



Alternative Method of Instruction

Middle School – 8th Grade

Day 1

Name: _____

Name: _____

Organizing Data

How is data displayed to make it meaningful?

Why?

Scientists rely on data to describe nature and uncover relationships. The raw data—measurements taken in the lab—are most useful when they are organized in a way that makes the relationships clear. In this activity you will explore two common ways that scientists organize data to help in analysis.

Model 1 – Copper Samples

Group Number	Volume (cm ³)	Mass (g)	Substance
1	2.0	17.92	Copper
2	6.0	50.89	Copper
3	10.0	93.45	Copper
4	8.0	79.30	Copper
5	14.0	125.44	Copper
6	4.0	39.80	Copper
7	12.0	103.85	Copper

Room Temperature: 21.7 °C

1. What substance were the students working with to obtain the data in Model 1?
2. What variables did the students measure to produce the data in Model 1?
3. Briefly describe an experiment that the class might have done on the day that the data in Model 1 was collected. Discuss your answer with your group members to be sure there is consensus.
4. Consider the data in Model 1.
 - a. Which variable was the **independent variable** in the experiment, and why do you think it was the independent variable?
 - b. Which variable was the **dependent variable** in the experiment, and why do you think it was the dependent variable?
 - c. List two **controlled variables** in the experiment?



5. Consider the data in Model 1.
- How is the data organized?
 - Is the table in Model 1 organized in a way that helps determine a relationship between the independent and dependent variables in the experiment? Explain.
6. Propose a better way to organize the data in Model 1, and transcribe the data into the table below.

Group Number	Volume (cm ³)	Mass (g)	Substance

7. The data table in Question 6 should allow you to state a relationship between the variables involved in the class's experiment. Complete the following statement:

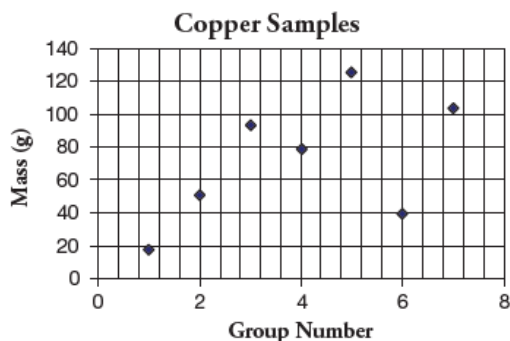
As the volume of copper increases, the mass of copper _____.

Read This!

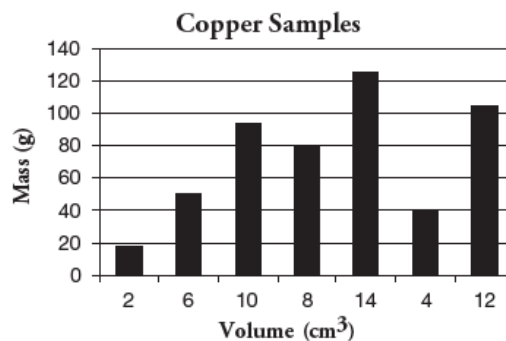
When scientists design an experiment they are usually looking for a cause-and-effect relationship between the independent variable and the dependent variable. Therefore, organizing the data by the independent variable is the easiest way to reveal a relationship. When the data is not organized, the relationships are not apparent.

Model 2 – Graphs for Copper Data

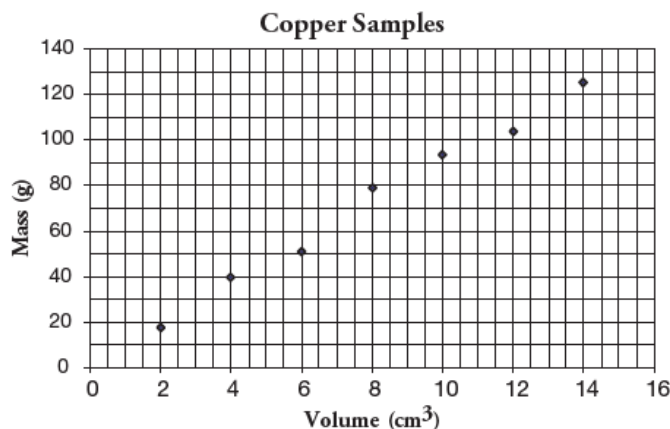
Graph A



Graph B



Graph C



9. One of the data points in graph B indicates that a volume of 8 cm³ has a mass of 80 g. Which other graph in Model 2 shows this same data?



