUND	JOBS THAT MIGHT CREATE THAT SOUND	NOTES
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

List of jobs that could create the sounds you have heard:

- Plumber
- Truck Driver
- Electrical Power Line Installer/Repairer
- Registered Nurse
- Dentist

- Pharmacist
- Radiologic Technologist
- Respiratory Therapist
- Accountant

ON THE JOB: PROFESSION PHOTO PUZZLE HUNT
(Identify the Difference)

SCIENCE TEKS OBJECTIVES

§112.18	2., 7.2, 8.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and field investigations. The student is expected to: (A) Plan and implement comparative and descriptive investigations by making observations, asking well-defined questions, and using appropriate equipment and technology; (B) Design and implement experimental investigations by making observations, asking well-defined questions, formulating testable hypotheses, and using appropriate equipment and technology; (C) Collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers. 3., 7.3, 8.3 Scientific investigation and reasoning. The student uses critical thinking, scientific reasoning, and problem-solving to make informed decisions and knows the contributions of relevant scientists. The student is expected to: (A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student.

COLLEGE AND CAREER READINESS AND INVESTIGATING CAREERS TEKS OBJECTIVES

§127.1	(4)	The student investigates labor market information. The student is expected to: (B) classify evidence of high-skill, high-wage, or high-demand occupations based on analysis of labor market information;
§127.3	(3)	The student evaluates skills for personal success. The student is expected to: (A) use interpersonal skills to facilitate effective teamwork; (B) use problem-solving models and critical-thinking skills to make informed decisions;

Instructional Directions	**This activity is designed to take 5–50 minutes based on chosen content, modifications or extensions** Each picture has two "versions." By using keen observations skills, students can find as many differences between the pictures as possible. Differences can be recorded on **Blackline Master S1c**.
Learning Outcome(s)	Students will use acute visual discrepancy skills to analyze the differences between two versions of the same photograph depicting Workforce Solutions high-skill, high-growth jobs.
Related Occupations/Industry	Construction Industry
Deliverables	Completed Worksheet with differences between each picture listed.
Resources Needed	Blackline Master S1c IDEAL: An additional digital photograph for the extension activity.
Vocabulary or Concepts (New and/or Challenging)	• observe • minute (as in small) • observation skills • analyze/analysis • visual acuity

MODIFICATIONS & EXTENSIONS

• Students with access to computer programs for altering photos could change a photograph then share for other students to observe and analyze. Consider having students add original & modified photos
to a teacher-monitored photo-sharing Internet site (such as Flickr or Photobucket) or a social media app (such as Instagram)

• **Simplify:** This lesson could be done orally without any writing at all – answers could be discussed orally. Project image for the class to view as a whole or pass out into small groups. It could be used as a warm up to get students focused. This could also be used during short class period schedules when a "scientific" activity is needed but there is not adequate time for a lab or full lesson.

ON THE JOB: PHOTO PUZZLE HUNT

Individually or with your partner, find the differences between Pictures A and B. Be as descriptive as possible when describing the difference that Picture B has from Picture A.

A
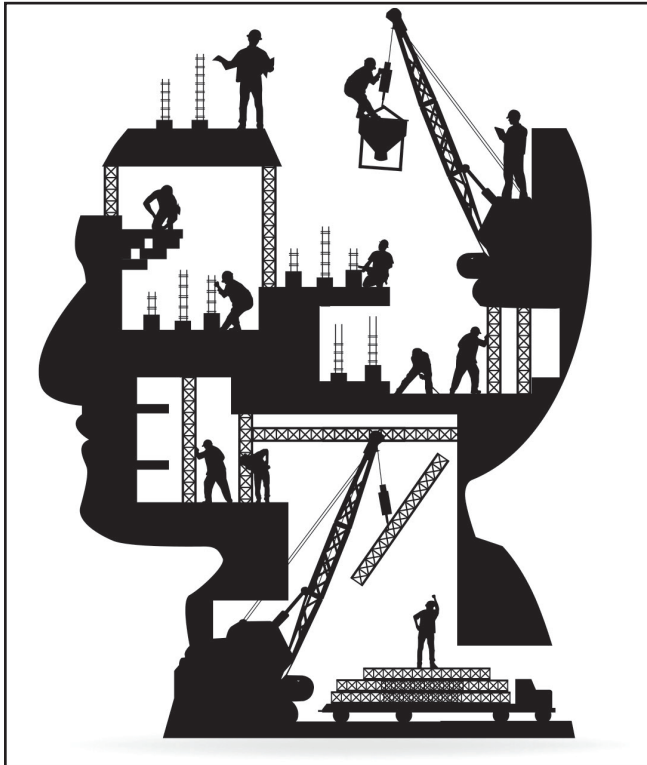
B
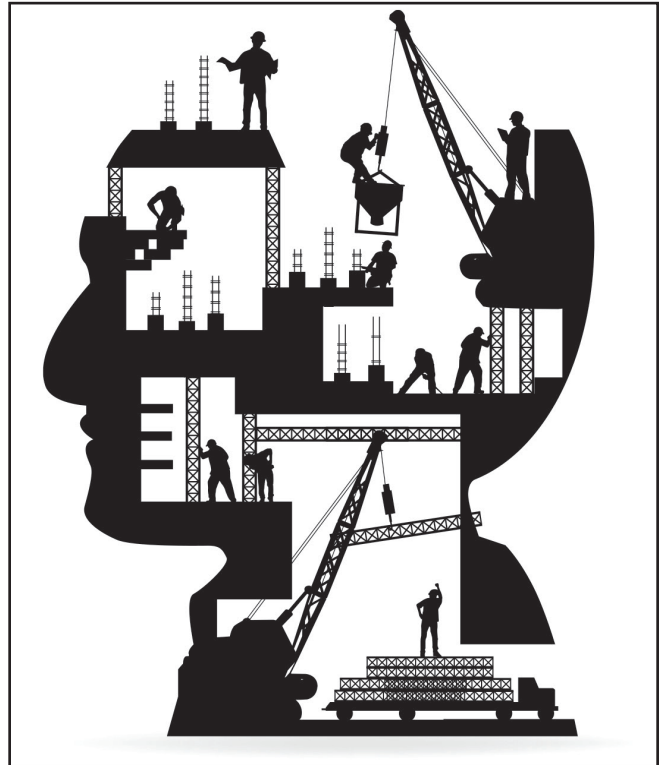
Differences between Pictures A and B:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

ON THE JOB: TOOLS OF THE TRADE
(Mix, Match & Mingle)

SCIENCE TEKS OBJECTIVES

§112.18	6.4, 7.4, 8.4 Scientific investigation and reasoning. The student knows how to use a variety of tools and safety equipment to conduct science inquiry. The student is expected to:
	    (A) use appropriate tools to collect, record, and analyze information, including lab journals/notebooks, beakers, meter sticks, graduated cylinders, anemometers, psychrometers, hot plates, test tubes, spring scales, balances, microscopes, thermometers, calculators, computers, spectroscopes, timing devices, and other equipment as needed to teach the curriculum; and
	    (B) use preventative safety equipment, including chemical splash goggles, aprons, and gloves, and be prepared to use emergency safety equipment, including an eye/face wash, a fire blanket, and a fire extinguisher.

COLLEGE AND CAREER READINESS AND INVESTIGATING CAREERS TEKS OBJECTIVES

§127.1	(2)	The student investigates career pathways in one or more of the 16 career clusters. The student is expected to: (C) describe the technical-skill requirements for careers.

§127.3	(3)
	
	(6)
		The student evaluates skills for personal success. The student is expected to:
		    (A) use interpersonal skills to facilitate effective teamwork;
		    (B) use problem-solving models and critical-thinking skills to make informed decisions;
		The student develops skills for professional success. The student is expected to:
		    (A) demonstrate effective verbal, nonverbal, written, and electronic communication skills;
		    (C) model characteristics of effective leadership, teamwork, and conflict management;
		    (D) recognize the importance of a healthy lifestyle, including the ability to manage stress; and

Instructional Directions

This activity is designed to take 15–25 minutes as presented below.

1. Teacher should cut cards apart, laminate and place cards in an envelope or baggie.

2. Students are placed into partnerships or small groups (no more than three is advised to allow all students ownership of a portion of the activity).

3. Cards are given to student groups in an envelope. Each envelope contains a set of 10 pictures, 10 job names, and 10 descriptions/scenarios.

4. Student groups spread cards out and observe/read.

5. Students begin to match job names with descriptions by using context clues. Students should be advised that some safety "tools" could be used by more than one profession, but that in this activity, there is a best match for each job, description and picture using context clues.

6. Once all pictures, job names, and description/scenarios are matched as the group deems correct, the group calls the instructor over to check their work.

Learning Outcome(s)	The students will use observation and context clue reading skills to match a picture and also a verbal description of safety equipment to the job that uses it. The finished product here will be a set of three columns: job names, pictures of safety tools/equipment and a verbal description or scenario for the equipment's use. In each row, the goal is for the student to match up the job, safety equipment and scenario correctly. Each picture will have a specific job and matching description/scenario. No writing involved in this activity.
Related Occupations/Industry	Plumbers, Welders, Machinists, School Teachers, Dentists, Nurses, Radiologic Technologists, Computer Programmers, Software Developers and Accountants
Deliverables	Students will ask teacher to check completed sets of job titles, description/scenarios and safety tool once all sets are complete in their group.
Resources Needed	1. Laminated sets of Tools of the Trade Mix Match and Mingle Activity Cards (Blackline Masters S1d.1) 2. Envelopes for sets as they are cut apart (30 pieces) 3. Key for teacher (Blackline Master S1d.2)
Vocabulary or Concepts (New and/or Challenging)	• Relationships • Attributes • Classification • Profession

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MODIFICATIONS & EXTENSIONS

- Students interview parents on safety equipment that they use on their job.

- Students write an essay on the importance of safety training in the workplace.

- **Simplify:** Students could have a modified set of clues with key words underlined.

- **Simplify:** Scenarios attached to pictures. The only match is with the job name.

