



# BUILDING INDUSTRY TECHNOLOGY ACADEMY

A program promoted by the  
California Homebuilding Foundation



## UNIT ONE: ORIENTATION AND SAFETY

## **YEAR ONE**

### **UNIT ONE: ORIENTATION AND SAFETY**

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### Lesson #1: Welcome to BITA

#### Objectives

##### Students will be able to...

- Understand student expectations for the course and what they will learn throughout the year.
- Connect with classmates by exploring common interests.

#### Common Core Standards

RSIT 11-12.2  
RLST 11-12.2  
Communications 2.1, 2.4

#### Materials

Friendship Wheel Worksheet  
Class Syllabus  
BITA Pre-Survey

#### Lesson Sequence

- Introduce yourself and review the class syllabus. (15-20 minutes)
- Hand out the Friendship Wheel worksheet. Review the worksheet and have students fill in their own answers to the questions. Allow time for students to independently complete this task. (5-10 minutes)
- Ask students to find classmates who share their same response. Students then should sign their name in the wheel under the response that they have in common. Allow time for students to meet one another and collaborate on their answers. (10-15 minutes)
- Allow students the opportunity to share their experience with the class. What did they learn from the activity? What did they learn about themselves? What did they learn about their classmates?
- Students complete BITA Pre- Survey. (5-10 minutes)

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### **Assessment**

Check for student understanding by asking clarifying questions while presenting the class syllabus.

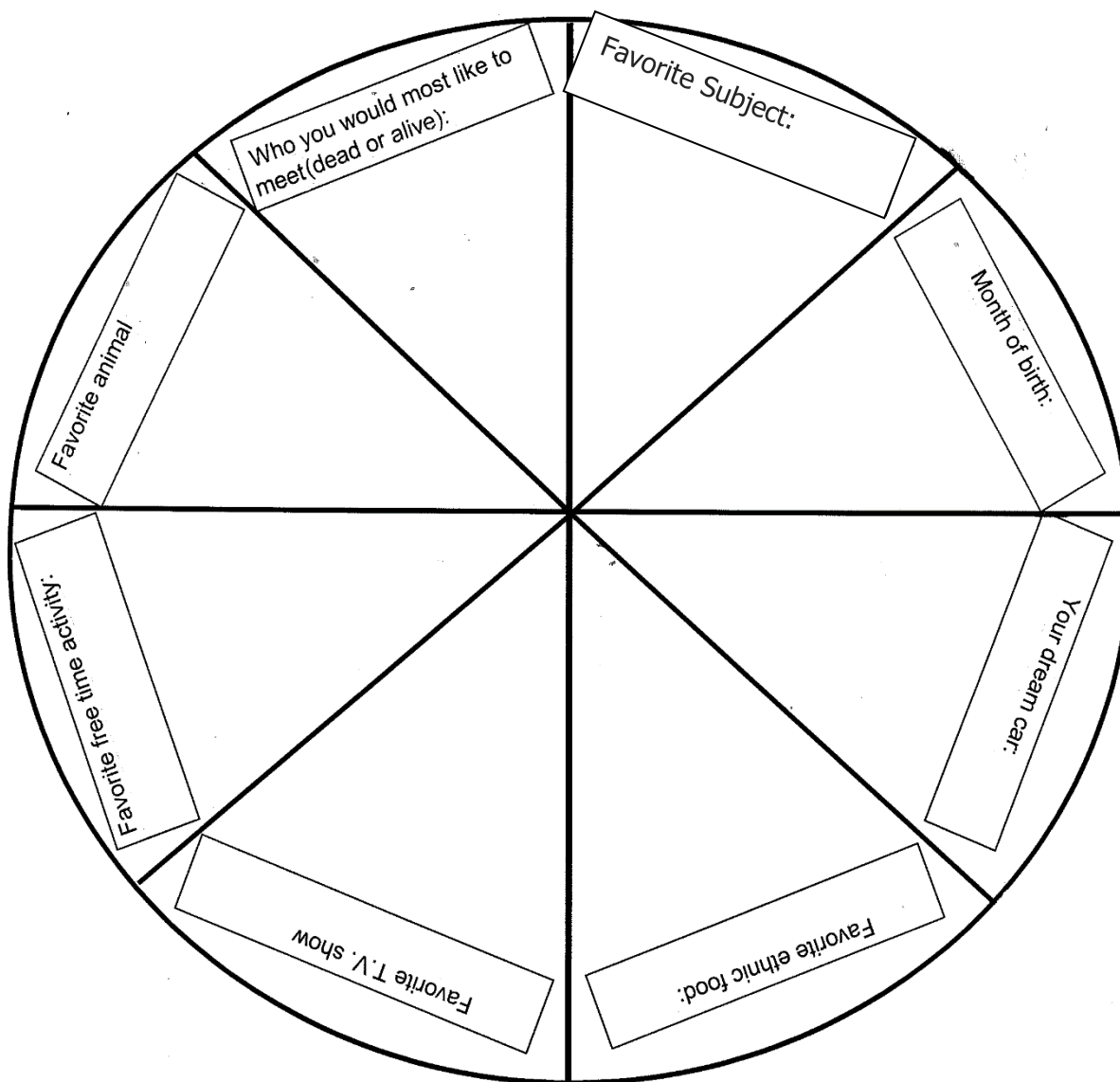
### **Accommodations/Modifications**

Check in with students while they are roaming the classroom during Friendship Wheel activity- may need to facilitate social conversations as needed.

## Friendship Wheel Worksheet

### Directions

- ✓ In each of the eight rectangles, record your response to each prompt.
- ✓ Move around the room, finding others that have the same answers as you.
- ✓ Once you have found them, have them print their first and last names in the wedge that matches your response.
- ✓ Print your first and last name on their wedge as well.



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## **BITA Pre-Survey**

### **Building Industry Technology Academy Pre-Survey**

Grade Level: \_\_\_\_\_ Student ID #: \_\_\_\_\_ BITA Class Level: \_\_\_\_\_

#### **1. Which BITA classes have you completed?**

Level 1 \_\_\_\_\_ Level 2 \_\_\_\_\_ Level 3 \_\_\_\_\_ Level 4 \_\_\_\_\_

#### **2. When you have completed this class will you enroll in the next level BITA class?**

Yes \_\_\_\_\_ No \_\_\_\_\_ Unsure \_\_\_\_\_

**If not, why?**

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#### **3. What was your reason for enrolling in the BITA class?**

- \_\_\_\_\_ I want to learn a skill or trade.
  - \_\_\_\_\_ I want to work in the construction industry.
  - \_\_\_\_\_ I thought it would be interesting.
  - \_\_\_\_\_ A guidance counselor or teacher recommended the class.
  - \_\_\_\_\_ I know someone who works in construction and they suggested I take the class.
  - \_\_\_\_\_ Other
- 

#### **4. Are you interested in working in the construction industry when you complete your education?**

Yes \_\_\_\_\_ No \_\_\_\_\_

#### **5. Do you think working in the construction industry will provide you career opportunities and the advancement you desire?**

Yes \_\_\_\_\_ No \_\_\_\_\_

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### **6. Which specific trade or aspect of construction interests you? (Check all that apply)**

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Carpentry     | <input type="checkbox"/> Drywall/Plaster    | <input type="checkbox"/> Engineering           |
| <input type="checkbox"/> Tile/Flooring | <input type="checkbox"/> HVAC               | <input type="checkbox"/> Grading/Excavating    |
| <input type="checkbox"/> Estimating    | <input type="checkbox"/> Concrete/Masonry   | <input type="checkbox"/> Architecture/Drafting |
| <input type="checkbox"/> Stucco/Siding | <input type="checkbox"/> Plumbing           | <input type="checkbox"/> Roofing               |
| <input type="checkbox"/> Surveying     | <input type="checkbox"/> General Contractor | <input type="checkbox"/> Other                 |

### **7. Rank the following in order of importance to you, with 5 being most important and 1 being least important.**

#### **I want to learn:**

- ☐ Skills in a specific trade.
- ☐ About a variety of different trades.
- ☐ Skills so I can get a job in the construction industry.
- ☐ How to build a house.
- ☐ What it is like to work at a construction site.
- ☐ Other:

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### **8. What are your plans after graduation?**

- ☐ Getting a job.
- ☐ Continue your education.
- ☐ Go into the military service.

### **9. If you are planning in continuing your education, what type of school are you planning on attending?**

- ☐ Trade School
- ☐ On the job training,/apprenticeship
- ☐ Community College
- ☐ Regional Occupational Program
- ☐ 4 year college or university

### Lesson #2: Safety

#### Objectives

##### Students will be able to...

- Identify general shop safety practices/expectations and demonstrate knowledge of a safe attitude.

#### Common Core Standards

RSIT 11-12.2  
RLST 11-12.2  
Communications 2.1, 2.4  
Health & Safety 6.1, 6.2, 6.3, 6.5, 6.5, 6.6  
Responsibility and Flexibility 7.2  
CTE Pathway D 1.1, 1.2, 1.3  
Ethics and Legal Responsibilities 8.1 & 8.4

#### Materials

Safety guidelines  
Safety YouTube video <https://www.youtube.com/watch?v=W4IEI6c-yZo>

#### Lesson Sequence

- Review safety guidelines. Model appropriate safety as needed. Answer any questions students may have regarding the safety guidelines. Then, have students sign guidelines and turn it in. (30 minutes)
- Watch safety YouTube video <https://www.youtube.com/watch?v=W4IEI6c-yZo> (11 minutes)
- Debrief the video with the class. (5-10 minutes)
- Exit Ticket- Ask students to write down five things they learned from the video regarding safety in the shop. Have students turn their responses in as they exit the classroom.
- (5-10 minutes)



**Assessment**

Students should display their general understanding of the safety guidelines through classroom discussions and their exit ticket responses.

**Accommodations/Modifications**

Reduce exit ticket criteria to listing three things they learned from the video.

## **Safety Guidelines**

### **General Safety Rules**

#### **1. Paying attention**

- a. Keep your mind on your work at all times.
- b. Watch where you are going.
- c. Look out for anything in your way.
- d. Do not move any materials or equipment unless you can clearly see your way.

#### **2. Keeping your instructor informed**

- a. Report all accidents and injuries, even slight ones, to your instructor.
- b. Report to your instructor any unsafe condition or unsafe work behaviors that could injure others.
- c. Report any damaged equipment to your instructor.
- d. Work together to help everyone avoid accidents and learn safety practices.
- e. Check with your supervisor or instructor before using any equipment.

#### **3. No "Clowning Around"**

- a. "Horseplay" can be extremely dangerous.
- b. A playful push can result in a serious accident.
- c. Accidents don't just happen, they are caused
- d. Do not try to fix broken equipment, report it to your instructor right away.
- e. Do not throw anything in the shop.
- f. Never hold parts, such as washers, nails or screws, in your mouth.

#### **4. Good Housekeeping**

- a. Keep floors clean, dry and clear of objects. Cords, cables, and air hoses should be off the floor.
- b. Put chairs and equipment away.
- c. Aisle ways must be clear. Watch the floor for piles, exposed nails, spills, or other hazards. If you see anything on the floor, pick or clean it up right away.