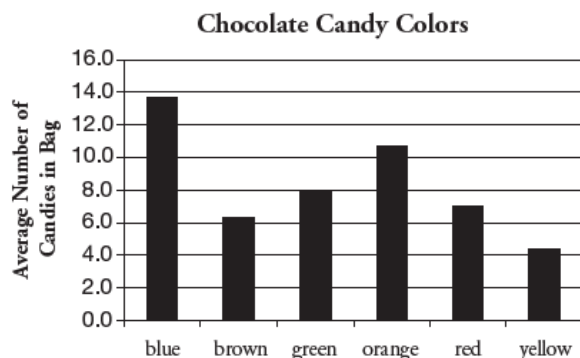
10. Of the three graphs in Model 2, which illustrates the relationship between the variables that you stated in Question 7 most clearly?

Read This!

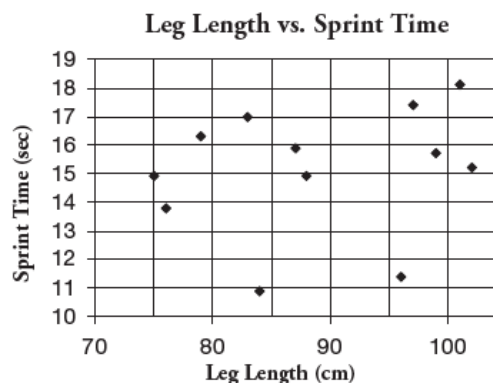
Scientists use graphs to clearly illustrate whether or not there is a relationship between variables. In most cases a scatter plot is used. Bar graphs are sometimes used if the independent variable is limited to specific numeric values (where the values in-between are not possible) or is non-numeric. A special type of bar graph called a histogram is used in cases where the scientist wants to show how often something happens.

Model 3 – More Examples of Graphs

Graph D



Graph E



11. Identify the independent variable and dependent variable for each of the graphs in Model 3.

	Graph D	Graph E
Independent Variable		
Dependent Variable		

12. Match the experimental questions below to the appropriate graph from Model 3.

a. “Is the number of candies in a bag of chocolates dependent on the color of the candy?”

Graph _____

b. “Does the length of a person’s leg affect the time it takes them to sprint 60 yards?”

Graph _____

13. Why was the data for Graph D plotted in a bar graph?



14. Using the graphs in Model 2 and Model 3 as examples of proper graphs, identify the axis (x or y) where you would usually plot the independent variable.

15. For each of the following experiments, choose “scatter plot” or “bar graph” as the most appropriate way to display the data. Justify your answer.

- a. Students heated oil on a hot plate at the #4 setting for different amounts of time. They wanted to answer the question “How long do you need to heat an oil bath to reach a given temperature?”

Volume Oil (mL)	Hot Plate Setting	Initial Temp. of Oil (°C)	Time Heated (min)	Final Temp. of Oil (°C)
250	#4	21	0	21
250	#4	21	5	30
250	#4	21	10	38
250	#4	21	15	47
250	#4	21	20	57

- b. Students measured the height of each student in class. They wanted to answer the question “What is the most common height among 10th grade students?”

Height Range	Number of Students
under 4' 0"	1
4' 1" to 4' 6"	3
4' 7" to 5' 0"	5
5' 1" to 5' 6"	9
5' 7" to 6' 0"	3
over 6' 0"	1

- c. The Fish and Wildlife agency measured the size of Pacific salmon for 1 year and recorded the average weight for each species.