PLUMBERS

WELDERS

Work areas are not always easy to access or work in. In confined spaces, avoid oxygen deficient atmospheres, and monitor levels of hydrogen sulfide, a by-product of sewage decomposition. It can build up to unhealthy levels.

Protect eyes from radiation exposure. Infrared radiation can cause retinal burning and cataracts and it can usually be felt as heat. Ultraviolet radiation, which cannot be felt, can cause an eye-burn. This condition may not be apparent until several hours after exposure. It can cause extreme discomfort and can result in swelling, fluid excretion and temporary blindness.

MACHINISTS

SCHOOL TEACHERS

Using eye protection in the machine shop is the most important safety rule of all. Metal chips and shavings can fly at great speeds and distances and cause serious eye injury. Safety glasses must be worn when working with hand-cutting tools, since most hand-cutting tools are made of hardened steel and can break or shatter when used improperly.

These safety tools may become obsolete with more technology-driven, paperless assignments.

DENTISTS

NURSES

Worn whenever contact with blood or other potentially infectious materials is likely to occur. Since saliva is considered a potential infectious material, these should be worn in almost all patient procedures and when touching contaminated items or surfaces.

These workers have hands-on daily contact with their patients and therefore play a vital role in patient safety and infection control. The Center for Disease Control explains how hand-washing is the single most effective way to prevent the spread of infection.

RADIOLOGIC TECHNOLOGISTS

COMPUTER PROGRAMMERS

These workers are protected from radiation by using protective equipment such as lead shields, by following rigid safety procedures, and by wearing film badges to monitor exposure to radiation.

These workers can design instructions to cut and shape machine, automobile and aviation parts. They then input an instructional program into their machines to set guidelines for movement, cutting and shaping. Anyone seeking this profession should be capable of closely following safety measures, including wearing safety gear such as earplugs because machine tools can be hazardous.

SOFTWARE DEVELOPERS

ACCOUNTANTS

The American Academy of Ophthalmology also recommends that users should look up or away from their screens several times an hour. In addition, frequent blinking tends to lubricate the eyes and prevent them from drying out.

Some workplace injuries can happen from sitting in one place too long while making sure the company has accurate public records and its taxes are paid properly and on time. But there is a solution for this kind of fatigue.

MIX, MATCH & MINGLE ACTIVITY CARDS:
TEACHER KEY

PLUMBERS	Work areas are not always easy to access or work in. In confined spaces, avoid oxygen deficient atmospheres, and monitor levels of hydrogen sulfide, a by- product of sewage decomposition. It can build up to unhealthy levels. *http://www.statefundca.com/safety/safetymeeting/SafetyMeetingArticle.aspx?ArticleID=501*	
WELDERS	Protect eyes from radiation exposure. Infrared radiation can cause retinal burn- ing and cataracts and it can usually be felt as heat. Ultraviolet radiation, which cannot be felt, can cause an eye-burn. This condition may not be apparent until several hours after exposure. It can cause extreme discomfort and can result in swelling, fluid excretion and temporary blindness. *http://www.lincolnelectric.com/en-us/education-center/welding-safety/pages/personal-protective-equipment-faqs.aspx*	
MACHINISTS	Using eye protection in the machine shop is the most important safety rule of all. Metal chips and shavings can fly at great speeds and distances and cause serious eye injury. Safety glasses must be worn when working with hand-cutting tools, since most hand-cutting tools are made of hardened steel and can break or shatter when used improperly. *http://machinist.org/army-machine-tool/general-machine-shop-safety/*	
SCHOOL TEACHERS	These safety tools may become obsolete with more technology-driven, paperless assignments.	
DENTISTS	Worn whenever contact with blood or other potentially infectious materials is likely to occur. Since saliva is considered a potential infectious material, these should be worn in almost all patient procedures and when touching contami- nated items or surfaces. *http://www.ada.org/sections/professionalResources/pdfs/cdc_protective_equipment.pdf*	

MIX, MATCH & MINGLE ACTIVITY CARDS:
TEACHER KEY

NURSES	These workers have hands-on daily contact with their patients and therefore play a vital role in patient safety and infection control. The Center for Disease Control explains how hand-washing is the single most effective way to prevent the spread of infection. ***http://www.juns.nursing.arizona.edu/articles/fall%202009/infection%20conrol.htm***	
RADIOLOGIC TECHNOLOGISTS	These workers are protected from radiation by using protective equipment such as lead shields, by following rigid safety procedures, and by wearing film badges to monitor exposure to radiation. ***http://www.michigan.gov/healthcareers/0,4590,7-221-39742-63169--,00.html***	
COMPUTER PROGRAMMERS	These workers can design instructions to cut and shape machine, automobile and aviation parts. They then input an instructional program into their machines to set guidelines for movement, cutting and shaping. Anyone seeking this profession should be capable of closely following safety measures, including wearing safety gear such as earplugs because machine tools can be hazardous. ***http://education-portal.com/become_a_cnc_programmer.html***	
SOFTWARE DEVELOPERS	The American Academy of Ophthalmology also recommends that users should look up or away from their screens several times an hour. In addition, frequent blinking tends to lubricate the eyes and prevent them from drying out. ***http://consumer.healthday.com/encyclopedia/article.asp?AID=646385***	
ACCOUNTANTS	Some workplace injuries can happen from sitting in one place too long while making sure the company has accurate public records and its taxes are paid properly and on time. But there is a solution for this kind of fatigue. ***http://www.inc.com/guides/2010/05/9-avoidable-workplace-health-safety-hazards.html/1***	

NEWTON'S LAWS: ENERGY ON THE JOB

SCIENCE TEKS OBJECTIVES

§112.18	9. Force, motion, and energy. The student knows that the Law of Conservation of Energy states that energy can neither be created nor destroyed, it just changes form. The student is expected to: (C) demonstrate energy transformations such as energy in a flashlight battery changes from chemical energy to electrical energy to light energy.
§112.19	7. Force, motion, and energy. The student knows that there is a relationship among force, motion, and energy. The student is expected to: (B) illustrate the transformation of energy within an organism such as the transfer from chemical energy to heat and thermal energy in digestion

COLLEGE AND CAREER READINESS AND INVESTIGATING CAREERS TEKS OBJECTIVES

§127.1	(1)	The student investigates one or more careers within the 16 career clusters. The student is expected to: (A) identify the various career opportunities within one or more career clusters; and (B) identify the pathways within one or more career clusters.
	(2)	The student investigates career pathways in one or more of the 16 career clusters. The student is expected to: (C) describe the technical-skill requirements for careers.
	(3)	The student investigates the professional skills needed for college and career success. The student is expected to: (A) apply core academic skills to meet personal, academic, and career goals;
	(4)	The student investigates labor market information. The student is expected to: (B) classify evidence of high-skill, high-wage, or high-demand occupations based on analysis of labor market information;
§127.3	(3)	The student evaluates skills for personal success. The student is expected to: (A) use interpersonal skills to facilitate effective teamwork; (B) use problem-solving models and critical-thinking skills to make informed decisions; (C) use effective time-management and goal-setting strategies;
	(6)	The student develops skills for professional success. The student is expected to: (A) demonstrate effective verbal, nonverbal, written, and electronic communication skills; (C) model characteristics of effective leadership, teamwork, and conflict management; (E) explore characteristics necessary for professional success such as work ethics, integrity, dedication, perseverance, and interactions with diverse populations

Instructional Directions   **This activity is designed to take 15– 30 minutes for brainstorming; 10–45 minutes for skits depending on class size.**

1. Students have acquired background knowledge and comprehension of energy transformation that take place around us and the Law of Conservation of Matter (Energy).

2. Students are given a scenario from a particular job. (**Blackline Masters S2.1 –S2.7**)

Lesson S2a

Instructional Directions

3. Students brainstorm energy transformations that take place in that scenario.

4. In the blank space on their worksheet, students draw out transformations using arrows to show direction of transfer.

5. Students create a pantomime (silent) skit of the transformations.

6. Students perform their skit for their classmates. Classmates try to guess which job is being shown.

7. Class discusses energy transformations shown in group's skit.

Learning Outcome(s)

The students will demonstrate knowledge and application of energy transformations in an activity by a given job.

Related Occupations/Industry

Scientist, Nurse, Doctor, Accountant, HVAC Specialist, Police & Sheriff's Patrol Officer, Licensed Vocational Nurse (LVN)

Deliverables

Acting out a pantomime demonstrating the scene given. A list of energy transformations found in the scene.

Resources Needed

Blackline Masters S2.1 –S2.7 (This is where students will list their energy transformations.)

Vocabulary or Concepts (New and/or Challenging)

- Pantomime
- Energy
- Law of Conservation of Energy
- Energy transformations

MODIFICATIONS & EXTENSIONS

- Video clips could be shown of a job in action. Students could describe or even draw energy transformations shown.

Group Member Names: _____   _____

                     _____   _____

             Date: _____

ENERGY TRANSFORMATION SKITS

As a group, read your situation and think about the energy transformations that may take place in the situation. One person in the group needs to draw the energy transformations with the actions your group will pantomime. Hand this paper to your teacher when time to practice is up. It must have the names of all your group members.

Group 1:   Astronauts replace a "window" on the international space station that allows sunlight to enter the lab where the **<u>scientists</u>** are experimenting on growth plants in space.

When your group is called on, act out your situation. The audience will record on a piece of notebook paper what they think your situation is and the energy transformations that they saw. Your grade is based on:

- The energy transformations shown below on this page (with arrows correct)
- Appropriate participation in your group
- Showing a minimum of three energy transformations in your pantomime
- Making your situation obvious to your audience in your acting
- Your active participation in observing other groups

Group Member Names: _____   _____
                      _____   _____
         Date: _____

ENERGY TRANSFORMATION SKITS

As a group, read your situation and think about the energy transformations that may take place in the situation. One person in the group needs to draw the energy transformations with the actions your group will pantomime. Hand this paper to your teacher when time to practice is up. It must have the names of all your group members.

Group 2:   A **<u>college nursing instructor</u>** is showing students how to give an immunization shot. A student attempts to give another student a shot and is too rough. The student receiving the shot screams in pain.