- d. Keep the doors of lockers and cabinets closed.
- e. Store all rags with any grease, oil, gasoline, paint, or other flammable materials on them in metal containers. Put all scrap in a scrap box.
- f. Use a brush or whisk broom to sweep scraps from your workbench or table; do not use your hands.

### 5. Walk, don't run

- a. You are less likely to trip, fall, or collide with another person or object.
- b. Do not walk too closely to doors. They might open suddenly. Open doors slowly.
- c. When approaching a corner, slow down or stop to be sure no one else is coming around it.

### 6. Cleaning up spills immediately

- a. Be careful when handling any liquid-even water.
- b. If you see oil or grease on the floor, wipe it up, even if you didn't spill it.
- c. If the spill is large, block off the wet area and report it to your instructor.
- d. Report spills of dangerous or hazardous liquids. Remove any sources of ignition, and then stay out of the area. **Clean up of hazardous materials should be done by trained personnel only.**

### 7. Lifting and carrying correctly

- a. Think and plan before lifting.
- b. Check item for weight and rough or slippery surfaces. Know where to will grip it.
- c. Get help if the object is too heavy or longer than 8 feet.
- d. If you need to, use a dolly or handcart. Handcarts should be pushed, not pulled.
- e. Survey the area to be sure the path is clear.
- f. Know where you are going to put down the load.
- g. If another person is helping you, decide who will say when and where to move to.
- h. Lift correctly.
- i. Stand on firm ground, not on boxes, crates, buckets, chairs or other unstable objects.
- j. Get a good grip using both hands.

- k. Keep your back straight and knees bent.
- l. Lift using your leg muscles.
- m. Draw the load in close to your body. Never lift or lower a load with your arms extended away from you.
- n. Do not twist your body when lifting or carrying.
- o. Carry no more than what you can easily handle.
- p. Be sure you can see over the load.
- q. Move slowly; do not hurry.
- r. Hold the object close to you.
- s. Do not twist your body when carrying.
- t. Watch for and avoid obstructions or loose material.
- u. Carry a long piece with its front end high enough to avoid striking anyone.

### **Personal hygiene and protection**

#### **1. Maintain personal cleanliness**

- a. Make sure you have recently taken a shower before coming to your training site.
- b. Your hair should be clean and neat. Long hair should be pulled back when operating equipment.
- c. Tuck in loose clothing, and remove rings and watches before operating any equipment.
- d. Wear clean, close-toed shoes.
- e. Never point a high-pressure air nozzle at anyone. Don't try to clean off your clothes with an air hose unless it is fitted with OSHA-approved low-pressure safety nozzle.

#### **2. Use protective attire**

- a. Inspect your protective clothing and equipment to make sure it fits and is clean, comfortable, and safe.
- b. Wear safety glasses, goggles or a face shield to protect your eyes against flying objects or spray.
- c. Use special gloves when working with chemicals. Do not use gloves around moving machinery.
- d. Use earplugs or earmuffs to protect yourself from noise. Make sure the earplugs or earmuffs fit correctly.
- e. Respirators work well for you if you use them correctly. Know respirator procedures before using.

## **Emergency/disaster response**

### 1. Evacuation procedures

- a. Earthquake, fire, bomb threats, or chemical spills may require evacuation.
- b. You might be notified of the need to evacuate through:
  1. Building alarms
  2. Building public address system
  3. Security or police announcement
- c. Leave calmly and quickly through the nearest exit.
- d. Always treat an evacuation as a real emergency. Don't assume it is only a drill.
- e. Do not return for personal items such as keys, purse, or clothing.
- f. Cooperate with the training site supervisor or whoever is directing the evacuation. Do not argue with them, help them.
- f. Stay with the group in your assigned area until everyone can be accounted for.

## **Earthquake preparation**

### 1. Prepare for earthquakes

- a. Know where emergency supplies (canned food, first aid kit, flashlight with extra batteries, etc.) are stored in your training site.
- b. Do not store heavy objects in overhead storage areas.
- c. Report any bookshelves or tall cabinets against walls that are not secured.
- d. Keep emergency supplies in your car.

### 2. Use caution during an earthquake

- a. Get away from glass windows, stacked items, and unsecured objects ex: cabinets.
- b. Get under sturdy furniture or in a hallway in the center of the building.
- c. Stand in doorways, preferably without doors. Doors may slam shut on your fingers.
- d. Never run outside a building: roof tiles or building façade may fall and hit you. Stay put until the shaking stops.
- e. If outdoors when the quake starts, stay outside and move to an open area. Stay away from power lines, trees, or structures that could fall over.

### 3. Safety procedures after an earthquake

- a. Do not smoke or use candles, matches, or other open flames.
- b. Do not leave the building until routes have been checked out for safety.
- c. Shut off any leaking or broken water pipes.
- d. If you hear or smell gas, inform your instructor. Leave the area promptly.
- e. In a multi-story building, use the stairs, not the elevator, if evacuation is necessary.

## **Tools and equipment**

### 1. Hand tool safety

- a. Two people can't use the same tool at the same time.
- b. Make sure you have a good grip. Clean grease from your hands before you grip a tool.
- c. Always check in front of and behind you before swinging a hammer.
- d. Make sure tool heads of hammers are securely fastened to the handle.
- e. Give tools to another student with the handles extended.
- f. Keep your stock securely fastened in a vise or clamps while working on it. Close unused vises, but never tighten and unused vise.
- g. Do not leave tools or materials projecting from a vise or workbench where someone can bump into them.

### 2. Sharp tool safety

- a. Keep tools sharp at all times, dull ones are dangerous.
- b. Carry sharp tools in your hand pointed down. Do not carry sharp-edged tools in your pockets.
- c. Keep both hands behind the driving edge of any sharp-edged cutting tool.
- d. When you are using sharp cutting tools, cut away from your body. Wear goggles, and don't cut towards others.
- e. When you are using metal snips, don't pinch your fingers between the handles while making a cut.

### 3. Power tool safety

- a. Never work in the shop unless there is an instructor present. Be sure machines are anchored securely.

- b. Work with machines or equipment only after you have been given safety instructions for that equipment. Wear appropriate personal protective equipment.
- c. Do not attempt to repair a machine yourself. Report any damaged or broken machines to your instructor.
- d. Only the operator and instructor should be in the defined safety zone around any machine.
- e. Never crowd around an operating machine. This may distract the operator's attention, leading to injuries. Safe operation requires concentration.
- f. Disconnect portable tools when not in use.
- g. Keep machine guards in proper position at all times. NEVER reach around or under a guard.
- h. When turning off your machine, stay by it until it has completely stopped. Always use caution when approaching machines in operation.
- i. Clean or adjust machinery only when it has stopped. Keep rags, hands, tools and other materials away from operating machines.
- j. Follow safe lockout/tag out procedures.

#### 4. Electrical safety

- a. Check that electrical connections are tight. Do not overload outlets or force plugs.
- b. When disconnecting a machine, pull the plug out at the wall. Never unplug a machine by pulling on the cord.
- c. Use extension cords only when necessary and only if rated high enough for the job.
- d. Do not put cords near heat or water. Do not touch anything electrical with wet hands.
- e. Inspect insulation to make sure wiring is fully insulated.
- f. Use personal protective equipment as instructed by your supervisor.
- g. If equipment smokes, sparks, or smells; turn it off, unplug it, and report it to your instructor.
- h. Never try to repair equipment or use temporary wiring.

### **Machine Tools:**

- a. Only the instructor can and must turn on and off the master switches.
- b. Ask the instructor for permission to operate any power-driven machine.
- c. The instructor must check all special set-ups before the power is turned on.
- d. Only the operator and the instructor are permitted within the defined working area around any machine.
- e. Only the operator may start and stop a machine. After the machine is turned off, the operator should stand by until it has come to a complete stop.
- f. Suitable eye protection is always to be worn while in the shop.
- g. Long, loose hair can easily be caught in revolving machinery and ripped out causing serious scalp laceration. Hair must be cut short or tied back so as not to create a distraction or danger to the operator.
- h. Safe clothing must be worn in the shop. Fasten or remove loose clothing before operating any machine. Long sleeves are to be rolled above the elbows.
- i. Gloves are forbidden when working with power driven machinery.
- j. Jewelry and other accessories can be hazardous, and will be removed, if deemed necessary by the instructor.
- k. Machine guards must always be kept in their proper position.
- l. Overloading or forcing any power-driven machine is dangerous. Use only materials or stock furnished or approved by the instructor.
- m. Rags are to be kept away from machines that are in operation.
- n. If a machine makes an unusual sound, is found to be out of adjustment, or in need of repair, it is to be reported to the instructor immediately. Only machines in good working order are to be operated.
- o. Distractions are to be avoided when using machines. The operator should not allow distractions, or cause a distraction when using machines.
- p. Machines must come to a dead stop and the master switch be turned off before adjusting or repairing the machine.



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- q. No student will be compelled to use any power-driven machinery. A student may be excused from using any machine by consulting the instructor.
- r. Loose pieces of material, tools, etc. are to be removed from a machine before starting the machine.
- s. No machine shall be used until the operator has passed the safety exam for the tool and has received instruction in its use.

### **Portable Power Hand Tools:**

- a. All portable power hand tools must be disconnected when not in use.
- b. When disconnecting a power hand tool from a receptacle, remove the plug by pulling on the plug itself, rather than the cord.
- c. Before touching electrical switches, plugs or receptacles, hands must be dry. Wet hands can receive a severe shock and serious burns may result.
- d. Extension cords must lay flat on the floor when in use.
- e. When using compressed air, the stream must not be directed at any person.

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Construction and Woodshop are a privilege, abuse that privilege and you will lose it.

I understand and agree to the above rules:

\_\_\_\_\_  
Student Signature

\_\_\_\_\_  
PRINT Students Name

### Lesson #3: Safety Guidelines Posters

#### Objectives

**Students will be able to...**

- Identify general shop safety practices/expectations and demonstrate knowledge of a safe attitude.

#### Common Core Standards

RSIT 11-12.2  
RLST 11-12.2  
Communications 2.1, 2.4  
Health & Safety 6.1, 6.2, 6.3, 6.5, 6.5, 6.6  
Responsibility and Flexibility 7.2  
CTE Pathway D 1.1, 1.2. 1.3

#### Materials

Chart paper  
Safety guidelines  
Poster rubric

#### Lesson Sequence

- Ask students to take their safety guidelines out.
- Divide class up into seven groups. Assign each group a general safety rule (paying attention, keeping your instructor informed, no "clowning around", good housekeeping, walk, no running, cleaning up spills immediately, and lifting and carrying correctly).
- Each group will create a poster for that rule. See attached rubric for poster expectations. (25 minutes)
- Begin poster presentations. Each group member must present a section of the presentations. Allow the audience to ask any questions they may have. (25 minutes)

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### **Assessment**

Each group member should be able to answer any questions asked about their rule.  
Students should include all required information on their poster per rubric expectations.

### **Accommodations/Modifications**

Students may need social facilitations during group work.