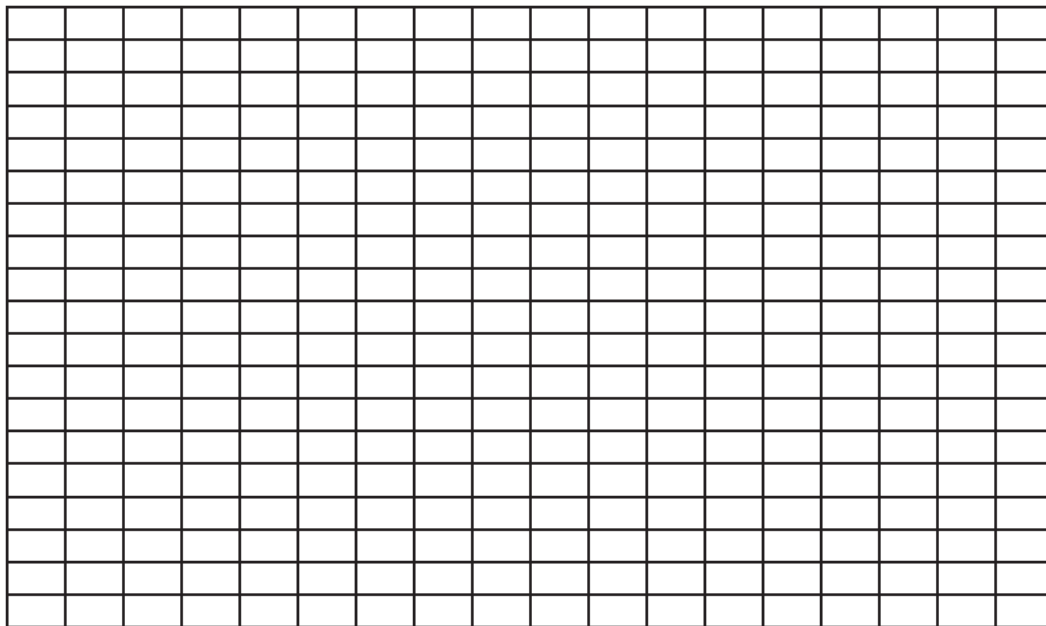
Salmon Species	Average Weight (lbs)
King	15
Sockeye	8
Silver	12
Chum	15
Humpback	5

- d. The National Oceanic and Atmospheric Administration measured the pressure of the atmosphere at various altitudes.

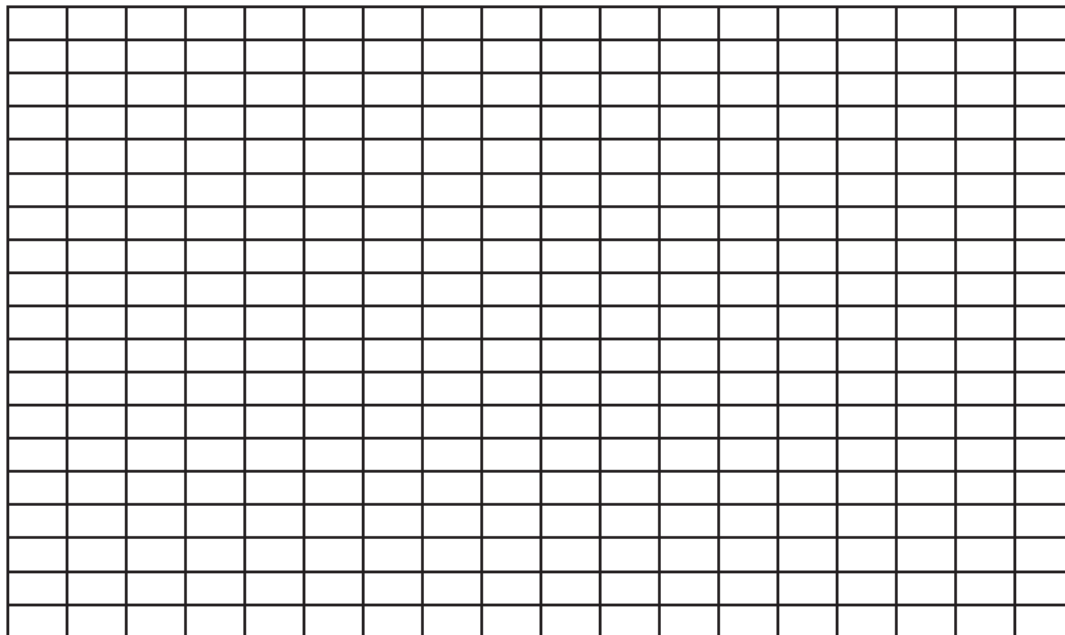
Altitude (m)	Atmos. Pressure (atm)	Altitude (m)	Atmos. Pressure (atm)
0	1.000	16,132	0.100
2750	0.750	30,901	0.010
5486	0.500	48,467	0.001
8376	0.333		