When your group is called on, act out your situation. The audience will record on a piece of notebook paper what they think your situation is and the energy transformations that they saw. Your grade is based on:

- The energy transformations shown below on this page (with arrows correct)
- Appropriate participation in your group
- Showing a minimum of three energy transformations in your pantomime
- Making your situation obvious to your audience in your acting
- Your active participation in observing other groups

Group Member Names: _____   _____

                   _____   _____

              Date: _____

ENERGY TRANSFORMATION SKITS

As a group, read your situation and think about the energy transformations that may take place in the situation. One person in the group needs to draw the energy transformations with the actions your group will pantomime. Hand this paper to your teacher when time to practice is up. It must have the names of all your group members.

Group 3: You eat a bad hamburger, become ill, go to see a **doctor**. He/She writes a prescription after examining you.

When your group is called on, act out your situation. The audience will record on a piece of notebook paper what they think your situation is and the energy transformations that they saw. Your grade is based on:

- The energy transformations shown below on this page (with arrows correct)
- Appropriate participation in your group
- Showing a minimum of three energy transformations in your pantomime
- Making your situation obvious to your audience in your acting
- Your active participation in observing other groups

Group Member Names: _____ _____

_____ _____

Date: _____

ENERGY TRANSFORMATION SKITS

As a group, read your situation and think about the energy transformations that may take place in the situation. One person in the group needs to draw the energy transformations with the actions your group will pantomime. Hand this paper to your teacher when time to practice is up. It must have the names of all your group members.

Group 4:   An **<u>accountant</u>** is trying to calculate the end-of-month expenses but her phone keeps ringing and no one is on the other end. Finally, her boss comes in and informs her that he has been trying to call her. They realize his phone is not working. He throws it out the window.

When your group is called on, act out your situation. The audience will record on a piece of notebook paper what they think your situation is and the energy transformations that they saw. Your grade is based on:

- The energy transformations shown below on this page (with arrows correct)
- Appropriate participation in your group
- Showing a minimum of three energy transformations in your pantomime
- Making your situation obvious to your audience in your acting
- Your active participation in observing other groups

ENERGY TRANSFORMATION SKITS

As a group, read your situation and think about the energy transformations that may take place in the situation. One person in the group needs to draw the energy transformations with the actions your group will pantomime. Hand this paper to your teacher when time to practice is up. It must have the names of all your group members.

Group 5:   Your home's air-conditioning has gone out! UGH! You call an **HVAC** (home ventilation & air conditioning) **specialist** to come out and fix the problem. He finds that a huge weed has grown and become intertwined in the unit outside. He cuts it back and restores AC to your home! Thank goodness!

When your group is called on, act out your situation. The audience will record on a piece of notebook paper what they think your situation is and the energy transformations that they saw. Your grade is based on:

- The energy transformations shown below on this page (with arrows correct)
- Appropriate participation in your group
- Showing a minimum of three energy transformations in your pantomime
- Making your situation obvious to your audience in your acting
- Your active participation in observing other groups

Group Member Names: _____   _____

_____   _____

Date: _____

ENERGY TRANSFORMATION SKITS

As a group, read your situation and think about the energy transformations that may take place in the situation. One person in the group needs to draw the energy transformations with the actions your group will pantomime. Hand this paper to your teacher when time to practice is up. It must have the names of all your group members.

Group 6: **<u>Police and sheriff's patrol officers</u>** enforce the law to protect people's lives and property. They patrol the streets and enforce traffic laws.

When your group is called on, act out your situation. The audience will record on a piece of notebook paper what they think your situation is and the energy transformations that they saw. Your grade is based on:

- The energy transformations shown below on this page (with arrows correct)
- Appropriate participation in your group
- Showing a minimum of three energy transformations in your pantomime
- Making your situation obvious to your audience in your acting
- Your active participation in observing other groups

Group Member Names: _____ _____

_____ _____

Date: _____

ENERGY TRANSFORMATION SKITS

As a group, read your situation and think about the energy transformations that may take place in the situation. One person in the group needs to draw the energy transformations with the actions your group will pantomime. Hand this paper to your teacher when time to practice is up. It must have the names of all your group members.

Group 7: It's your grandpa's birthday. He lives in a nursing home. His **LVN** (Licensed Vocational Nurse) wheels him in the room. You get to light the candles on the cake and then help him blow them out before you all eat it.

When your group is called on, act out your situation. The audience will record on a piece of notebook paper what they think your situation is and the energy transformations that they saw. Your grade is based on:

- The energy transformations shown below on this page (with arrows correct)
- Appropriate participation in your group
- Showing a minimum of three energy transformations in your pantomime
- Making your situation obvious to your audience in your acting
- Your active participation in observing other groups

NEWTON'S LAWS: A LESSON IN FORCE

SCIENCE TEKS OBJECTIVES

§112.19	7. Force, motion, and energy. The student knows that there is a relationship among force, motion, and energy. The student is expected to: (A) contrast situations where work is done with different amounts of force to situations where no work is done such as moving a box with a ramp and without a ramp, or standing still;
§112.20	6. Force, motion, and energy. The student knows that there is a relationship between force, motion, and energy. The student is expected to: (A) demonstrate and calculate how unbalanced forces change the speed or direction of an object's motion; (B) differentiate between speed, velocity, and acceleration; and (C) investigate and describe applications of Newton's law of inertia, law of force and acceleration, and law of action-reaction such as in vehicle restraints, sports activities, amusement park rides, Earth's tectonic activities, and rocket launches.

COLLEGE AND CAREER READINESS AND INVESTIGATING CAREERS TEKS OBJECTIVES

§127.1	(1)	The student investigates one or more careers within the 16 career clusters. The student is expected to: (A) identify the various career opportunities within one or more career clusters; and
	(2)	The student investigates career pathways in one or more of the 16 career clusters. The student is expected to: (A) research the academic requirements for one or more of the careers in an identified cluster; (C) describe the technical-skill requirements for careers.
	(3)	The student investigates the professional skills needed for college and career success. The student is expected to: (A) apply core academic skills to meet personal, academic, and career goals;
	(4)	The student investigates labor market information. The student is expected to: (A) analyze national, state, regional, and local labor market information; (B) classify evidence of high-skill, high-wage, or high-demand occupations based on analysis of labor market information;
§127.3	(1)	The student explores career assessments as related to college and career planning. The student is expected to: (C) research trending fields related to career interest areas;
	(3)	The student evaluates skills for personal success. The student is expected to: (B) use problem-solving models and critical-thinking skills to make informed decisions;
	(6)	The student develops skills for professional success. The student is expected to: (A) demonstrate effective verbal, nonverbal, written, and electronic communication skills; (B) evaluate the impact of positive and negative personal choices, including use of electronic communications such as social networking sites; (C) model characteristics of effective leadership, teamwork, and conflict management; (E) explore characteristics necessary for professional success such as work ethics, integrity, dedication, perseverance, and interactions with diverse population

Instructional Directions

This activity is designed to take 45 –60 minutes as presented below.

1. Students discover background information of the types of high-skill, high-demand jobs found in the Gulf Coast region (http://tinyurl.com/menzpp9)

2. Students can also review background information on Newton's Second Law through discussion of previous lessons or watching a video such as http://tinyurl.com/kv2osp2

3. Students will be given instructions to think of a contrasting situation related to one of the jobs on the video to show/illustrate Newton's Second Law: Force = Mass x Acceleration. Students select one. All groups can be given the same jobs or each group can have a different job/scenario. Students must then illustrate the contrasting scenarios.

> • Example: The same nurse has to move two different patients from their beds to a gurney to get x-rays taken. The first patient is an elderly lady that weighs 90 lbs. (lesser mass). The second is a former Texas Longhorns football player who weighs 295 lbs. (greater mass). To accelerate (move the same direction at the same speed), the nurse will have to use more force with the second patient – the one with the greater mass. Students could draw or find computer images to portray this contrasting scene that illustrates Newton's Second Law of Motion.

(NOTE: Ask students to avoid situations that involve gravity as most don't fully grasp the concept of gravity as a force yet.)

4. Illustrations can be computer-generated or hand-drawn.

5. Students will write a paragraph explaining how their illustration portrays Newton's Second Law.

6. Share final examples with the class. Discuss the accuracy of the concepts portrayed by the students.

Learning Outcome(s)

Students will review the concept of Newton's Second Law. Students will also review the types of high-skill, high-growth jobs found in the Central Texas region. The students apply their comprehension of the law by creating an illustration of Newton's Second Law at work in a particular job related task. Each student will do his/her own illustration.

Related Occupations/Industry

Any of those found in Workforce Solutions' High-Skill/High-Growth Jobs List or Student Career Profiles

Deliverables

Short essay illustrating example of Newton's Second Law.
Contributions can be individual or group assignments

Resources Needed

IDEAL
- U.S. Department of Labor videos
- Student Career Profiles (*http://www.wfscapitalarea.com/YouthServices/CareerPlanning.aspx*)
- High-Skill/High-Growth Jobs List (*http://www.wfscapitalarea.com/Portals/0/all-content/Youth%20 Services/WhenIGrowUpHighSkillHighGrowthJobsCapitalArea.pdf*)
- Computers, Internet access for images, drawing paper, markers, map pencils

LIMITED RESOURCES
- Teacher provides paper-based information on pre-selected jobs from the High-Skill/ High Growth Jobs List and Student Career Profiles
- Students hand-draw illustrations on their essay page

Vocabulary or Concepts (New and/or Challenging)

- Force
- Motion
- Acceleration
- Mass
- Net force
- Direction of force

- Sir Isaac Newton
- Newton's Second Law of Motion
- Portray
- Illustrate
- Effect
- Affect

MODIFICATIONS & EXTENSIONS

As students are watching the Department of Labor videos, teacher could pause to ask about forces found in each of the scenarios. Analysis questions:

- If more mass was added to _____ how would that affect the acceleration of _____?
- What would happen if more force was applied to _____?
- Students with higher math abilities can use the formula to make up word problems with realistic values to apply to their illustrated scenes. Word problems could be teacher created as well.
- **Simplify:** Students would not create their own illustrations. Examples could be teacher-generated showing:
    a. the same force acting on different masses producing different acceleration rates.
    –OR –
    b. different forces on the same mass producing different acceleration rates.
- **Simplify:** Students could write the paragraph of the application of Newton's Second Law to "On the Job" illustrations that could be provided.