**Poster Rubric**

	<b>Possible Points</b>	<b>Self-Assessment</b>	<b>Teacher Assessment</b>
Presentation was well planned and organized.	10		
Information was clear, accurate, and reflected the opinion of the presenters.	10		
Presenters demonstrated full knowledge of their topic. Explanations and reasons were given for conclusions.	10		
Visual aids are well prepared, informative, effective, and not distracting.	10		
Students' voices were easy to hear and good eye contact with the audience was used.	10		
<b>Total Possible Points</b>	<b>50</b>		

**Rate each category according to the following scale:**

**9-10 points = excellent**

**7-8 points = very good**

**5-6 points = good**

**3-4 points = satisfactory**

**1-2 points = poor**

**0 points= unsatisfactory**

**Teacher comments:**

### Lesson #4: Continue Posters and Safety Test

#### Objectives

##### Students will be able to...

- Identify general shop safety practices/expectations and demonstrate knowledge of a safe attitude.

#### Common Core Standards

RSIT 11-12.2  
RLST 11-12.2  
Communications 2.1, 2.4  
Health & Safety 6.1, 6.2, 6.3, 6.5, 6.5, 6.6  
Responsibility and Flexibility 7.2  
CTE Pathway D 1.1, 1.2, 1.3

#### Materials

Poster Rubric  
General Safety Test

#### Lesson Sequence

- Continue poster presentations if needed.
- Review safety guidelines as a class. Ask students checking for understanding questions. Answer any final questions students may have about safety guidelines.
- Give students the general safety test. They must pass the test with a score of 100% in order to move into the shop/lab. Students may take the test again if needed.

#### Assessment

The general safety test- students must pass this test with a 100% prior to being able to work in the shop/lab.

Accommodations/Modifications
Students may need the test read aloud. Students may need the fill in the blank option list to be simplified.

### General Safety Test

1. Work benches should be kept \_\_\_\_\_ and organized.
2. When you are finished with a tool, return it to its assigned \_\_\_\_\_ area.
3. Ask for \_\_\_\_\_ when you need to handle large or heavy material.
4. Lift with your \_\_\_\_\_ not with your back.
5. Never handle \_\_\_\_\_ equipment if your hands are wet or if you are standing on a wet floor.
6. Equipment with a \_\_\_\_\_ power cord should be reported to the instructor. Do not use it.
7. Don't yank on the power cord to disconnect the tool. Pull the \_\_\_\_\_.
8. Never adjust equipment while it is \_\_\_\_\_.
9. Using the tools and equipment requires your complete \_\_\_\_\_ at all times.
10. Always work at a \_\_\_\_\_ speed.
11. When you turn off a machine, stay with it until it has come to a \_\_\_\_\_ stop.
12. Don't \_\_\_\_\_ someone while they are using the equipment.
13. Always wear eye \_\_\_\_\_.
14. Use the equipment only with the instructor's \_\_\_\_\_.
15. All \_\_\_\_\_ must be reported immediately.
16. Do not use tools that are \_\_\_\_\_ in any way.
17. Never use tools or equipment unless you have been shown how to use them \_\_\_\_\_.
18. Keep clothes tucked in and shirt sleeves \_\_\_\_\_ neatly.

accidents  
attention  
brush  
clean up  
clear  
complete  
correctly  
damaged  
defective  
distract  
dust mask  
electrical  
equipment  
fire extinguishers  
help  
instructed  
jewelry  
legs  
litter  
metal  
permission  
plug  
protection  
right size  
rolled up  
rough  
running  
safe  
storage  
tied back

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19. Watches or \_\_\_\_\_ should not be worn in the shop.
20. Long hair should be \_\_\_\_\_ or covered with a cap.
21. You should know where the \_\_\_\_\_ are located and read the instructions posted on them.
22. Aisles and floors must be kept free of \_\_\_\_\_.
23. Use a \_\_\_\_\_ or a rag to clear away sawdust and scraps. Don't use your hands.
24. Use the proper tool and the \_\_\_\_\_ for the job.
25. Use the \_\_\_\_\_ only when the instructor is in the shop.
26. Never use equipment until you have been properly \_\_\_\_\_ in its use.
27. A \_\_\_\_\_ should be worn when working where there is a lot of wood dust.
28. Damp, oily rags should be kept in a \_\_\_\_\_ container with a lid.
29. Always \_\_\_\_\_ spilled materials right away.
30. Never wear gloves except when handling \_\_\_\_\_ lumber.

accidents  
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**BITA General Safety Test -Answer Key**

1. Work benches should be kept \_\_\_\_\_ **clear** \_\_\_\_\_ and organized.
2. When you are finished with a tool, return it to its assigned \_\_\_\_\_ **storage** \_\_\_\_\_ area.
3. Ask for \_\_\_\_\_ **help** \_\_\_\_\_ when you need to handle large or heavy material.
4. Lift with your \_\_\_\_\_ **legs** \_\_\_\_\_ not with your back.
5. Never handle \_\_\_\_\_ **electrical** \_\_\_\_\_ equipment if your hands are wet or if you are standing on a wet floor.
6. Equipment with a \_\_\_\_\_ **defective** \_\_\_\_\_ power cord should be reported to the instructor. Do not use it.
7. Don't yank on the power cord to disconnect the tool. Pull the \_\_\_\_\_ **plug** \_\_\_\_\_.
8. Never adjust equipment while it is \_\_\_\_\_ **running** \_\_\_\_\_.
9. Using the tools and equipment requires your complete \_\_\_\_\_ **attention** \_\_\_\_\_ at all times.
10. Always work at a \_\_\_\_\_ **safe** \_\_\_\_\_ speed.
11. When you turn off a machine, stay with it until it has come to a \_\_\_\_\_ **complete** \_\_\_\_\_ stop.
12. Don't \_\_\_\_\_ **distract** \_\_\_\_\_ someone while they are using the equipment.
13. Always wear eye \_\_\_\_\_ **protection** \_\_\_\_\_.
14. Use the equipment only with the instructor's \_\_\_\_\_ **permission** \_\_\_\_\_.
15. All \_\_\_\_\_ **accidents** \_\_\_\_\_ must be reported immediately.
16. Do not use tools that are \_\_\_\_\_ **damaged** \_\_\_\_\_ in any way.
17. Never use tools or equipment unless you have been shown how to use them \_\_\_\_\_ **correctly** \_\_\_\_\_.
18. Keep clothes tucked in and shirt sleeves \_\_\_\_\_ **rolled up** \_\_\_\_\_ neatly.
19. Watches or \_\_\_\_\_ **jewelry** \_\_\_\_\_ should not be worn in the shop.
20. Long hair should be \_\_\_\_\_ **tied back** \_\_\_\_\_ or covered with a cap.

21. You should know where the \_\_\_\_ **fire extinguishers** \_\_\_\_ are located and read the instructions posted on them.
22. Aisles and floors must be kept free of \_\_\_\_ **litter** \_\_\_\_.
23. Use a \_\_\_\_ **brush** \_\_\_\_ or a rag to clear away sawdust and scraps. Don't use your hands.
24. Use the proper tool and the \_\_\_\_ **right size** \_\_\_\_ for the job.
25. Use the \_\_\_\_ **equipment** \_\_\_\_ only when the instructor is in the shop.
26. Never use equipment until you have been properly \_\_\_\_ **instructed** \_\_\_\_ in its use.
27. A \_\_\_\_ **dust mask** \_\_\_\_ should be worn when working where there is a lot of wood dust.
28. Damp, oily rags should be kept in a \_\_\_\_ **metal** \_\_\_\_ container with a lid.
29. Always \_\_\_\_ **clean up** \_\_\_\_ spilled materials right away.
30. Never wear gloves except when handling \_\_\_\_ **rough** \_\_\_\_ lumber.

### Lesson #5: Ineffective vs. Effective Teamwork

#### Objectives

##### Students will be able to...

- Work as a team to meet a common goal.
- Identify the key factors that support an effective team.

#### Common Core Standards

Leadership and Teamwork 9.2 & 9.3  
Writing 11-12.4  
RSIT 11-12.2  
RLST 11-12.2  
Communications 2.1, 2.4  
Responsibility and Flexibility 7.2  
CTE Pathway D 1.1, 1.2. 1.3

#### Materials

Straw Tower Activity Instructions  
Straws  
Tape  
Cup  
Team Debrief Questions  
Effective Teamwork Rubric

#### Lesson Sequence

- Remind students that the second critical skill in this field is teamwork.
- Introduce the Straw Tower Activity Instructions to the students (see instructions attached).
- Break students up into groups. Follow attached instructions for activity. (15-20 minutes).
- After competition, provide each student with the team debriefing questions and effective teamwork rubric. Students should work through both independently while

reflecting about their experience while working with their team. (15 minutes).

- Discuss student's reflections about straw activity as a class. Discuss what makes an effective team. Discuss any obstacles that the team had to overcome during activity. Discuss any strengths that students found while working as a team. (10-15 minutes)
- Collect the student's completed team debriefing questions and effective teamwork rubrics.

### **Assessment**

The effective teamwork rubric will show student understanding of how well their team worked together. Compare each team member's personal rubric with one another to see if they all agreed on how they filled the rubric out.

### **Accommodations/Modifications**

Support students with social interactions as needed  
Monitor teamwork

## **Straw Tower Activity Instructions**

### **Materials needed:**

A box of straws  
Scotch tape  
Plastic cups

**Introduction:** Tell students you are going to break them into groups for a competitive building exercise. Give the following directions BEFORE you break them into groups:

### **Directions:**

1. The object of the competition is to build the tallest, freestanding structure you can use just straws and tape. You may NOT use the cup, place the structure on a table, or tape any part of the structure to the floor or other surface. You may only tape the straws to each other to create the structure.
2. For the first 3 minutes, each team will be allowed to experiment, practice, discuss—whatever you want to do in that time.
3. After the 3 minutes is up, each team must throw out anything you have already built/done and clear your work area. Only plain straws in a cup and a roll of tape are allowed to remain. (This means no precut tape, etc.)
4. When I say, “go,” you will have ten minutes to build your structure. I will give you a 5-minute warning, a 2-minute warning, and a 1-minute warning. When 20 seconds remain, I will start to count down. When I say “ZERO, step back,” you must let go of your tower and stand back. I will then count to 20 seconds. Any tower that falls in that time is disqualified from the competition.
5. I expect you to speak respectfully to one another at all times.

### **Directions to teacher:**

While students are working, walk around and take notes about how they are interacting. Is one person taking over? Are all participating? Are they using teamwork in any form? What happens once the competition starts? DO they divide up tasks? How are decisions made? Keep careful notes of the nature of the discussion. Don't interfere with the activity unless you hear students being disrespectful to one another—then step in.

After the winners are announced, debrief the activity. Have students fill in **Team Debriefing Questions** sheet before the whole class discussion. Use your notes to show that if we simply break people into groups without assigning specific roles, invariably someone fills the vacuum by taking leadership; others may or may not participate. If some teams did divide up tasks, show how that made things goes more smoothly.

### **Points to emphasize:**

Explain there is a difference between a team and a group of people working together. The first 3 minutes they functioned more like a group. The second time they were more of a team. Based on

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research, when teams first work together, they may work slower. However, as they learn to function more effectively as a team, they become more efficient and productive.