16. Choose one of the data sets in Question 15 that you selected as appropriate for a scatter plot and graph it here. Remember to label the axes.



17. Choose one of the data sets in Question 15 that you selected as appropriate for a bar graph and graph it here. Remember to label the axes.

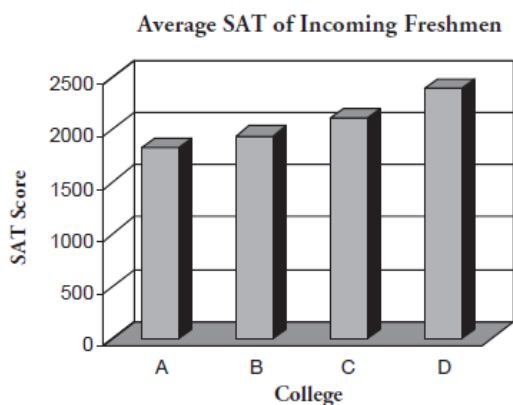


18. Send one representative of your group to another table to share the two graphs constructed in Questions 16 and 17. Does the other group agree that your graphs are properly constructed? If not, what adjustments do you think need to be made?

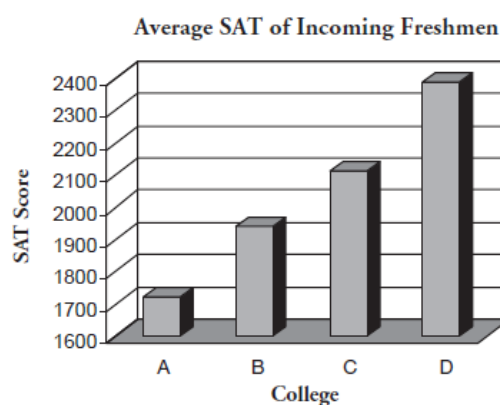
Extension Questions

Model 4 – SAT Scores

Graph F



Graph G



19. Describe the independent and dependent variables for the data that is displayed in Graphs F and G in Model 4.
20. When you look at Graph F, what message is communicated by the relative lengths of the bars to prospective students about College D's average SAT scores compared to the other three schools?
21. When you look at Graph G, what message is communicated by the relative lengths of the bars to prospective students about College D's average SAT scores compared to the other three schools?
22. For each of the graphs in Model 4, estimate the average score for each college represented by the height of the bar. Is the data being displayed in the two graphs the same or different? Support your answer with evidence from the graph.
23. A student takes a quick look at Graph G and says "Based on the size of these bars, it looks to me as though College D had entering freshman with SAT scores nearly four times higher than College A." Explain to this student what mistake he has made in processing the information presented in Graph G.