Adapted from: Newton's Second Law Illustrations developed by N. Stewart

Lesson S3a

A COLONY FOR LUNAR LIVING

SCIENCE TEKS OBJECTIVES

§112.18	11. Earth and space. The student understands the organization of our solar system and the relationships among the various bodies that comprise it. The student is expected to: (C) describe the history and future of space exploration, including the types of equipment and transportation needed for space travel.
§111.27	7b.1 (A) apply mathematics to problems arising in everyday life, society, and the workplace 7b.4 (E) convert between measurement systems, including the use of proportions and the use of unit rates.

COLLEGE AND CAREER READINESS AND INVESTIGATING CAREERS TEKS OBJECTIVES

§127.1	(1) The student investigates one or more careers within the 16 career clusters. The student is expected to:
	    (A) identify the various career opportunities within one or more career clusters; and
	(2) The student investigates career pathways in one or more of the 16 career clusters. The student is expected to:
	    (C) describe the technical-skill requirements for careers.
	(3) The student investigates the professional skills needed for college and career success. The student is expected to:
	    (F) demonstrate characteristics required for personal and professional success such as work ethics, integrity
	(4) The student investigates labor market information. The student is expected to:
	    (A) analyze national, state, regional, and local labor market information;
	    (B) classify evidence of high-skill, high-wage, or high-demand occupations based on analysis of labor market information; and
	    (C) analyze the effects of changing employment trends, societal needs, and economic conditions on career planning.

§127.3	(1) The student explores career assessments as related to college and career planning. The student is expected to:
	    (B) explore the 16 career clusters;
	(3) The student evaluates skills for personal success. The student is expected to:
	    (A) use interpersonal skills to facilitate effective teamwork;
	(B) Use problem-solving models and critical-thinking skills to make informed decisions;
	    (D) identify skills that can be transferable among a variety of careers;
	(6) The student develops skills for professional success. The student is expected to:
	    (A) demonstrate effective verbal, nonverbal, written, and electronic communication skills;
	    (C) model characteristics of effective leadership, teamwork, and conflict management;
	    (D) recognize the importance of a healthy lifestyle, including the ability to manage stress

Lesson S3a

Instructional Directions	**This activity is designed to take 25– 45 minutes as presented below.**
	1. Read the scenario about living on the moon. Describe general ways life would be different on the moon.
	2. Review the Workforce Solutions High-Skill, High-Growth Jobs List and Student Career Profiles and determine 10 jobs that may transfer to lunar living.
	3. Record your ideas and your reason(s) for selecting that job.
	4. Record a different challenge for each occupation that might be unique to getting the job done considering the facts given about the moon.
Learning Outcome(s)	The students will understand living conditions on the moon by being able to justify the need for specific jobs needed for habitation of the moon.
Related Occupations/Industry	All those found in Workforce Solutions High-Skill, High-Growth Jobs List and Student Career Profiles
Deliverables	Completed Blackline Master S3
Resources Needed	• Workforce Solutions' High-Skill, High-Growth Jobs List (*http://www.wfscapitalarea.com/Portals/0/all-content/Youth%20Services/WhenIGrowUpHighSkillHighGrowthJobsCapitalArea.pdf*) and Student Career Profiles (*http://www.wfscapitalarea.com/YouthServices/CareerPlanning.aspx*) • Blackline Master S3 • Lunar facts • A computer to do more research, if needed
Vocabulary or Concepts (New and/or Challenging)	• Gravity • Lunar Month • Maria • Orbit • Regolith • Atmosphere

MODIFICATIONS & EXTENSIONS

• An activity could be created that has 20 jobs on it. Students would rank the jobs from one to 20 on the necessity of that job for the colonization of the moon. There could be a column for each to explain the justification of its given rank.

• Student choice justificationwritten in a well-developed paragraph.

• Students could choose five jobs that may be obsolete with moon colonization and explain why.

• Create a moonscape skit with each group member representing a different job.

Name: _____
Period: _____
Date: _____

A COLONY FOR LUNAR LIVING

Life on earth is getting challenging. The earth's resources just can't seem to catch up with the ever-growing human population and the demand we put on the non-renewable resources that we have used for the "necessities" of our lives. NASA engineers have been exploring the possibility of lunar living for decades, but have renewed their efforts in the past few years with the goal of having colonies on the moon by the year 2020. Just like the early explorers to the new world, adaptations have to be made for new surroundings, new challenges and new resources that are available. Imagine that your family is one of the first families to actually live on the moon and not just visit.

BASIC MOON FACTS	
distance from the earth	356,000 – 407,000 km (Conversion rate: 1 km ≈ 0.62 miles)
orbital speed	36,800 km/hr
temperature range (night–day)	-184 – 214°C (-141 °F)
temperature at poles	constant - 96 °C
revolution period	27.3 Earth days
rotation period	27.3 Earth days
equatorial diameter	3,476 km
gravitational pull	0.16 times the Earth's

Data assimilated from: http://nssdc.gsfc.nasa.gov/planetary/factsheet/moonfact.html

I. Use your schema and the given background facts on the moon to list five specific ways basic life will be different on the moon:

1. _____

2. _____

3. _____

4. _____

5. _____

Name: _____

Period: _____

Date: _____

A COLONY FOR LUNAR LIVING CONTINUED...

II.   For life on the moon to be viable, an economy will have to be established. Therefore, there will be jobs for people to do and services that will be needed. Consider the Workforce Solutions High-Skill, High-Growth Jobs List and Student Career Profiles. Determine 10 jobs that will be essential to basic living on the moon. Name each of these jobs and give a reason why your family would need the essential services of that particular job.

LUNAR ESSENTIAL JOB	JUSTIFICATION FOR THE NECESSITY OF THIS JOB
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

III.   Use your schema and the given background facts on the moon to list five specific ways basic life will be different on the moon:

LUNAR JOB	CHALLENGE OF DOING THIS JOB ON THE MOON
1.	
2.	
3.	
4.	
5.	
6.	

SPACE SPIN-OFFS

SCIENCE TEKS OBJECTIVES

§112.18	11. Earth and space. The student understands the organization of our solar system and the relationships among the various bodies that comprise it. The student is expected to: (C) describe the history and future of space exploration, including the types of equipment and transportation needed for space travel.

COLLEGE AND CAREER READINESS AND INVESTIGATING CAREERS TEKS OBJECTIVES

§127.1	(3)	The student investigates the professional skills needed for college and career success. The student is expected to: (A) apply core academic skills to meet personal, academic, and career goals;
	(4)	The student investigates labor market information. The student is expected to: (B) classify evidence of high-skill, high-wage, or high-demand occupations based on analysis of labor market information; and
§127.3	(1)	The student explores career assessments as related to college and career planning. The student is expected to: (C) research trending fields related to career interest areas;
	(3)	The student evaluates skills for personal success. The student is expected to: (B) use problem-solving models and critical-thinking skills to make informed decisions;
	(6)	The student develops skills for professional success. The student is expected to: (A) demonstrate effective verbal, nonverbal, written, and electronic communication skills;

Instructional Directions   **This activity is designed to take 1 –3 hours, including writing; additional hours (2 –6) if app developed.**

1. Have students use information from spinoff.nasa.gov to look at things developed for space use by NASA that have been used by industry/individuals applying this space technology to new things.

2. Choose 10 jobs that you can connect to 10 of these spin-offs.
– OR –
Research tools and processes used in a given job and describe how that could be used on the moon.

3. Describe what the limitations would be considering the difference in gravity between the earth and the moon.

4. Have students write a 1–2 page paper summarizing their conclusions/findings based on the instructional direction you have chosen.

Learning Outcome(s)   Students will identify space materials & processes that have been used in space history and then applied to industry/everyday living.

Related Occupations/Industry   All those found in the Workforce Solutions' High-Skill, High-Growth Jobs List and Student

Deliverables	1–2 page paper OR this could be a paperless activity for discussion
Resources Needed	Computer(s) to view NASA website, Workforce Solutions High-Skill, High-Growth Jobs List and Student Career Profiles
Vocabulary or Concepts (New and/or Challenging)	• Spinoff • Velcro • Any other term used in conjunction with the spinoffs

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MODIFICATIONS & EXTENSIONS

Consider having students use a web-based app development tool (such as Infinite Monkeys: www.infinitemonkeys.mobi) to share their findings or introduce a solution to one of the identified resource challenges.

SIMPLE MACHINE SCAVENGER HUNT

SCIENCE TEKS OBJECTIVES

§112.18	8. Force, motion, and energy. The student knows force and motion are related to potential and kinetic energy. The student is expected to: (E) investigate how inclined planes and pulleys can be used to change the amount force to move an object.

COLLEGE AND CAREER READINESS AND INVESTIGATING CAREERS TEKS OBJECTIVES

§127.3	(3)	The student evaluates skills for personal success. The student is expected to:
		     (B) use problem-solving models and critical-thinking skills to make informed decisions;
		     (D) identify skills that can be transferable among a variety of careers;

Instructional Directions	**This activity is designed to take 30–45 minutes as presented below.** 1. Students review simple machines. Teachers review just simple machines that apply to their curriculum. 2. Students are given pictures of Workforce Solutions high-skill, high-growth jobs and challenged to hunt for simple machines found in these pictures. (You may use pictures from Blackline Masters S1a and S1d or any of your choosing.) This activity should be timed. This could be done in pairs or in a larger group depending on the number of copies of pictures you have. Students list simple machines found in each pic. 3. Students are then challenged to use Workforce Solutions' High-Skill, High-Growth Jobs List and Student Career Profiles to hypothesize which picture fits with which job. Students will identify space materials & processes that have been used in space history and then applied to industry/everyday living.
Learning Outcome(s)	The students will be able to identify simple machines at work in jobs pictures. Students will become more aware of the types of jobs available in the Central Texas region.
Related Occupations/Industry	All those found in Workforce Solutions' High-Skill, High-Growth Jobs List and Student Career Profiles
Deliverables	This could be a paperless activity for discussion or students could complete the Simple Machines Scavenger Hunt Activity. (**Blackline Master S4**)
Resources Needed	Same photos from Blackline Master S1a & S1d Blackline Master S4 Workforce Solutions' High-Skill, High-Growth Jobs List and Student Career Profiles
Vocabulary or Concepts (New and/or Challenging)	• Scavenger hunt • Simple machines • Wheel and axle • Strategy • Inclined plane • Wedge • Pulley • Level • Screw

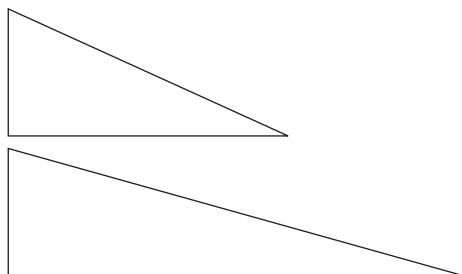## MODIFICATIONS & EXTENSIONS

Teacher could make up a scavenger hunt for his/her own school building by writing clues to discover specific simple machines found on his/her campus. (For example, one item to find might be "locate the simple machine found to the left of the entrance to the gym.")