In small group work, there are no designated leaders, everybody just kind of does what they think is best. When working as a team or cooperating, each person is given a specific role— facilitator, recorder, timekeeper, summarizer/backtracker, or presenter. Just as in the workplace, each person has a job title. All members of the team participate in the learning/decision-making process instead of just 1 or 2. At the end of the learning, each team reports its findings/decisions to the larger group. Sometimes each group is given the same task; sometimes each is given a different task.

Whether working as a team of two or ten, it is important to utilize the ways of an effective team. This improves relationships and increases the quality and quantity of work.

### Team Debriefing Questions

1. What did you learn through this activity about the functioning of a team?

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2. Did team members have specific roles? If so, how were these roles determined?

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3. In general terms, how was communication used (e.g., positive, negative, neutral)? Give examples of words, phrases, or expressions used and/or heard.

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4. Given the team experience, what were your team's strengths and possible areas for improvement? How could you contribute better to your team's effectiveness?

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### Effective Teamwork Rubric

Evaluate how well your team worked together by circling the best descriptor for your tem in each of the 4 categories. Add up your scores and record on the line above.

Teamwork Questions	Not Effective Teamwork (0)	Somewhat Effective Teamwork (1)	Effective Teamwork We met our goal (2)
<b>Did we Cooperate?</b>	<ol style="list-style-type: none"><li>1. No cooperation</li><li>2. Some team members did not want to work with others.</li><li>3. There was a lot of arguing.</li></ol>	<ol style="list-style-type: none"><li>1. Some people were cooperating, but others were not.</li><li>2. Procedures to get things done were not clear to all.</li><li>3. There were a few arguments.</li></ol>	<ol style="list-style-type: none"><li>1. Everyone cooperated.</li><li>2. Everyone listened to each other.</li><li>3. There was no arguing.</li><li>4. A person's role and responsibilities were known.</li></ol>
<b>Did we Communicate?</b>	<ol style="list-style-type: none"><li>1. Nobody talked nor seemed to listen to others if they talked.</li><li>2. No one knew what their role or responsibility was.</li><li>3. There was no method for making team decisions.</li></ol>	<ol style="list-style-type: none"><li>1. Some people discussed what we were to do.</li><li>2. Some people knew their role and responsibilities.</li><li>3. The method for making team decisions kept changing.</li></ol>	<ol style="list-style-type: none"><li>1. Everybody shared their ideas and listened to each other.</li><li>2. There was constant communication.</li><li>3. People knew their role and responsibilities.</li></ol>
<b>Did we concentrate?</b>	<ol style="list-style-type: none"><li>1. Some team members were doing other things and not focused on our task.</li></ol>	<ol style="list-style-type: none"><li>1. Sometimes people were working.</li></ol>	<ol style="list-style-type: none"><li>1. All team members:<ul style="list-style-type: none"><li>• paid attention</li><li>• were thinking</li><li>• were working</li></ul></li></ol>
<b>Were we Respectful?</b>	<ol style="list-style-type: none"><li>1. Some team members were not respectful to other's ideas.</li></ol>	<ol style="list-style-type: none"><li>1. Some team members need help giving and receiving feedback.</li></ol>	<ol style="list-style-type: none"><li>1. We listened to each other and worked on being positive with our comments to each other.</li></ol>

**Teacher Comments:**



### Lesson #6: Effective Teamwork

#### Objectives

##### Students will be able to...

- Work as a team to meet a common goal.
- Identify the key factors that support an effective team.

#### Common Core Standards

Leadership and Teamwork 9.2 & 9.3  
 Writing 11-12.4  
 RSIT 11-12.2  
 RLST 11-12.2  
 Communications 2.1, 2.4  
 Responsibility and Flexibility 7.2  
 CTE Pathway D 1.1, 1.2. 1.3

#### Materials

Effective Teamwork/Team Roles Descriptions Notes  
 Lost at Sea Activity Instructions  
 Lost at Sea Ranking Chart for each student  
 Team Debriefing Questions  
 Effective Team Rubric

#### Lesson Sequence

- Pass out the effective teamwork/team roles description notes to students.
- Have students follow along as you discuss this handout. Answer any questions as needed. (10-15 minutes)
- Follow the Lost at Sea Activity Instructions. This activity builds problem-solving skills as team members analyze information, negotiate and cooperate with one another. It also encourages them to listen and to think about the way they make decisions. Students will be put into teams and model the team roles. (20 minutes)
- Students will answer team debrief questions and fill out the effective team rubric after

activity. (10-15 minutes)

- Discuss the debrief questions as a class if time permits.

### **Assessment**

The effective teamwork rubric will show student understanding of how well their team worked together. Compare each team member's personal rubric with one another to see if they all agreed on how they filled the rubric out and how well their group worked together.

### **Accommodations/Modifications**

Support students with working together in each of their roles.  
Model what each role may do during group work.  
Ask checking for understanding questions.

## **Effective Teamwork**

### **What does it take to be an effective team?**

To be an effective team, team members:

- ✓ Are willing to work with each other.
- ✓ Use each other's strengths and differences to achieve common goals.
- ✓ Establish ground rules for behavior.
- ✓ Define their purpose, goals/tasks.
- ✓ Identify roles and responsibilities.
- ✓ Give ideas, listen to each other and know how to give and receive feedback.
- ✓ Can effectively handle disagreements and conflict.
- ✓ Use a method for making team decisions.
- ✓ Establish procedures to get things done.
- ✓ Evaluate how well they work together.

### **Team Roles Descriptions**

#### **FACILITATOR**

The Facilitator's job is to ask for ideas from each team member and to keep the team on task.

- Explains the team's purpose and the task to be done.
- Leads the team in deciding who will do what, by when
  - Who would like to .....?
  - Would you like to.....?
- Asks each team member for ideas or comments
  - "\_\_\_\_\_, what do you think?"
  - "\_\_\_\_\_, can you add to this?"
- Helps keep the team focused on the task
- Guides the team in evaluating how well they work together
  - "How good was our work?"
  - "How well did we cooperate with each other?"
  - "What could we have done differently?"

## **RECORDER**

The Recorder's job is to write the team's responses on the Team Worksheet.

- Correctly writes the team's ideas and comments.
- Asks a team member to explain if comments or ideas are unclear.
  - "\_\_\_\_\_ please explain what you mean by this."
  - "It sounds like we want\_\_\_\_\_, is this correct?"
- Maintains team's worksheets, records, charts, action plans

## **TIMEKEEPER**

The Timekeeper's job is to keep track of the time as the team works on the task.

- Helps keep the team working to complete its task on time.
- Frequently reminds the team of time remaining.
  - "We have \_\_\_\_\_ more minutes to get this done."
  - "We have \_\_\_\_\_ things to do and \_\_\_\_\_ minutes to do it."
- Tells team members if discussion is not related to the task.

## **PRESENTER**

The Presenter's job is to report back to the class with the team's responses.

- Prepares information to be presented to the larger group.
- Checks out the accuracy of the information with team members.
  - "I am going to say.... Is this correct? Should I add anything else?"
- Makes a verbal presentation to the larger group by summarizing the results of the team's work.

## **BACKTRACKER or SUMMARIZER**

The Backtracker or Summarizer's job is to review the main points of the team's responses at the close of the meeting.

- Reviews main points at the close of meeting
  - "The information our team decided upon is..."
  - "The main ideas the team came up with are..."
- Begins meeting by summarizing key points of last meeting
  - "The key points from our last meeting are..."

## **Lost at Sea Activity Instructions**

### **Exercise 1: Lost at Sea (from MindTools.com)**

In this activity participants must pretend that they've been shipwrecked and are stranded in a lifeboat. Each team has a box of matches, and several items that they've salvaged from the sinking ship. Members must agree which items are most important for their survival.

### **Advice for the Facilitator**

The ideal is for teams to arrive at a consensus decision where everyone's opinion is heard. However, that doesn't always happen naturally: assertive people tend to get the most attention. Less forthright team members can often feel intimidated and don't always speak up, particularly when their ideas are different from those around them. If you see this happening use the **Step Ladder** approach to include all, but explain why you're doing this, so that people learn from it.

### **Step Ladder to gain group consensus**

**Step 1:** Give everyone enough time to think about what needs to be done and to form their own opinions on how to best accomplish the task or solve the problem.

**Step 2:** Form a core group of two members. Have them discuss the problem.

**Step 3:** Add a third group member to the core group. The third member presents ideas to the first two members BEFORE hearing the ideas that have already been discussed. After all, three members have presented their solutions and ideas, they discuss their options together.

**Step 4:** Repeat the same process by adding a fourth member, and so on, to the group. Allow time for discussion after each additional member has presented his or her ideas.

**Step 5:** Reach a final decision only after all members have been brought in and presented their ideas.

After everyone has finished the exercise, each group discusses their process. Example questions: what the differences between individual, team and official rankings was, and why. This will help them think about how teams arrive at decisions, which will make people think about the skills they must use in future, such as listening, discussing, and decision-making skills, as well as creativity skills for thinking "outside the box."

### **What You'll Need**

- Up to five people in each group.
- A "lost at sea" ranking chart for each team member. Use the Mind Tools worksheet.
- The items to be ranked are: a mosquito net, a can of petrol, a water container, a shaving mirror, a sextant, emergency rations, a sea chart, a floating seat or cushion, a rope, some chocolate bars, a waterproof sheet, a fishing rod, shark repellent, a bottle of rum, and a VHF radio.

### **Instructions**

1. Divide participants into their teams and provide everyone with a ranking sheet.
2. Ask team members to take 10 minutes on their own to rank the items in order of importance. They should do this in the second column of their sheet.
3. Give the teams a further 10 minutes to confer and decide on their group rankings. Once agreed, they should list them in the third column of their sheets.
4. Ask each group to compare their individual rankings with their collective ones and consider why any scores differ. Did anyone change their mind about their own rankings during the team discussions and why?
5. Now read out the "correct" order, classified by the experts at the US Coast Guard (from most to least important):
  - a) **Shaving mirror.** (One of your most powerful tools, because you can use it to signal your location by reflecting the sun.)
  - b) **Can of petrol.** (Again, potentially vital for signaling as petrol floats on water and can be lit by your matches.)
  - c) **Water container.** (Essential for collecting water to restore your lost fluids.)
  - d) **Emergency rations.** (Valuable for basic food intake.)
  - e) **Plastic sheet.** (Could be used for shelter, or to collect rainwater.)
  - f) **Chocolate bars.** (A handy food supplies.)
  - g) **Fishing rod.** (Potentially useful, but there is no guarantee that you're able to catch fish. Could also feasibly double as a tent pole.)
  - h) **Rope.** (Handy for tying equipment together, but not necessarily vital for survival.)
  - i) **Floating seat or cushion.** (Useful as a life preserver.)
  - j) **Shark repellent.** (Potentially important when in the water.)
  - k) **Bottle of rum.** (Could be useful as an antiseptic for treating injuries but will only dehydrate you if you drink it.)
  - l) **Radio.** (Chances are that you're out of range of any signal, anyway.)
  - m) **Sea chart.** (Worthless without navigational equipment.)
  - n) **Mosquito net.** (Assuming that you've been shipwrecked in the Atlantic, where there are no mosquitoes, this is pretty much useless.)
  - o) **Sextant.** (Impractical without relevant tables or a chronometer.)