SOCIAL STUDIES – 8TH GRADE

Name: _____

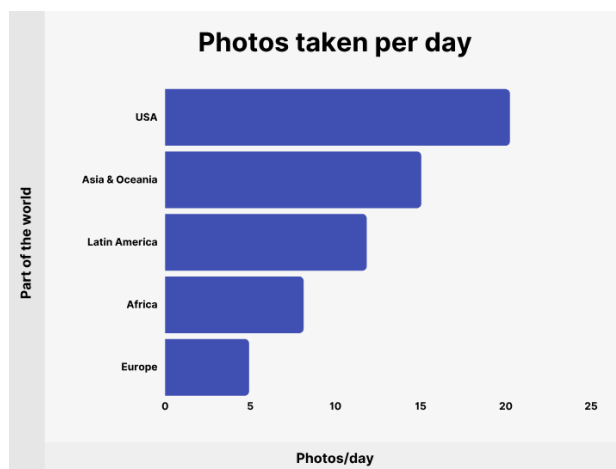
Lesson 1

Subject: Exploring Historical Sources: Paintings vs. Photography

Objective: The objective of this lesson is to help students understand the differences between paintings and photography as historical sources and to critically evaluate their dependability in representing historical events and people in the context of U.S. History.

Exploring Historical Sources: Paintings vs. Photography

In order to learn about the past, we often reference primary sources including images like historical paintings or photographs in our history books and online. These visual sources allow us to understand history and how they provide valuable insights into the past. Photography has only been in existence since 1826, and since then, 12.6 trillion photos have been taken. The average person in the US takes 20.2 photographs each day.



Knowing of the widespread use of photography today, and the short time that it has been in existence, what did we use before this, and how dependable was it? Before photography was invented, people used paintings to record history and preserve significant events. Paintings served as valuable visual records, capturing moments in time with remarkable detail and artistic expression.

Artists would meticulously depict historical figures, battles, celebrations, and everyday life, providing a glimpse into the past. These paintings were not only aesthetically

pleasing but also played a crucial role in educating and informing future generations about their heritage and the events that shaped their society. While photography has now taken over as the primary means of documenting history, the legacy of historical paintings remains as a testament to the artistic and historical significance they held in preserving our shared human story. Artists would attempt to record these events with accuracy, however due to the media used and the setting, they may not always have time to create the works.

This means that at times, these images may not always be accurate, and can even be created in a way to tell a story that differs from the true story. Paintings can focus on artistic interpretation, might contain biases, emotions, and symbolism, often depict important moments or figures with an artist's perspective. While paintings might convey emotions and interpretations, photographs can capture real moments and serve as valuable primary sources. Photography often captures real moments, candid shots of events and people, can be more objective, but still subject to the photographer's viewpoint or editing to manipulate the true image. Each have characteristics and potential strengths and limitations of each medium for portraying historical events and people.

How did paintings serve as historical records before photography, and how might their creators' perspectives and biases have influenced the way events and individuals were depicted?

Look at the images below and answer the following questions.



The Boston Massacre (1770) as depicted in a colored engraving by Paul Revere.

The Metropolitan Museum of Art, New York, gift of Mrs. Russell Sage, 1910 (accession no. 10.125.103); www.metmuseum.org



1. Emotional Impact

Which medium, a painting or a photograph, do you feel has a stronger emotional impact when depicting a historical event? Please explain the reasons behind your choice and how it affects your perception of the event.

2. Artistic Interpretation

Consider the artistic interpretation of both a painting and a photo – a painting allows the artist to use their imagination and creativity, while a photograph captures a moment as it is. Which approach do you believe better conveys the truth of a historical event, and why?

3. Historical Accuracy

When comparing a painting and a photograph of the same historical event, which medium, photo or painting do you think provides a more accurate

representation? Include any potential biases, alterations, or enhancements that might be present in either form and how they impact the historical authenticity.

4. Longevity and Preservation

In terms of preserving and passing down historical events to future generations, which medium, a painting or a photograph, do you think is more durable and likely to withstand the test of time? Explain your reasoning and consider factors like deterioration, storage, and accessibility.

Name: _____

8th Grade ELA AMI Day #1

Assignment

Directions: Read the following article about goal-setting. Then complete the S.M.A.R.T. goal worksheet and create your own goal to work on for this week.

The Importance of Goal-Setting for Teens

Boys & Girls Clubs of America

Goals give us something to work toward, a purpose to keep us motivated, and – with a little luck and a lot of hard work – something to celebrate.