WS

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SIMPLE MACHINES

INCLINED PLANE

More distance, less force

DESCRIPTION

(Which job is using or might use this machine? What does it look like, what does it do, how does it work? Give an example.)
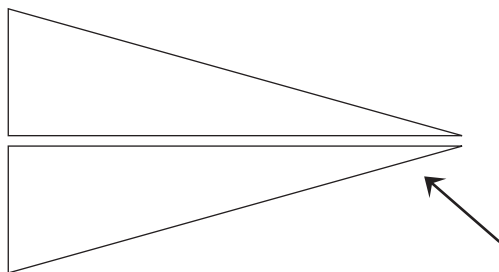
_____

_____

_____

- Increase the distance over which you exert force to decrease the size of the force
- No moving parts
- Mechanical advantage of an inclined plane increases as slant of plane decreases

WEDGE

DESCRIPTION

(Which job is using or might use this machine? What does it look like, what does it do, how does it work? Give an example.)

_____

_____

_____

- Moving incline plane
- Greater distance, less force (longer thinner wedge, less effort)
- 2 wedges put together – knife, ax
- Lock, key – series of wedges, zipper

SCREW

DESCRIPTION

(Which job is using or might use this machine? What does it look like, what does it do, how does it work? Give an example.)
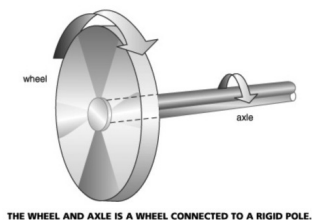
_____

_____

_____

- Inclined plane wrapped around a central bar, or cylinder to form a spiral
- Multiplies effort force by acting through a longer distance
- Closer threads – more distance, less force

SIMPLE MACHINES CONTINUED...

WHEEL AND AXLE

wheel

axle

THE WHEEL AND AXLE IS A WHEEL CONNECTED TO A RIGID POLE.

More distance, less force

DESCRIPTION

(Which job is using or might use this machine? What does it look like, what does it do, how does it work? Give an example.)
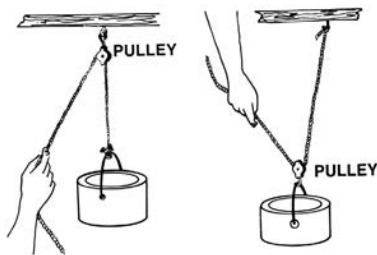
_____

_____

_____

- Two circular objects of different sizes working together
- Wheel moves greater distance than axle
- The greater the difference in size between the wheel and axle, the greater the mechanical advantage

PULLEY

PULLEY

PULLEY

DESCRIPTION

(Which job is using or might use this machine? What does it look like, what does it do, how does it work? Give an example.)
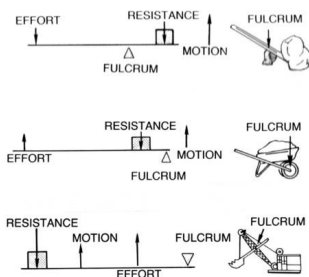
_____

_____

_____

- Rope, belt, chain around grooved wheel
- Mechanical advantage: Changes direction or amount of force
- Increase mechanical advantage, by adding another pulley to create a pulley system

LEVER

EFFORT   RESISTANCE   FULCRUM
        △   MOTION
       FULCRUM

        RESISTANCE   FULCRUM
EFFORT   △ MOTION
        FULCRUM

RESISTANCE   FULCRUM   FULCRUM
    MOTION   ▽
        EFFORT

DESCRIPTION

(Which job is using or might use this machine? What does it look like, what does it do, how does it work? Give an example.)

_____

_____

_____

- Rigid bar, free to move around a fixed point (fulcrum)
- Decrease distance, changes direction of force
- Divided into three classes depending on location of fulcrum and forces (effort force and resistance force)

DISCOVER YOUR INTERESTS SHOWCASE

COLLEGE AND CAREER READINESS AND INVESTIGATING CAREERS TEKS OBJECTIVES		
§127.1	(1)	The student investigates one or more careers within the 16 career clusters. The student is expected to: (A) identify the various career opportunities within one or more career clusters; and (B) identify the pathways within one or more career clusters.
§127.3	(1) (3) (6)	The student explores career assessments as related to college and career planning. The student is expected to: (A) analyze and discuss the initial results of career assessments; (B) explore the 16 career clusters; (C) research trending fields related to career interest areas; The student evaluates skills for personal success. The student is expected to: (E) create a personal career portfolio; (G) identify entrepreneurial opportunities within a field of personal interest. The student develops skills for professional success. The student is expected to: (A) demonstrate effective verbal, nonverbal, written, and electronic communication skills;

Instructional Directions

This activity is designed to take 20–35 minutes as presented below.

1. Define "Career Exploration" for students. This is the process of aligning interests to possible job options, identifying appropriate educational and lifestyle choices, and considering options for achieving their career goals. Discuss with students how they might explore careers, what careers they are considering, and why they currently have these ideas.

2. Discover Your Interests – Direct the discussion to lead students to considering their interests and strengths as a starting point for discovering career opportunities.
   A. Give examples of strengths/character qualities, such as:
   - Compassionate listener
   - Outgoing encourager
   - Problem solving investigator
   B. Have students complete the Discover Your Interests Worksheet (**Blackline Master C1**)
   - Review questions for understanding
   - Allow time for completion. Students may consult peers as appropriate or desired based on the nature of the question.

3. Showcase Your Talent
   A. Have students select one question from the worksheet to share with the class. For example, if a student chooses to share that their friends compliment their talent as a poet, they might share a poem. If they are good in science, they might build something or share an odd science fact.

   B. Give options in method of sharing
   - Perform the skill or talent
   - Work a problem on the board
   - Display a piece of art work
   - Other options as defined by the student and approved by the teacher

Learning Outcome(s)

Students will be able to determine what talents others may recognize in them, identify qualities they admire in others that they possess, acknowledge positive actions that gave them a sense of accomplishment, identify how interests may turn into occupations

Lesson C1

Deliverables	• Completed Blackline Master C1 • Demonstrable skill or talent for showcase
Resources Needed	Blackline Master C1
Vocabulary or Concepts (New and/or Challenging)	• Career Exploration

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MODIFICATIONS & EXTENSIONS

- **School-to-Home Connection:** Interview 2 adults (teacher, parent, adult friend) about their impression of the student (ref. question 2 on worksheet) Ask parent or guardian how they chose their career and how it matches their interests or strengths.

- **Technology-Driven:** Complete the Texas Career Check Interest Profiler from the Texas Workforce Commission (*http://www.texascareercheck.com/ExploreCareer/InterestProfiler*) and have students compare the interests revealed in this inventory with those on their worksheet. Have students write a summary essay or create a presentation to discuss their new findings.

DISCOVER YOUR INTERESTS

1. Good friends count on each other for many things. What do YOUR friends count on you for or what do they often compliment you about? (not counting looks)

_____
_____
_____
_____

2. What PRAISE or acknowledgement have you gotten from your teachers?

_____
_____
_____
_____

3. What are your favorite subjects and why?

_____
_____
_____
_____

4. Identify three people you admire. Name THREE QUALITIES or characteristics in each of these people that you most respect or admire. Circle the qualities that you named that are also true about YOU. How do you show these characteristics?

_____
_____
_____
_____

5. Describe something you DESIGNED, CREATED, built, made, or fixed up, that gave you a strong sense of satisfaction. Tell why you feel good about it.

_____
_____
_____
_____

EGG-STREAM SPORTS

	COLLEGE AND CAREER READINESS AND INVESTIGATING CAREERS TEKS OBJECTIVES

§127.1	(1)	The student investigates one or more careers within the 16 career clusters. The student is expected to:
		(A) identify the various career opportunities within one or more career clusters; and
		(B) identify the pathways within one or more career clusters.
	(2)	The student investigates career pathways in one or more of the 16 career clusters. The student is expected to:
		(A) research the academic requirements for one or more of the careers in an identified cluster;
		(B) research the certification or educational requirements for careers; and
		(C) describe the technical-skill requirements for careers.
	(3)	The student investigates the professional skills needed for college and career success. The student is expected to:
		(C) investigate the steps required to participate in a variety of career and educational opportunities, including, but not limited to, entry-level employment, military service, apprenticeships, community and technical colleges, and universities;
		(F) demonstrate characteristics required for personal and professional success such as work ethics, integrity,
	(4)	The student investigates labor market information. The student is expected to:
		(B) classify evidence of high-skill, high-wage, or high-demand occupations based on analysis of labor market information; and
		(C) analyze the effects of changing employment trends, societal needs, and economic conditions on career planning.
§127.3	(1)	The student explores career assessments as related to college and career planning. The student is expected to:
		(B) explore the 16 career clusters;
	(3)	The student evaluates skills for personal success. The student is expected to:
		(A) use interpersonal skills to facilitate effective teamwork;
		(B) use problem-solving models and critical-thinking skills to make informed decisions;
		(D) identify skills that can be transferable among a variety of careers;
		(G) identify entrepreneurial opportunities within a field of personal interest.