**Lost at Sea Ranking Chart**

	Your ranking	Team ranking	Coast Guard ranking
Bottle of rum			
Can of petrol			
Chocolate bars			
Emergency rations			
Fishing rod			
Floating seat/cushion			
Mosquito net			
Plastic sheet			
Radio			
Rope			
Sea chart			
Sextant			
Shark repellent			
Shaving mirror			
Water container			

**Team Debriefing Questions**

1. What did you learn through this activity about the functioning of a team?

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2. Did team members have specific roles? If so, how were these roles determined?

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3. In general terms, how was communication used (e.g., positive, negative, neutral)? Give examples of words, phrases, or expressions used and/or heard.

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4. Given the team experience, what were your team's strengths and possible areas for improvement? How could you contribute better to your team's effectiveness?

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### Effective Teamwork Rubric

Evaluate how well your team worked together by circling the best descriptor for your team in each of the 4 categories. Add up your scores and record on the line above.

<b>Teamwork Questions</b>	<b>Not Effective Teamwork (0)</b>	<b>Somewhat Effective Teamwork (1)</b>	<b>Effective Teamwork We met our goal (2)</b>
<b>Did we Cooperate?</b>	<ol style="list-style-type: none"><li>1. No cooperation</li><li>2. Some team members did not want to work with others.</li><li>3. There was a lot of arguing.</li></ol>	<ol style="list-style-type: none"><li>1. Some people were cooperating, but others were not.</li><li>2. Procedures to get things done were not clear to all.</li><li>3. There were a few arguments.</li></ol>	<ol style="list-style-type: none"><li>1. Everyone cooperated.</li><li>2. Everyone listened to each other.</li><li>3. There was no arguing.</li><li>4. A person's role and responsibilities were known.</li></ol>
<b>Did we Communicate?</b>	<ol style="list-style-type: none"><li>1. Nobody talked nor seemed to listen to others if they talked.</li><li>2. No one knew what their role or responsibility was.</li><li>3. There was no method for making team decisions.</li></ol>	<ol style="list-style-type: none"><li>1. Some people discussed what we were to do.</li><li>2. Some people knew their role and responsibilities.</li><li>3. The method for making team decisions kept changing.</li></ol>	<ol style="list-style-type: none"><li>1. Everybody shared their ideas and listened to each other.</li><li>2. There was constant communication.</li><li>3. People knew their role and responsibilities.</li></ol>
<b>Did we concentrate?</b>	<ol style="list-style-type: none"><li>1. Some team members were doing other things and not focused on our task.</li></ol>	<ol style="list-style-type: none"><li>1. Sometimes people were working.</li></ol>	<ol style="list-style-type: none"><li>1. All team members:<ul style="list-style-type: none"><li>• paid attention</li><li>• were thinking</li><li>• were working</li></ul></li></ol>
<b>Were we Respectful?</b>	<ol style="list-style-type: none"><li>1. Some team members were not respectful to other's ideas.</li></ol>	<ol style="list-style-type: none"><li>1. Some team members need help giving and receiving feedback.</li></ol>	<ol style="list-style-type: none"><li>1. We listened to each other and worked on being positive with our comments to each other.</li></ol>

**Teacher Comments:**

### Lesson #7: Interpreting Graphs

#### Objectives

##### Students will be able to...

- Recognize the different types and components of graphs.
- Use various strategies in the interpretation of information presented visually.
- Use data analysis/statistics to generalize about occupational safety in differing fields.
- Recognize terms that are commonly used in the analysis of data and statistics.

#### Common Core Standards

Problem Solving Critical Thinking 5.1, 5.3 & 6.0

RSIT 11-12.2

RLST 11-12.2

Communications 2.1, 2.4

#### Materials

Interpreting Graphs Notes

Interpreting Graphs Worksheet

#### Lesson Sequence

- Review Interpreting graphs notes. Introduce graphs, their usefulness in conveying information, and the importance of being able to use them in the world or work. Introduce the components of a graph and the vocabulary needed in order to understand the purpose of the graphs. Answer any questions the students may have. (15-20 minutes)
- Divide students into 7 groups and assign a graph to each group from the interpreting graph notes. Each group will answer questions for their graph on the Interpreting Graphs Worksheet. Students will present information about their graph to the class. (30-35 minutes)

**Assessment**

Students should understand their graph while presenting to the class. Students should be able to answer any questions asked regarding their graph. Use student's responses to the interpreting graph worksheet to see if they have an understanding.

**Accommodations/Modifications**

Check for understanding  
Highlight important information for students within their notes packet

## Interpreting Graphs Notes

Graphs are picture representatives for 1 or more sets of information and how these visually relate to one another. There are many types of charts and graphs of varied complexity. For almost any numerical data set, there is a graph type that is appropriate for representing it. Graphs help you present data in a meaningful way. It is one thing to see a data listed on a page and it's another to understand the details and trends of the data. A lot of the time sets of data involve values in the millions or billions. This is far too many to print out in a magazine or journal article. Using a graph can help depict data and a well-made graph conveys information in a more interesting way.

### Parts of a Graph (Vocabulary)

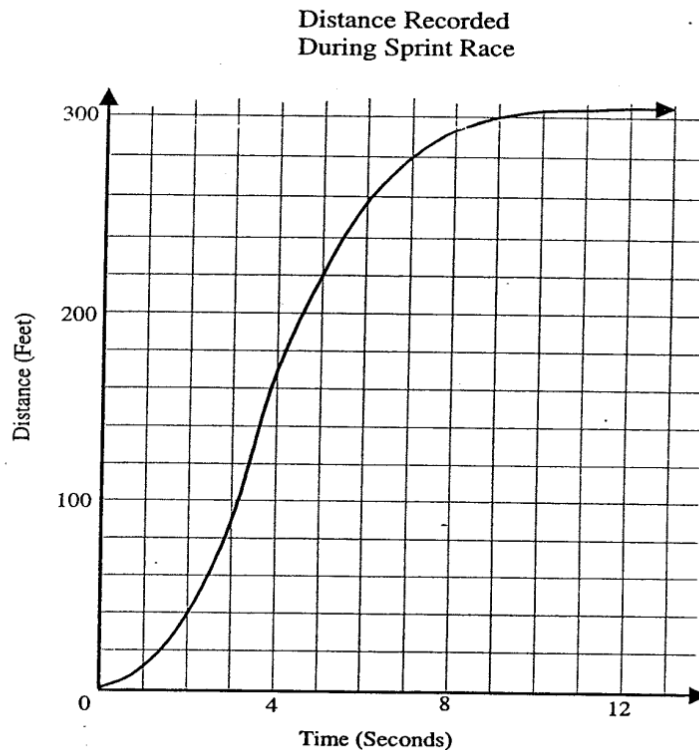
<b>title</b>	The title of the line graph tells us what the graph is about.
<b>labels</b>	<p>The horizontal label across the bottom and the vertical label along the side tells us what kinds of facts are listed.</p> <ul style="list-style-type: none"><li>• x-axis - the x-axis runs horizontally (flat), and has numbers representing different time periods or names of things being compared.</li><li>• y-axis - the y-axis runs vertically (up and down) and has numbers for what is being measured. The y-axis usually starts counting at 0 and can be divided into as many equal parts as you want to.</li></ul>
<b>scales</b>	The horizontal scale across the bottom and the vertical scale along the side tell us how much or how many.
<b>points</b>	The points or dots on the graph show us the facts.
<b>lines</b>	The lines connecting the points give estimates of the values between the points.

## **Types of Graphs**

### Line Graph:

A line graph is used to display comparisons between 2 variables. Line graphs involve an x-axis horizontally and a y-axis vertically on a grid. Dot-connected and grid-plotted lines are what comprise a line graph. These lines monitor and compare various data sets. Usually, the x-axis represents time measurements while the y-axis is a representative of measure or percentage of quantity. For this reason, a line graph is used often for tracking variables of one or more subjects in time.

### **Graph 1: Line Graph**



Line graphs are very precise; they also are good at showing trends or patterns. What do you know about running a sprint? At the beginning, runners have a burst of speed and cover a lot of distance, and towards the end of the race, the speed tapers off. So, runners don't travel as far in one second at the end of the race as they did at the beginning.

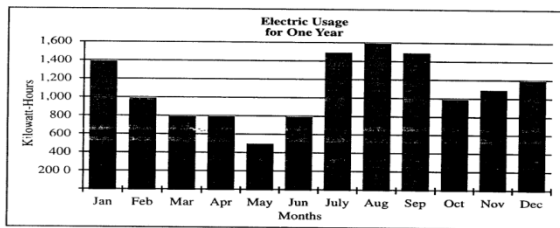
**Does the graph illustrate that?**

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## Bar graph:

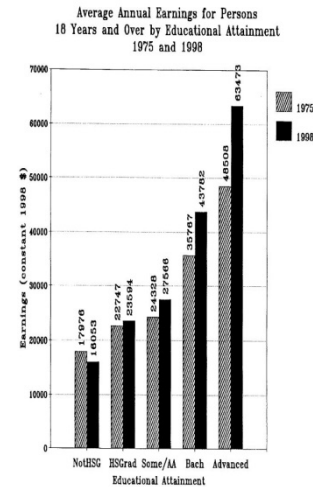
Use bars to show data. A bar graph can be horizontal or vertical. Each axis is labeled with either a categorical or a numerical variable. The bars' heights are scaled according to their values and the bars can be compared to each other.

**Graph 2: Vertical Bar Graph**

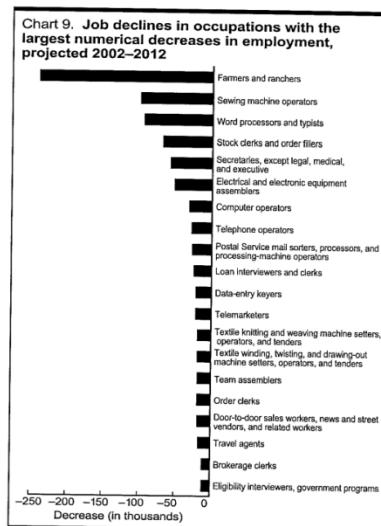
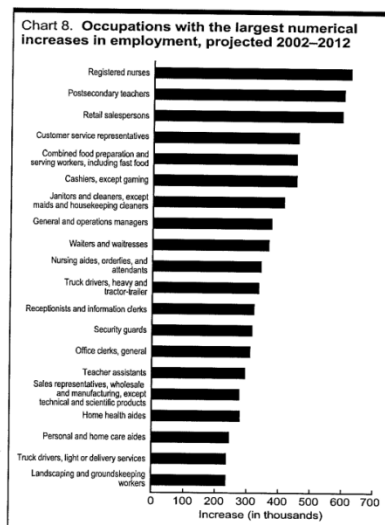


In bar **graph 2** data is arranged in columns. Bar graphs are used to compare several values at different times, among different groups of people.