Learning how to set goals is a vital skill for young people. After all, it's hard to get somewhere without knowing the destination you're heading to. Goals help teens focus on the journey to whatever they want to achieve, helping them to make plans, use their time and resources wisely, and identify the places where they may need some help.

Why is it Important for Teens to have Goals?

For teens, learning how to set goals has many benefits, such as:

- achieving the desired end result (the ultimate goal of any goal!)
- increasing self-confidence throughout the process
- understanding and developing their work ethic
- learning what works best to motivate them
- building their perseverance when things don't go as planned
- learning when to ask for help or support

Setting goals helps teens put action behind their ideas. These skills will serve them well personally, in school, and in the workforce.

How to Set a Goal: What Are SMART Goals?

Coming up with a goal is easy, but creating an action plan to reach it can be challenging. SMART goals are a way to write goal statements that include the actual steps that you need to take to achieve the goal. "SMART" is an acronym to help guide the goal-setting process. (And the good news is people of all ages can use SMART goals!)

Goals should be:

- **Specific:** The goal does not need to be broad – it needs to be specific enough so that teens can focus their efforts and clearly define what they are going to do.
- **Measurable:** The goal should be measurable. When they can measure a goal, they see changes occur. Youth will also be able to stay on track and have better success.
- **Attainable:** The goal should be attainable. If they set a goal that is too far out of their reach, then they will not commit to it for long. Attainable goals help develop attitudes, abilities and skills if they are important.
- **Realistic:** The goal should be realistic. Set the bar high enough for a satisfying achievement. It must require some effort.
- **Time-bound:** The goal should be achievable in a reasonable amount of time. Short-term goals can be broken down into actions to achieve over a short period of time. Long-term goals can be broken into time-based short-term goals over a longer period.

When thinking of the goal they want to achieve, teens should check that it's a SMART goal, meeting the criteria above. Then, it's time to consider how they will measure the goal and within what time frame. Goals help teens make a plan and go after it, building skills that will last a lifetime.

How to Goal-Set:

Ready, set, goal! Now that you know about SMART goals and the benefits of goal-setting for teens, here are five ways to support teens in their goal-setting efforts:

Setting Short-Term & Long-Term Goals – Goal Ideas for Teens:

Examples of short-term goals for students might include:

- Start and maintain a new habit, such as exercising or writing in a journal.
- Create a morning and/or evening routine that sets you up for success.
- Open a savings account.
- Clean and organize your spaces.
- Find a mentor who can help connect you with opportunities.
- Study to increase your score on a test or subject.
- Read a certain number of books that month and/or year.
- Volunteer for a day at a cause in your school or community.
- Create a resume.
- Try a new skill, sport, or hobby and see if it's something you'd like to pursue.
- Drink more water each day.
- Limit social media time daily to a certain amount.
- Begin a gratitude journal.
- Meditate daily for a certain amount of time.

Examples of long-term goals for students might include:

- Work toward graduating from high school on time.
- Commit to a long-term project such as planning a community/team event or starting a new hobby or initiative, like starting a podcast.
- Study for and take a driving exam to earn a license.
- Learn a new language.
- Join, start, or take on a leadership role in a club or extracurricular activity.
- To explore future careers, take on an internship, part-time job, or job-shadowing opportunity.
- Apply to college and/or create a plan for life after high school graduation.

The Importance of Goal-Setting for Teens. (2023). Retrieved 24 July 2023, from <https://www.bgca.org/news-stories/2022/January/the-importance-of-goal-setting-for-teens>

Directions: Think about a S.M.A.R.T. goal you can set for yourself and work toward over the following week. Fill out the following S.M.A.R.T GOAL ACCOUNTABILITY SHEET for your goal.

S.M.A.R.T. GOAL ACCOUNTABILITY SHEET

Crafting S.M.A.R.T. Goals are designed to help you identify if what you want to achieve is realistic and determine a deadline. When writing S.M.A.R.T. Goals use concise language, but include relevant information. These are designed to help you succeed, so be positive when answering the questions.

INITIAL

Write the goal you have in mind

GOAL**S****SPECIFIC**

What do you want to accomplish? Who needs to be included? When do you want to do this? Why is this a goal?