Instructional Directions   **This activity is designed to take 20–35 minutes as presented below.**

1. Scenario (Read aloud or use your best storytelling ability to set up the scenario):

There is a new extreme sport that Eddie the egg, and dozens of his friends are passionate about. They are free falling from various heights. Their problem is in the landing. They enjoy the sport but have had several friends scramble their brains in the process. They like to free fall so they like nothing wrapped around them, hence no parachute, etc.

Your company is going to capitalize on this new sport by building a structure to place on the floor where Eddie and his friends can land safely. You will build a prototype competing with several other companies. In order to get the business, you need to not only build a working structure but have good advertising and promotional materials.

2. Construction
     A. Arrange students in small groups (4–5 students; less or more as appropriate to class size)
          • Groups may choose to divide the tasks or work as one unit.

Instructional Directions

    B. Materials for prototype
- Pass out 2 pieces of newspaper, 6 inches of tape, 4 straws and 1 raw egg to each group.
- To keep it "fair," the groups must only use the materials given in the construction.
- To be sure no group just uses wadded up newspapers, they must use all of the supplies given to them.

    C. Marketing strategy
- Decide on a name for the company
- Create a slogan/tag line
- Any additional advertising strategies
- Develop a commercial (time permitting)

    D. Organizational plan
- Since this is a start-up company, staff must be limited. What are the five critical positions? Why?

    E. Customer service
- The customer/egg must be treated well at every stage of the process
- He/she may be pampered (decorated) but not damaged

3. Pitch (Company Presentations) & Product Testing

    F. Organizational plan
- Have groups list the five jobs in their start-up company and why they chose those positions
- Evaluate for effectiveness – may create a rubric for evaluations as time permits

    G. Marketing strategy
- Have groups present marketing items from the marketing strategy expectations above
- Evaluate for effectiveness – may create a rubric for evaluations as time permits

    H. Prototype
- Upon completion of the structure each group will place it on the ground
- One member of each group will step forward, place the egg at waist height and at the same time let the eggs free fall into the structure
- Examine the egg for cracks. Eggs without cracks may jump again, but a different group member should drop the egg and/or the height from which the egg is dropped should be changed (elbow height, shoulder height, or have students step up on a higher [safe] platform).
- Continue until all members have dropped the egg, one non-cracked egg remains, or all eggs are cracked (up to teacher discretion)
- Ideally, one team will remain with an uncracked egg. This is the winner of the contract! Ties should be broken by the quality of the marketing presentation.

4. Analyze & Summarize – instructional time should allow for at least one of these synthesizing activities

    I. Application to the workforce:
- Suppose you were to create this company. What occupations/ positions/ jobs would you need for people to have in order for the company to be successful?
- Have each group create a list of occupations their company would need

    J. High-Skill, High-Growth Jobs List (*http://www.wfscapitalarea.com/Portals/0/all-content/Youth%20 Services/WhenIGrowUpHighSkillHighGrowthJobsCapitalArea.pdf*) and Student Career Profiles (*http://www.wfscapitalarea.com/YouthServices/CareerPlanning.aspx*)
- Introduce the guide
- Ask student to compare the guide to their "company staff"
  - If there are positions on the guide put a star next to them
  - If there are positions they want to add, do so

    K. Share lists with class and make one "ideal" list of occupations needed for the best company

    L. Construction
- What worked well in this phase?
- What could they have done differently?

    M. Companies
- What would be the company's biggest obstacle in being successful?
- Direct students to the observation that companies are made up of many occupations, some more or less obvious than others. Their ideal job may exist where they least expect it.

Learning Outcome(s)

Students will be able to identify occupations needed to form a successful company, from occupations identified through their project development. The project is designed to highlight jobs that are high- skill, high-growth, apply engineering and mathematical principals to build a structure, use effective communication tools to create company marketing materials, and introduce business acumen to make decisions about the organizational structure of a company.

Deliverables	• Egg construction prototype • Marketing strategy and pitch • List of vital occupations • Any other deliverables you might want to add to increase exploration of different jobs within context
Resources Needed	IDEAL
	Newspaper, tape, straws, eggs, paper towels, trash can, High-Skill, High-Growth Jobs List, Student Career Profiles, chart paper, markers, materials used for "marketing the company", steps to test struture from various heights
	LIMITED
	Newspaper, tape, straws, eggs, paper towels, trash can, High-Skill, High-Growth Jobs List and Student Career Profiles
Vocabulary or Concepts (New and/or Challenging)	• Prototype • Marketing Strategy • Organizational Chart/Plan • Hierarchy

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MODIFICATIONS & EXTENSIONS

- **Extensions:** Have students calculate based upon time spent in construction, materials used, salaries of employees and demand how much they should charge for the structure? How many would they need to sell to make a profit? Evaluate success of the "marketing strategies" using a determined rubric.

- **Technology-Driven:** Using the High-Skill, High-Growth Jobs List and Student Career Profiles, explore the high-skill, high-growth jobs used in this activity. Research the business development around other extreme sports. Have students prepare presentations on other products they might develop to support these sports.

REALITY CHECK

COLLEGE AND CAREER READINESS AND INVESTIGATING CAREERS TEKS OBJECTIVES

§127.1	(1)	The student explores career assessments as related to college and career planning. The student is expected to: (A) analyze and discuss the initial results of career assessments; (B) explore the 16 career clusters; (C) research trending fields related to career interest areas; (D) determine academic requirements in related career fields; (2) The student analyzes college and career opportunities. The student is expected to: (A) determine academic requirements for transitioning to high school; (B) explore opportunities for earning college credit in high school such as advanced placement courses, International (3) The student evaluates skills for personal success. The student is expected to: (G) identify entrepreneurial opportunities within a field of personal interest. (4) The student recognizes the impact of college and career choices on personal lifestyle. The student is expected to: (A) prepare a personal budget reflecting the student's desired lifestyle; and (B) use resources to compare and contrast salaries of at least three careers in the student's interest area.

Instructional Directions

This activity is designed to take 30 minutes – 2 hours as presented below. Additional time can be allotted if a project-based demonstration of learning is chosen as the students' deliverable.

This lesson can be completed in a number of different ways depending on technological resources available. Please consider the appropriate direction for:
- a classroom with one internet-accessible computer;
- a classroom (lab) with multiple computers so that students could work individually or in pairs; or,
- a classroom with no computers.

Blackline Masters C3a and C3b are used for all three options and are necessary to complete option C, as it replaces the online interface.

Please note: It is advisable that teachers check for accessibility and use of the Web site www.texasrealitycheck.com prior to beginning this lesson. The website has three activity options. We will be using the activity titled "Reality Check," or option 1 using the free download Apple app.

1. Student should now complete the appropriate Reality Check:
    A. One computer
       - One person (teacher or student) operates the program depending upon time limitation. Students can call out their selections as the person running the program makes the chosen selections on the Web site.
       - Each student completes a Reality Check worksheet (Blackline Master C3a) reflecting their individual choice. This should not match what is being done collectively as a class (unless their answers are identical) as each student's complete worksheet will yield an individual result about their lifestyle choices.
    B. Multiple computers
       - Each student completes the online activity and records their answers on the Reality Check worksheet (**Blackline Master C3a**) reflecting their choice.
       - Have students write their expected annual salary on their worksheet.
    C. No computers
       - Each student completes a worksheet (**Blackline Master C3a**) reflecting their choices.
       - Determine the total number of points for their choices.

Instructional Directions

2. Students should then write down the salary (range) they must achieve to afford the lifestyle they have selected. The website provides a salary range and a link to consider careers that might provide this salary. For students doing the paper activity, they will need to reference the Reality Check Results Grid (**Blackline Master C3b**). All occupations on the grid are from the High-Skill, High-Growth Jobs List (*http://www.wfscapitalarea. com/Portals/0/all-content/Youth%20Services/WhenIGrowUpHighSkillHighGrowthJobsCapitalArea.pdf) and Student Career Profiles (http://www.wfscapitalarea.com/YouthServices/CareerPlanning.aspx)*, which should be introduced to students as a reference in their decision making.

In either case, this is a good time to open a discussion about how the students' lifestyle choices affected the available careers and salaries. Depending on the teacher's discretion and time allotted for the lesson, students might be allowed to change choices to allow different career options.

--- The lesson can be broken into two smaller units by stopping at this point ---

3. Students should now research the occupation the Student Career Profiles
    A. Multiple computers
        • Have student find their occupation from the list of Student Career Profiles
        • Complete the Focus on Profile Worksheet (Blackline Master C3c)
    B. One computer or none
        • Provide hard copies of a variety of the High-Skill, High-Growth Jobs List and a variety of the Student Career Profiles for each student to choose from, or
        • Break into groups and work on an occupation as a team
        • Complete the Focus on Profile Worksheet (Blackline Master C3c)
4. Summarize -- Using all completed worksheets, the students should summarize their findings:
    A. Review Focus On Profile worksheet as a class and direct a discussion on choices and outcomes regarding money, education, and career decisions; or,
    B. Have students create presentations on their chosen occupations. These can be oral, essays, group presentations, posters, or any deliverable deemed appropriate by the teacher. Students should include information on:
        • how they chose the profession they researched
        • what mattered most in choosing their career
        • how influential were salary and expenses in considering their options
        • what educational steps should they take next
        • where might they look for a job (include specific companies and industries) when they have completed their education.

Learning Outcome(s)

Students will calculate their cost of living, determine a high-skill, high-growth job that would meet their cost of living, and investigate their determined occupation.

Deliverables

• Completed Blackline Masters C3a-c
• Occupation presentation or paper

Resources Needed

IDEAL
    One computer for each student with access to Internet, Blackline Master C3a, materials for creating presentations (poster boards, markers, etc.)