**Graph 5: Double**



**Graphs 3 and 4: Horizontal Bar Graphs**



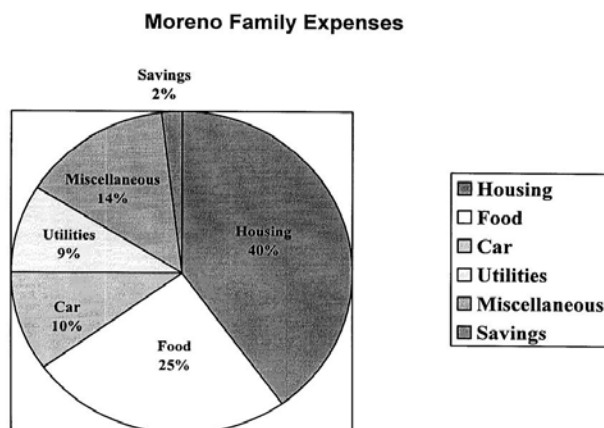
In a double line graph (**graph 5**), two sets of data are represented at the same time. This may seem to make things a bit more complicated to read, but a double line graph offers the advantage of a quick clear visual comparison of 2 or more items that gives you a sense of which is greater or less.

**Graphs 3 and 4** are a more complicated graph. In this case the bars are arranged in order of greatest to least projected growth, by going to the left of zero, as on a number line.

## BUILDING INDUSTRY TECHNOLOGY ACADEMY: YEAR ONE CURRICULUM

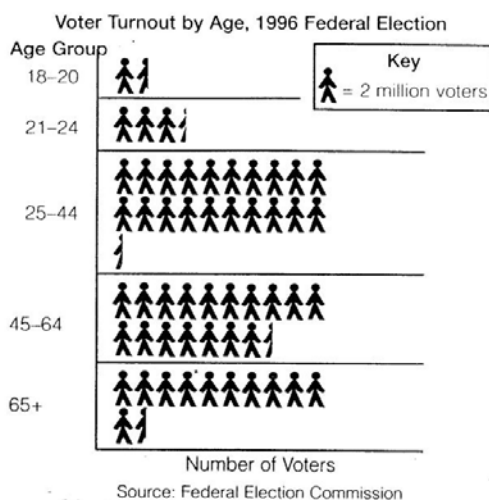
### Circle graph, pie charts:

Sometimes called a circle graph, pie charts represent the parts of a whole. Each 'section' or 'slice of the pie is a data percentage. From biggest to smallest, segments are arranged in a clockwise formation. This way, the pie chart features easy-to-compare subjects presented in a neat, easy-to-understand way.



### Pictograms/Pictograph:

A pictogram is a special type of bar graph. Instead of using an axis with numbers, it uses pictures to represent several items. For example, you could use a pictogram for the data above about ages, with an image of a person to show the number of people in each category.



## Interpreting graphs worksheet

Directions: For each of the graphs assigned to your group, write your answers in the spaces provided.

1. What type of graph is it?

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2. What is the title of the graph?

---

3. What information is presented on the horizontal axis?

---

4. What units are used (for example; feet, seconds, degrees-Fahrenheit, price in dollars, months, millions of people, etc.)?

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5. What information is presented on the vertical axis?

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6. What units are used?

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7. What is the scale on each axis (what increments are indicated on the horizontal and vertical axes)?

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8. If there is a legend or key, what does it tell you?

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9. In your own words, what information is being presented?

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10. In your own words, what information is being compared?

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11. Do you see any trends?

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12. As you move from left to right, are there any patterns that emerge?

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13. In your own words, summarize the information presented in the graph. (Examples: This graph shows that over 3 decades, sales increased dramatically from the first to the second decade but dropped again during the third decade.

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### Lesson #8: Understanding Graphs Assessment

#### Objectives

**Students will be able to...**

- Demonstrate an understanding of how to interpret statistics and graphs.

#### Common Core Standards

5.0 Problem Solving Critical Thinking 5.1, 5.3 & 6.0  
RSIT 11-12.2  
RLST 11-12.2

#### Materials

Understanding Graphs Assessment

#### Lesson Sequence

- Review understanding graphs vocabulary and important concepts. Answer any questions the students may have.
- Pass out the understanding graphs assessment.

#### Assessment

Review student answers on the understanding graphs assessment and review any questions students missed/any concepts students do still not understand.

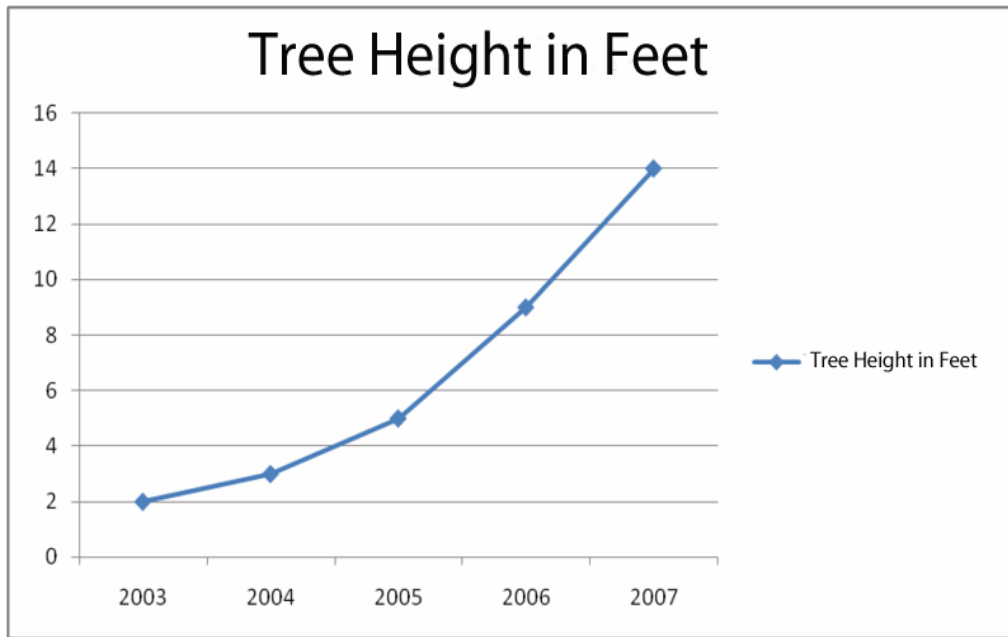
#### Accommodations/Modifications

Students may need assessment read aloud to them  
Provide answer choices  
Use class notes as a tool

### Understanding Graphs Final Assessment

Directions: Using the graph shown, write your answers to the questions in the spaces provided.

**Graph 1: Line Graph**



1. What is the graph about?

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2. What information is presented on the vertical (y) axis?

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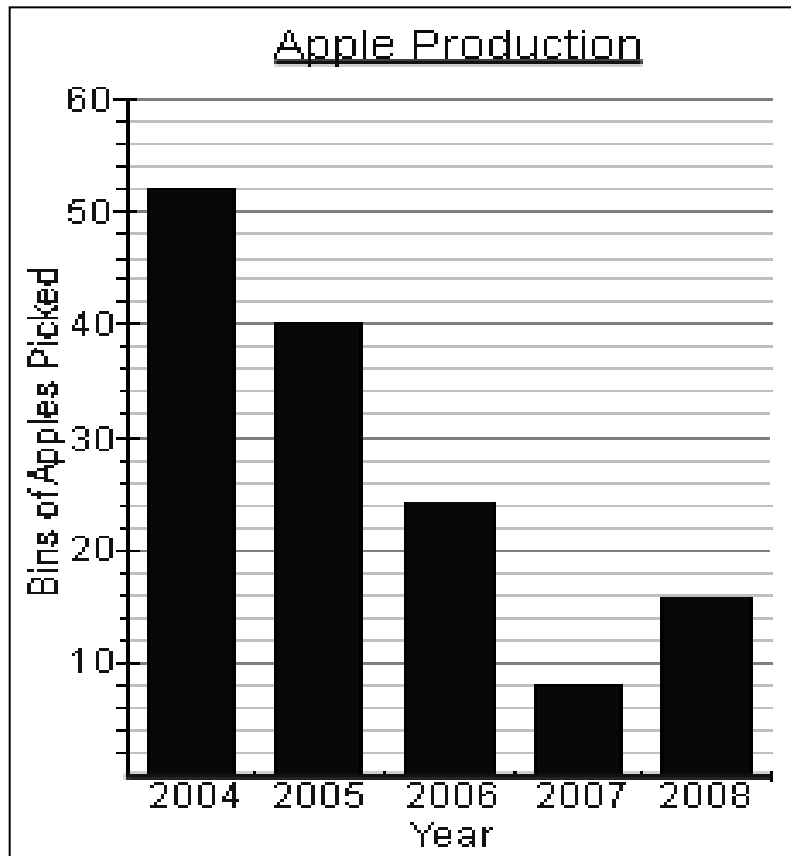
3. What information is presented on the horizontal (x) axis?

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4. What patterns do you see?

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Graph 2: Vertical Bar Graph



5. What is the graph about?

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6. What information is presented on the vertical (y) axis?

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7. What information is presented on the horizontal (x) axis?

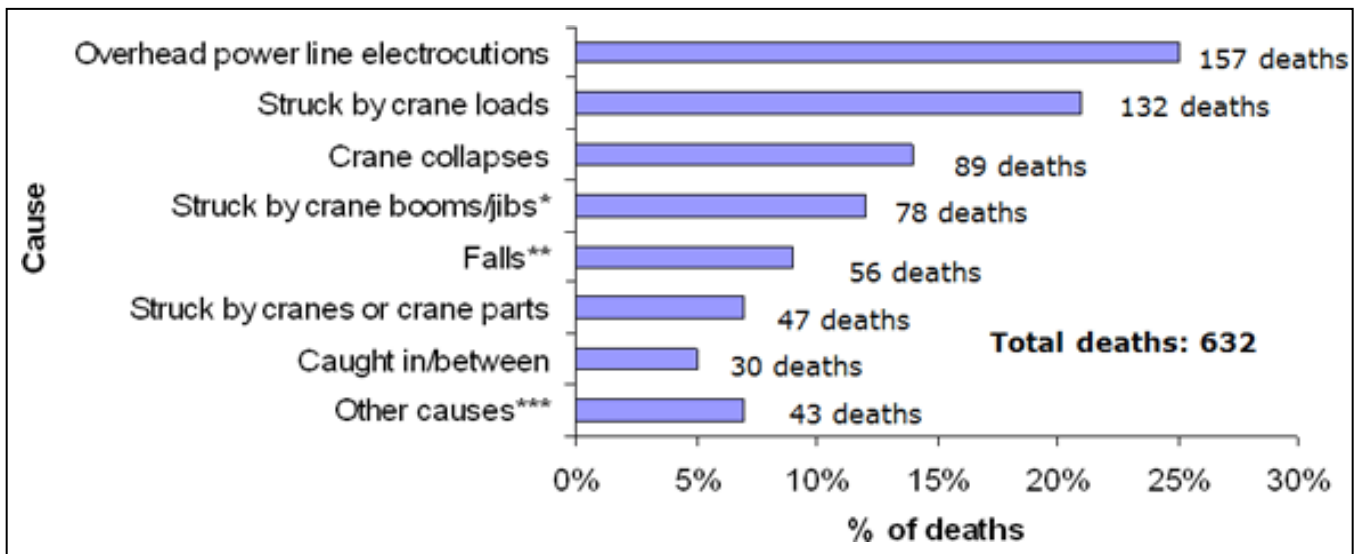
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8. What patterns do you see?

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**Graph 3: Horizontal Bar Graph**

Understanding Crane Accidents



9. What is the graph about?

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10. What information is presented on the vertical (y) axis?

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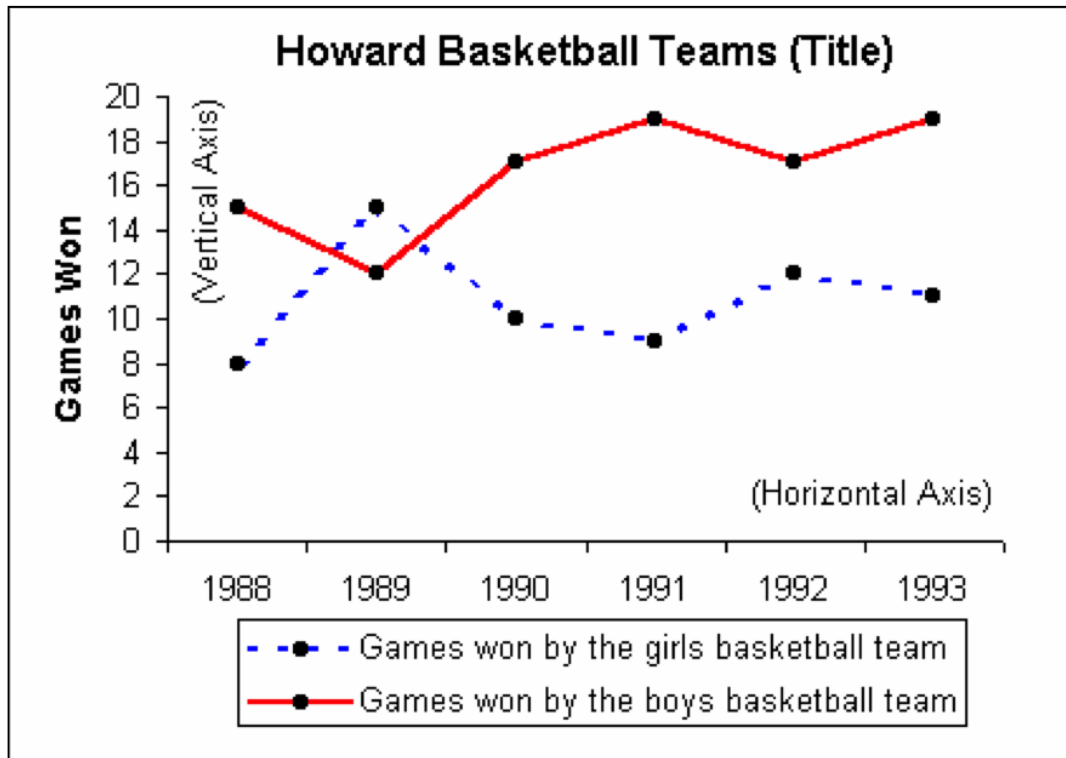
11. What information is presented on the horizontal (x) axis?

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12. What patterns do you see?

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Graph 4: Double Line Graph



13. What is the graph about?

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14. What information is presented on the vertical (y) axis?

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15. What information is presented on the horizontal (x) axis?

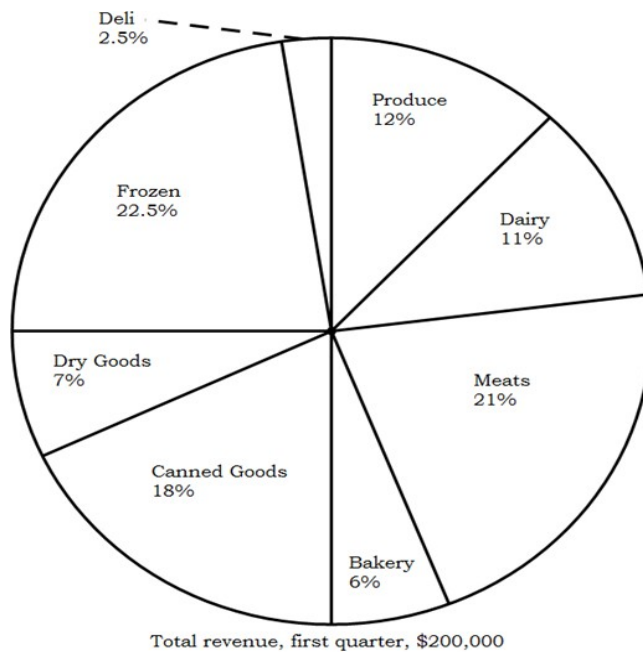
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16. What patterns do you see?

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**Graph 5: Circle/Pie Graph**

**Fast Lane Grocery Store Profits-Quarterly**



17. What is the graph about?

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18. What information is presented on the vertical (y) axis?

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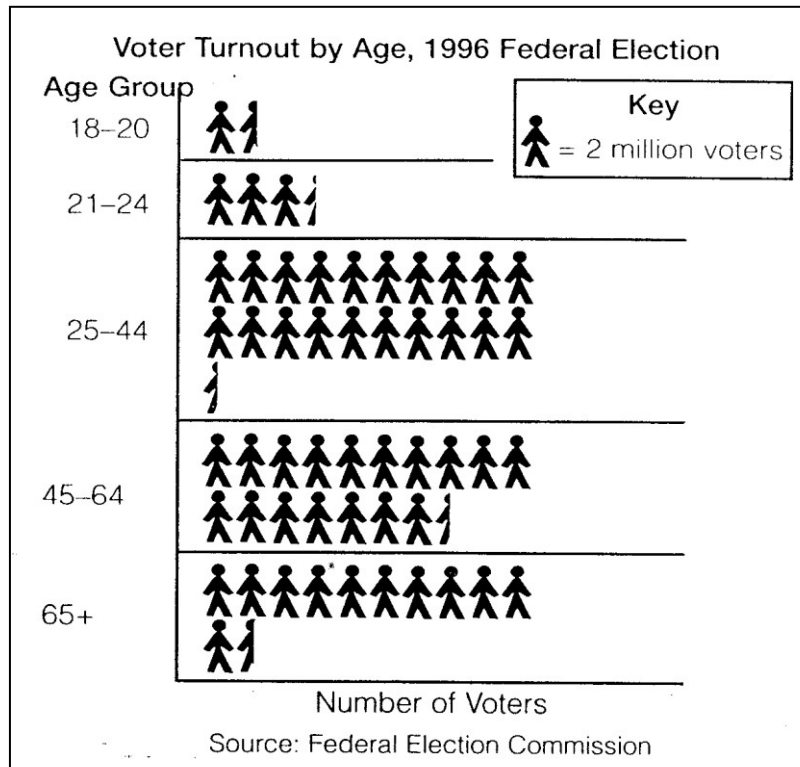
19. What information is presented on the horizontal (x) axis?

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20. What patterns do you see?

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**Graph 6: Pictograph**



17. What is the graph about?

18. What information is presented on the vertical (y) axis?

19. What information is presented on the horizontal (x) axis?

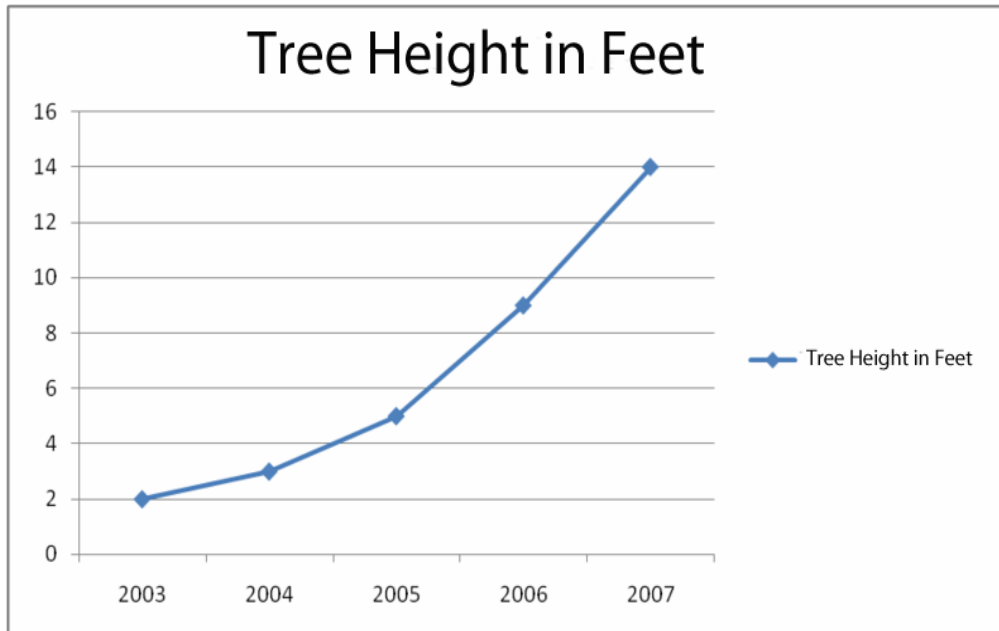
20. What patterns do you see?



### **Understanding Graphs Final Assessment** -Answer Key

Directions: Using the graph shown, write your answers to the questions in the spaces

provided. Graph 1: Line Graph



1. What is the graph about?

Tree height in feet, between 2003 and 2007 or how tall a tree has grown

2. What information is presented on the vertical (y) axis?

The scale used to measure the of tree in Feet

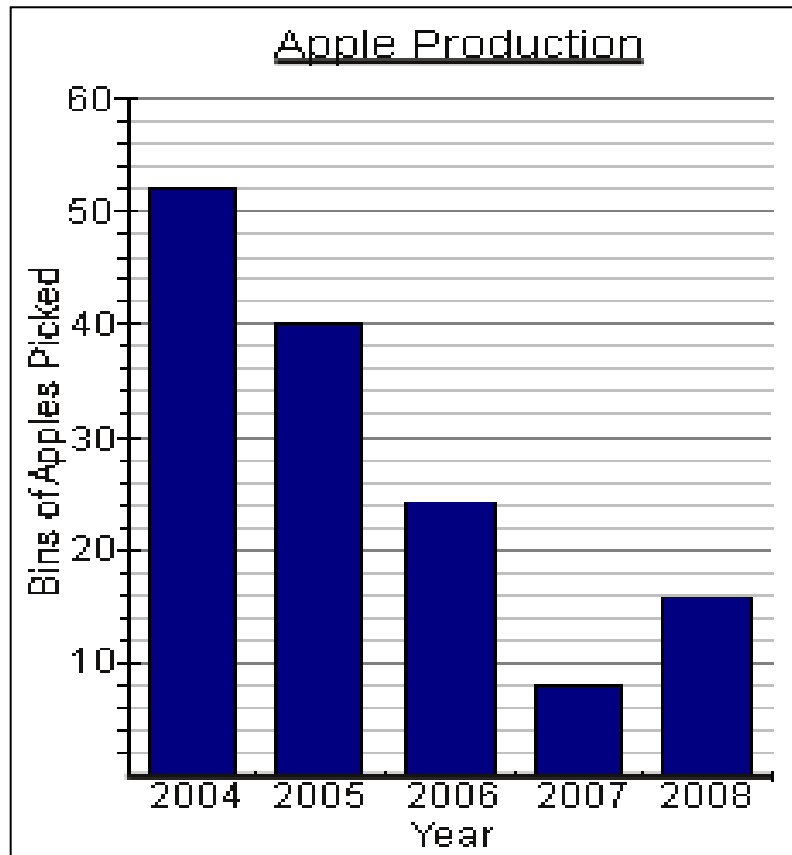
3. What information is presented on the horizontal (x) axis?