LIMITED
    Reality Check Worksheet and Results Grid (Blackline Masters C3a and b), Student Career Profiles from Workforce Solutions Web site, Focus On Profile worksheet (Blackline Master C3c)

Vocabulary or Concepts (New and/or Challenging)

• Cost of living
• High-skill, high-growth occupation
• Post-secondary education
• Student loans
• Public school
• Private school
• For-profit (proprietary) school

Name: _____

Period: _____

Date: _____

REALITY CHECK WORKSHEET

1. For each box above you are going to choose one or more options for lifestyle expenses you might choose to have when you have your first full-time job after high school or college.

2. If the box says "Choose 1," then you would only choose one option. For example: for housing, choose the line that matches the type of housing you would like to have. If you want to rent a one-bedroom apartment, you would circle 5 next to this choice.

3. For boxes where you can choose more than one option, feel free to choose as many as you think you need or want. For example, for entertainment, if you plan to go out with friends in town and also take short vacations, you should circle the corresponding number next to both of these options for a total of five.

4. Total the number of circled points and write the answer in the final space. Using the Reality Check Results Grid, find the column that matches your number of points and write down the salary range for that column in the box above. Next, choose one or more occupations you might consider to achieve this salary.

Reality Check may be found at www.texasrealitycheck.com

HOUSING
(choose 1)

Living at Home	0
None	0
Efficiency Apartment	4
One-bedroom Apartment	5
Two-bedroom Apartment	6
House	6

UTILITIES
(may choose more than 1)

Phone	1
Internet	2
Mobile Phone	2
Cable	2
Electricity	3
Water & Gas	4

FOOD
(choose 1)

Eat at Home	3
Home and Fast Food	4
Home and Fine Dining	4
Restaurants Mostly	5

TRANSPORTATION
(choose 1)

Walking	0
None	0
Public Bus	1
Used Auto	3
Basic Auto	5
Average Auto	6
Luxury Auto	8

CLOTHING
(may choose more than 1,
but only 1 option from choices 3–6)

Accessories	1
Shoes	1
$50-75/month	2
$76-125/month	2
$126-250/month	3
$250+/month	4

HEALTH CARE
(choose 1)

No Insurance	1
Basic Insurance (I)	2
Premium Insurance (II)	4

No insurance means no paycheck deduction but you will pay full price for each medical visit or service. Basic insurance may be less from your paycheck, but you will pay more per visit than premium insurance.

Name: _____
Period: _____
Date: _____

PERSONAL
(may choose more than 1)

Basics (toiletries, etc.)	1
Gym/Sports Reaction	2
Hair and Skin Services	2
Extras (makeup, cologne)	3
Luxuries	4

ENTERTAINMENT
(may choose more than 1)

Stay Home	1
Go out on the townat least once a week	1
Spend money on concert tickets, short out-of-town trips, and other items that cost more than a night on the town	2
Longer vacations and premium adventures that might require hotel and travel expenses	3

MISCELLANEOUS
(may choose more than 1)

Misc. (small purchases)	1
Pet Care	2
Vacation Spending (aside from the cost of booking hotels and travel)	3
Gadgets (electronics)	4
Home furnishings (decorations, sheets, tables, etc.)	5

SAVINGS PER CHECK
(choose 1)

2%	1
5%	2
7%	2
10%	3

STUDENT LOAN
(choose 1)

Certificate	1
Associates	1
Bachelor's	2
Master's	4
Professional	5

TOTAL POINTS

SALARY RANGE

POSSIBLE OCCUPATIONS FOR MY CHOSEN LIFE STYLE

REALITY CHECK RESULTS GRID

TOTAL POINTS FROM REALITY CHECK WORKSHEET							
29 or less **$30 – 40k**	**30 – 39** **$41 – 50k**	**40 – 49** **$51 – 60k**	**50 – 59** **$61 – 79k**	**60 – 69** **$71 - 80k**	**70 – 79** **$30 - 40k**	**80 – 89** **$91 - 100k**	**90 or more** **$101k +**
Medical Assistant	Welder	Social Worker	Cost Estimator	Financial Specialist	Computer Systems Analyst	Management Analyst	Software Development, Applications
Pharmacy Technician	Machinist	Engineering Technician	Accountant and Auditor	Accountant and Auditor	Computer Programmer	Construction Manager	Software Developer, Systems Software
Phlebotomist	Dental Assistant	Elementary / Middle / Secondary School Teacher	Web Developer	Registered Nurse	Physical Therapist	Financial Analyst	Information Security Analyst
Secretary and Administrative Assistant	HVAC Mechanic and Installer	Respiratory Therapist	Environmental Engineer	Occupational Therapist	Biomedical Engineer	Nurse Practitioner	Financial Manager
Heavy and Tractor-Trailer Truck Driver	Bookkeeper	Radiologic Technologist	Registered Nurse	Dental Hygienist	Database Administrator	Postsecondary Teacher	Pharmacist
Hairdressers	Paralegal	Firefighter	Dental Hygienist	Market Research Analyst	Civil Engineer	Title Examiner	Dentist
Carpenters	Preschool Teacher	Computer Numerically Controlled Machine Tool Programmer	Occupational Therapist	Postsecondary Teacher	Physical Therapist	Mechanical Engineer	Physician Assistant
Security Guards	Electrician	Medical and Clinical Lab Technologist	Police and Sherriff's Patrol Officer	Real Estate Sales Agent	Architect	Computer and Information Research Scientist	Lawyer

Read the Student Career profiles to get more information on occupations that may interest you. Profiles can be found at http://www.wfscapitalarea.com/YouthServices/CareerPlanning.aspx.

Name: _____
Period: _____
Date: _____

FOCUS ON YOUR CAREER

_____
YOUR CAREER CHOICE FOR TODAY

1. What will you do in this occupation? (Summarize the duties and day-to-day activities in this job.)

_____

_____

2. What percent of increase do they expect in the field by 2018?

_____

_____

3. How many new workers do we need in this occupation each year?

_____

_____

4. What is the stated salary or salary range for this position?
(If none is stated, you will have to do some research to get a salary range to complete this question.)

_____

_____

5. How much education or training is needed for the position?

_____

_____

6. According to this handout how many places offer this training? Name two.

_____

_____

7. How many major employers are listed as needing this position? Name two.

_____

_____

8. What courses could help prepare you for this career?

_____

_____

SURVIVOR ISLAND – CENTRAL TEXAS

COLLEGE AND CAREER READINESS AND INVESTIGATING CAREERS TEKS OBJECTIVES

§127.3.c	1. The student explores personal interests and aptitudes as they relate to education and career planning. The student is expected to:
	    (B) explore the career clusters as defined by the U.S. Department of Education;
	    (C) summarize the career opportunities in a cluster of personal interest;
	    (F) explore how career choices impact the balance between personal and professional responsibilities.
	2. The student analyzes personal interests and aptitudes regarding education and career planning. The student is expected to:
	    (D) determine the impact of technology on careers of personal interest; and
	    (E) identify entrepreneurial opportunities within a field of personal interest.
	3. The student analyzes college and career opportunities. The student is expected to:
	    (A) determine academic requirements for transition from one learning level to the next;
	    (D) discuss the impact of effective college and career planning;
	    (E) demonstrate decision- making skills related to school and community issues, programs of study, and career planning.
	4. The student evaluates skills for personal success. The student is expected to:
	    (B) use interpersonal skills to facilitate effective teamwork;
	    (C) use a problem-solving model and critical-thinking skills to make informed decisions;
	    (D) use effective time-management and goal-setting strategies;
	    (E) effectively use information and communication technology tools; and
	    (F) identify skills that can be transferable among a variety of careers.
	7. The student develops skills for professional success. The student is expected to:
	    (A) demonstrate effective verbal, nonverbal, written, and electronic communication skills;
	    (B) evaluate the impact of positive and negative personal choices, including use of electronic communications such as social networking sites;
	    (C) model characteristics of effective leadership, teamwork, and conflict management;
	    (D) recognize the importance of a healthy lifestyle, including the ability to manage stress;
	    (E) explore and model characteristics necessary for professional success such as work ethics, integrity, dedication, perseverance, and the ability to interact with a diverse population; and
	    (F) complete activities using project- and time-management techniques.
	8. The student identifies and explores technical skills essential to careers in multiple occupations, including those that are high skill, high wage, or high demand. The student is expected to:
	    (B) analyze the relationship between various occupations such as the relationship between interior design, architectural design, manufacturing, and construction on the industry of home building or the multiple occupations required for hospital administration.

	1. The student explores one or more career clusters of interest. The student is expected to:
	    (A) identify the various career opportunities within one or more career clusters; and
	    (B) identify the pathways within one or more career clusters.
	3. The student explores programs of study. The student is expected to:
	    (B) identify the academic and technical skills needed.
	6. The student explores labor market information. The student is expected to:
	    (A) analyze national, state, regional, and local labor market information;
	    (B) cite evidence of high-skill, high-wage, or high-demand occupations based on analysis of labor market information; and
	    (C) analyze the effects of changing employment trends, societal needs, and economic conditions on career planning.