The years that were used to chart the height.

4. What patterns do you see?

The tree really started to grow after 2005

**Graph 2: Vertical Bar Graph**



5. What is the graph about?

Apple Production

6. What information is presented on the vertical (y) axis?

The number of bins of apples picked.

7. What information is presented on the horizontal (x) axis?

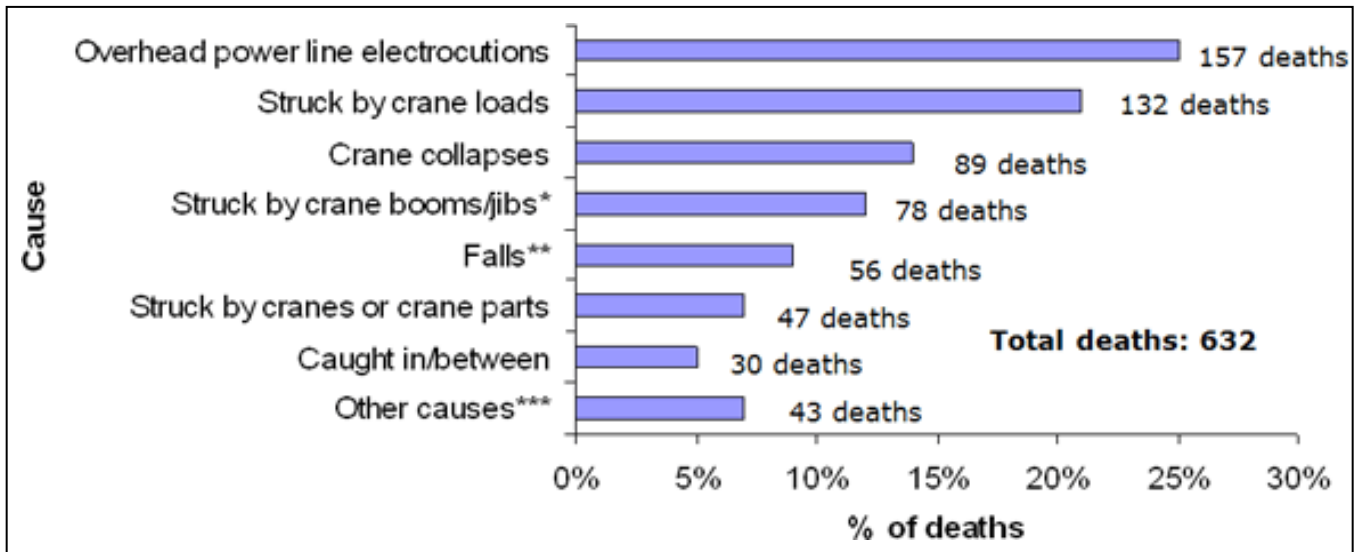
The years in which the bins were counted.

8. What patterns do you see?

The most apples were picked in 2004 and then started to decrease.

**Graph 3: Horizontal Bar Graph**

**Understanding Crane Accidents**



9. What is the graph about?

Looking at types of crane accidents.

10. What information is presented on the vertical (y) axis?

The type of accidents

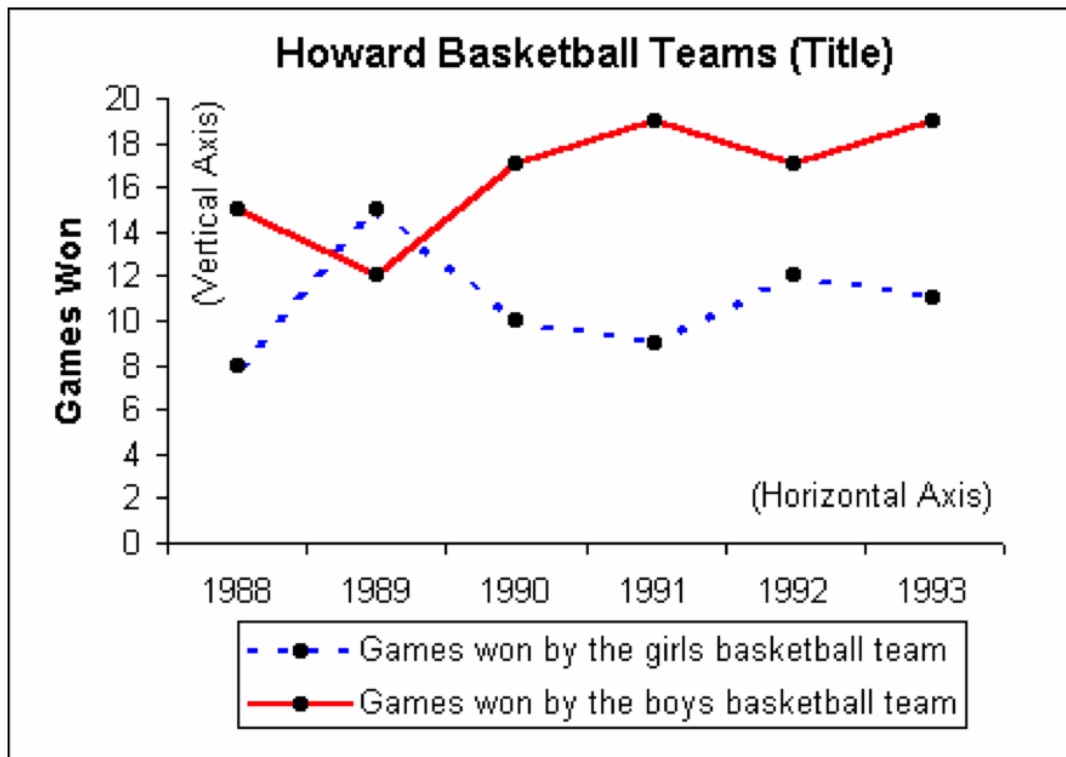
11. What information is presented on the horizontal (x) axis?

How many of each type of accident in a percentage that led to death.

12. What patterns do you see?

The least amount of accidents causing death were caught in between accidents, and the largest amount of accidents were electrocutions from hitting overhead power lines.

Graph 4: Double Line Graph



13. What is the graph about?

Boys' and girls' basketball teams from Howard and comparing how many titles they have won

14. What information is presented on the vertical (y) axis?

The number of games won.

15. What information is presented on the horizontal (x) axis?

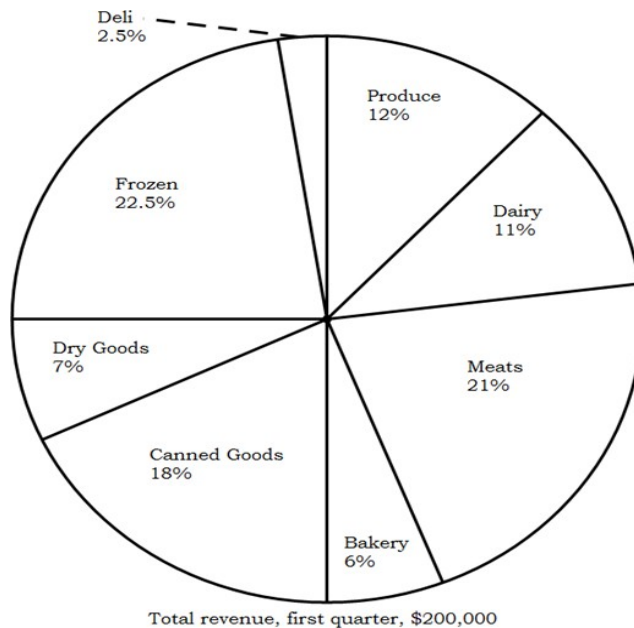
The years that the games were played in.

16. What patterns do you see?

The boys' team won more titles and more games. The girls won the most games in 1989.

**Graph 5: Circle/Pie Graph**

**Fast Lane Grocery Store Profits-Quarterly**



17. What is the graph about?

The Fast Lane Grocery Store's profit.

18. What percent of total profit is from the sale of Produce?

12% of the profit is from the sale of Produce.

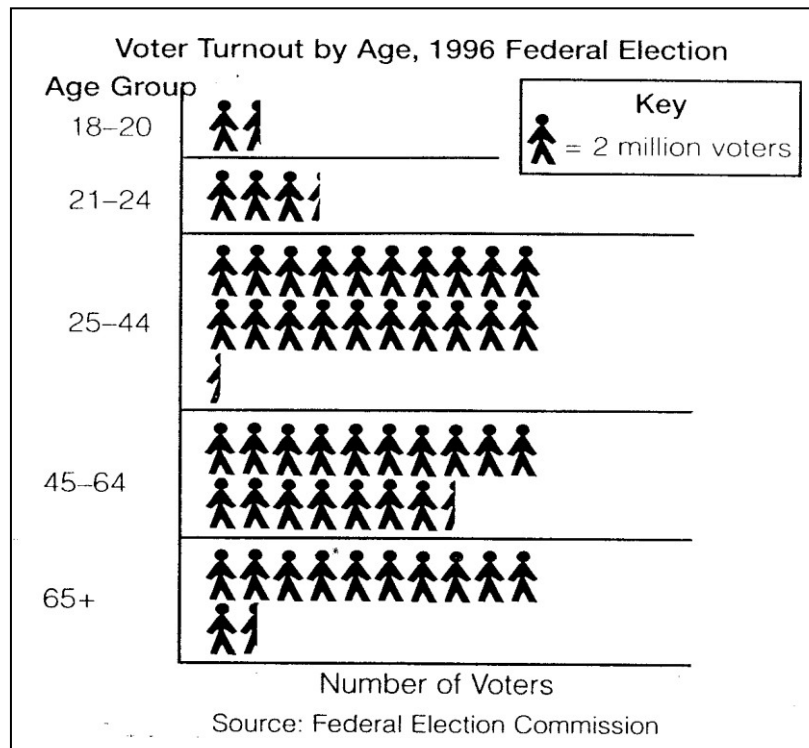
19. What area of sales makes the most money for the store?

The Frozen Foods sales make the most money.

20. What patterns do you see to help the store owner raise his revenue/profit?

The Deli and Bakery make the least amount so I would improve those areas. Or accept any other area if the student has a reason.

**Graph 6: Pictograph**



21. What is the table about?

Voter turnout by age in the 1996 Federal Election.

22. What information is presented on the vertical (y) axis?

The age group of the voters

23. What information is presented on the horizontal (x) axis?

The number of voters.

24. What do you notice about the figures?

Some are part of a whole to represent a portion of the 2 million voters.