§127.2	(1)	The student investigates one or more careers within the 16 career clusters. The student is expected to: (A) identify the various career opportunities within one or more career clusters; and (B) identify the pathways within one or more career clusters.
	(2)	The student investigates career pathways in one or more of the 16 career clusters. The student is expected to: (C) describe the technical-skill requirements for careers.
	(4)	The student investigates labor market information. The student is expected to: (A) analyze national, state, regional, and local labor market information; (B) classify evidence of high-skill, high-wage, or high-demand occupations based on analysis of labor market information; and (C) analyze the effects of changing employment trends, societal needs, and economic conditions on career planning.
§127.3	(1)	The student explores career assessments as related to college and career planning. The student is expected to: (A) analyze and discuss the initial results of career assessments; (B) explore the 16 career clusters; (C) research trending fields related to career interest areas; (D) determine academic requirements in related career fields; and (E) research educational options and requirements using available resources.
	(2)	The student analyzes college and career opportunities. The student is expected to: (A) determine academic requirements for transitioning to high school; (B) explore opportunities for earning college credit in high school such as advanced placement courses, International Baccalaureate courses, dual credit, and local and statewide articulated credit; (D) discuss the impact of effective college and career planning; (E) demonstrate decision-making skills related to school and community issues, programs of study, and college and career planning; and
	(3)	The student evaluates skills for personal success. The student is expected to: (A) use interpersonal skills to facilitate effective teamwork; (B) use problem-solving models and critical-thinking skills to make informed decisions; (C) use effective time-management and goal-setting strategies; (D) identify skills that can be transferable among a variety of careers;
	(4)	The student recognizes the impact of college and career choices on personal lifestyle. The student is expected to: (A) prepare a personal budget reflecting the student's desired lifestyle; and (B) use resources to compare and contrast salaries of at least three careers in the student's interest area.
	(6)	The student develops skills for professional success. The student is expected to: (A) demonstrate effective verbal, nonverbal, written, and electronic communication skills; (B) evaluate the impact of positive and negative personal choices, including use of electronic communications such as social networking sites; (C) model characteristics of effective leadership, teamwork, and conflict management; (D) recognize the importance of a healthy lifestyle, including the ability to manage stress; and (E) explore characteristics necessary for professional success such as work ethics, integrity, dedication, perseverance, and interactions with diverse populations

Instructional Directions   **This activity is designed to take 45 minutes – 1 hour as presented below.**

1. Current Career Choice
   A. Depending on class size, arrange students in small groups of four or more (ideally – adapt group size for smaller or larger classes as deemed appropriate)
   B. Using the Career Choice ticket (Blackline Master C4), have students write down their current career choice and why.
   C. Have students share their choices within the small groups
   D. Once complete, proceed to step 2

Lesson C4

Instructional Directions

2. Survivor Island – Small and Large Group Activity

    E. Scenario – (You may read aloud to class or "embellish" as you feel qualified.)

        After entering their chosen professions, the small group travels on a plane together. It crashes on a deserted island. Others have crashed there as well. The island can only sustain   number of people (change this number to represent two for each group, so if there are four groups, the number would be 4 x 2 or 8).

    F. Decisions

      • Based upon their occupation, the small group must decide which two people from their group can remain. The others are fed to the sharks!

      • Share with class compiling one big list of who is on the island and their respective occupations. (Write this on the board or somewhere the entire class can view.)

      • Ask class: "Would this island be successful with these occupations? Why? Why not?"

3. Rescued – Individual Activity

    G. Scenario – Bad News, Good News

      • (You may read aloud or, again, use your best storytelling ability.)

      A tsunami is coming! The good news is that the sharks are scared away. The bad news is now everyone is in trouble. However, an airplane is arriving from the Austin-Bergstrom Airport and can harbor some castaways. However, the plane will only accept passage of those with certain professions that their community and economy needs.

      • Pass out the High-Skill, High-Growth Jobs List (*http://www.wfscapitalarea.com/Portals/0/all-content/Youth%20Services/WhenIGrowUpHighSkillHighGrowthJobsCapitalArea.pdf*) and allow students access to the Student Career Profiles (*http://www.wfscapitalarea.com/YouthServices/CareerPlanning.aspx*).

    H. Decisions – ask students:

      • Is your chosen career on this list? If so, great! Why do you think your career is on the list?

      • If not, which position would you choose to pursue to get rescued?

      • Why would you choose this career?

    I. Have students write their **new career** on the ticket in the appropriate blank (even if it didn't change)

    J. Share with class – writing the new choices next to the original list of island inhabitants

    K. Compare and contrast the two lists:

      • Can _____ make more money in their new career?

      • What skills or interests are shared between the original career and the new career? (Encourage connections students might not see. For example, a student might choose to be a teacher instead of a singer. Point out that both perform for "audiences" and have to prepare to perfect their performances.)

      • For students that have chosen a HSHG career from the beginning, encourage them to share why they have done this and inquire about what they are doing to prepare for that career.

4. Summarize – Large Group

    L. Direct the discussion to summarize findings. Guide to the following:

      • Career choices can be made based upon interests (like the choice they came in with today) or the needs of the group (for example, those on the island or the need of the Central Texas region as seen in the HSHG Guide)

      • Information is available that projects (predicts) what industries and occupations will be in demand for the Central Texas region. Encourage the students to explore career options in the guide and share with their families and friends.

Learning Outcome(s)

Students will recognize how the need for occupations may vary according to the community, consider a career choice based upon labor market information, and become familiar with the High-Skill, High-Growth Jobs List.

Deliverables

• Completed Blackline Master C4; lists of vital occupations

Resources Needed

High-Skill, High-Growth Jobs List, "Career Choice" Ticket (Blackline Master C4), chart paper or chalk board, markers or chalk, blank paper for small groups to record answers, island decorations or other thematic add-ins as desired

Vocabulary or Concepts (New and/or Challenging)

• Labor Market
• Tsunami

CAREER EXPLORATION TICKET

LAST	FIRST
1 Currect Career Choice	
Why?	

High-Skill, High-Growth Career Choice

| **2** Why? | |
| Training Required | |

CAREER EXPLORATION TICKET

LAST	FIRST
1 Currect Career Choice	
Why?	

High-Skill, High-Growth Career Choice

| **2** Why? | |
| Training Required | |

CAREER EXPLORATION TICKET

LAST	FIRST
1 Currect Career Choice	
Why?	

High-Skill, High-Growth Career Choice

| **2** Why? | |
| Training Required | |

CAREER EXPLORATION TICKET

LAST	FIRST
1 Currect Career Choice	
Why?	

High-Skill, High-Growth Career Choice

| **2** Why? | |
| Training Required | |

CAREER EXPLORATION TICKET

LAST	FIRST
1 Currect Career Choice	
Why?	

High-Skill, High-Growth Career Choice

| **2** Why? | |
| Training Required | |

CAREER EXPLORATION TICKET

LAST	FIRST
1 Currect Career Choice	
Why?	

High-Skill, High-Growth Career Choice

| **2** Why? | |
| Training Required | |

CAREER EXPLORATION TICKET

LAST	FIRST
1 Currect Career Choice	
Why?	

High-Skill, High-Growth Career Choice

| **2** Why? | |
| Training Required | |

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NETWORKING BINGO

COLLEGE AND CAREER READINESS AND INVESTIGATING CAREERS TEKS OBJECTIVES		
§127.3	(6)	The student develops skills for professional success. The student is expected to: (A) demonstrate effective verbal, nonverbal, written, and electronic communication skills; (C) model characteristics of effective leadership, teamwork, and conflict management;

Instructional Directions

This activity is designed to take 30–45 minutes as presented below.

1. Using Blackline Master C5, complete the activity by having students fill out their responses to each of the prompt boxes with their individual answers first. Allow a limited amount of time based on how you would like to implement the lesson. This can be a quick ice breaker to begin the thought process on interests and education and career decision making, or it can serve as a larger lesson to include a group discussion. For either, allow no more than 2–3 minutes for the individual work.

2. Next, explain to students that they will be networking. This is also briefly defined in line item 3 on the worksheet. Networking is talking to people to discover and share mutual interests. Role-playing this activity might be valuable at this point.

3. Inform students that they will have 8–12 minutes (again, based on the customization of your lesson) to network. The first student to find 12 unique connections with other students to complete their grid should shout "Bingo!" At this point, the interactions should stop and the teacher should verify the connections by calling out the answers (i.e. "Johnny, Alice said you both share the same Ideal Job as an Astronaut.") If all the answers are verified, that student "wins."

4. The activity should end with discussion on the purpose of connecting with others through networking. It also sets up a brief assessment of interests and allows students to take an inventory of things in their lives that they may not have previously considered valuable in their career decisions. Some possible questions for discussion are included at the bottom of the worksheet.

Learning Outcome(s)

Students will apply interpersonal skills to recognize similarities in interests and both education and career decisions with their peers.

Deliverables

• Completed Blackline Master C5

Resources Needed

Blackline Master C5

Vocabulary or Concepts (New and/or Challenging)

• Networking
• Interpersonal

MODIFICATIONS & EXTENSIONS

• **Extensions:** Provide Workforce Solutions' High-Skill, High-Growth Jobs List (*http://www.wfscapitalarea.com/Portals/0/all-content/Youth%20 Services/WhenIGrowUpHighSkillHighGrowthJobsCapitalArea.pdf*) and Student Career Profiles (*http://www.wfscapitalarea.com/YouthServices/ CareerPlanning.aspx*) to give students the opportunity to research possible occupations before they network.

• **Simplify:** For smaller classes and groups, the lesson can be adapted to allow students to have one student's name more than once. However, the focus should be on communicating with as many people as possible so the number of interactions per student should be controlled.

NETWORKING BINGO

INDIVIDUALLY

1. Respond to each prompt (as it pertains to your own life and experience) by writing your answer on the "Me" line in each box.

2. You have _____ minutes to complete this portion of the

IN A GROUP

3. Stand up, walk around, and talk to people. This is called "networking." Identify individuals that have the same response for each box. When you find someone that matches your response, write their name in the box. You may not have the same person's name more than ONE time in the grid.

4. You have _____ minutes to network and complete your grid. Yell "BINGO!" when all blanks are filled in.

SHOE SIZE	INTENDED COLLEGE MAJOR	FAVORITE ANIMAL	STRONGEST SKILL
Me: _____ Name: _____	Me: _____ Name: _____	Me: _____ Name: _____	Me: _____ Name: _____
YOUR IDEAL CAREER	**BIGGEST FEAR**	**HOMETOWN**	**FAVORITE STORE**
Me: _____ Name: _____	Me: _____ Name: _____	Me: _____ Name: _____	Me: _____ Name: _____
FAVORITE COLOR	**INDUSTRY IN WHICH YOU WOULD LIKE TO WORK**	**FAVORITE HOBBY**	**COLLEGE/UNIVERSITY YOU WANT TO ATTEND**
Me: _____ Name: _____	Me: _____ Name: _____	Me: _____ Name: _____	Me: _____ Name: _____

1. How could people who share your interests help you make good educational and career choices?

2. Who would be the most beneficial connection on your grid? Why?

3. How might a "fun" connection like "favorite hobby" or "animal" help in your career development?

4. Can social media, like Instagram or Snapchat, help us network? If so, how? Can it hurt our networking opportunities?