M**MEASURABLE**

How can you measure progress and know if you've successfully met your goal?

A**ACHIEVABLE**

Is this goal achievable and attainable? Is the goal specific and small enough to achieve success in the amount of time you have set for yourself to achieve it?

R**RELEVANT**

Why am I setting this goal now? Is it aligned with overall objectives?

T

TIME-BOUND

What's the deadline and is it realistic?

SMART

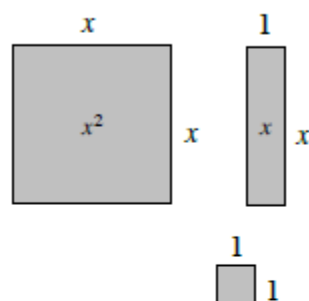
GOAL

Review what you have written, and craft a new goal statement based on what the answers to the questions above have revealed

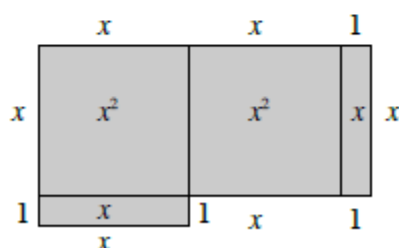
Name: _____

ALGEBRA TILES AND PERIMETER

Algebraic expressions can be represented by the perimeters of algebra tiles (rectangles and squares) and combinations of algebra tiles. The dimensions of each tile are shown along its sides and the tile is named by its area as shown on the tile itself in the figures at right. When using the tiles, perimeter is the distance around the exterior of a figure. For additional information, see the Math Notes box in Lesson 6.2.4 of the *Core Connections, Course 1* text.

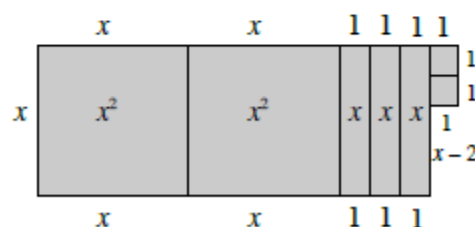


Example 1



$$P = 6x + 4 \text{ units}$$

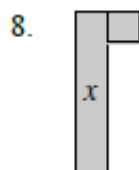
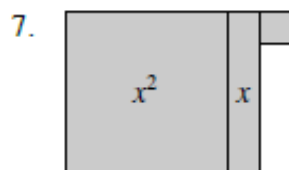
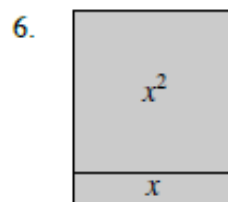
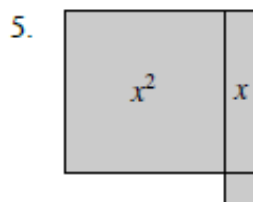
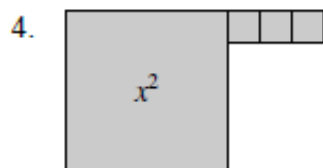
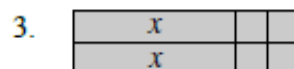
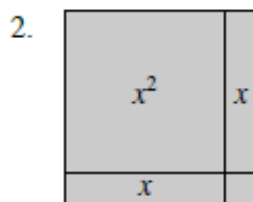
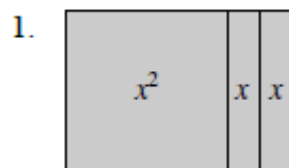
Example 2



$$P = 6x + 8 \text{ units}$$

Problems

Determine the perimeter of each figure.



PHYSICAL EDUCATION – 8TH GRADE

Name: _____

Do You Want to Build a Snowman?

Directions: Choose Option 1, Option 2 or Option 3 to complete.

Option 1: Shovel the driveway for your family or a neighbor. Snow shoveling is a cardiovascular activity that raises your heart rate. If you have a family member or neighbor who needs extra help please take a photo or have the person who's driveway you shoveled sign this paper below.

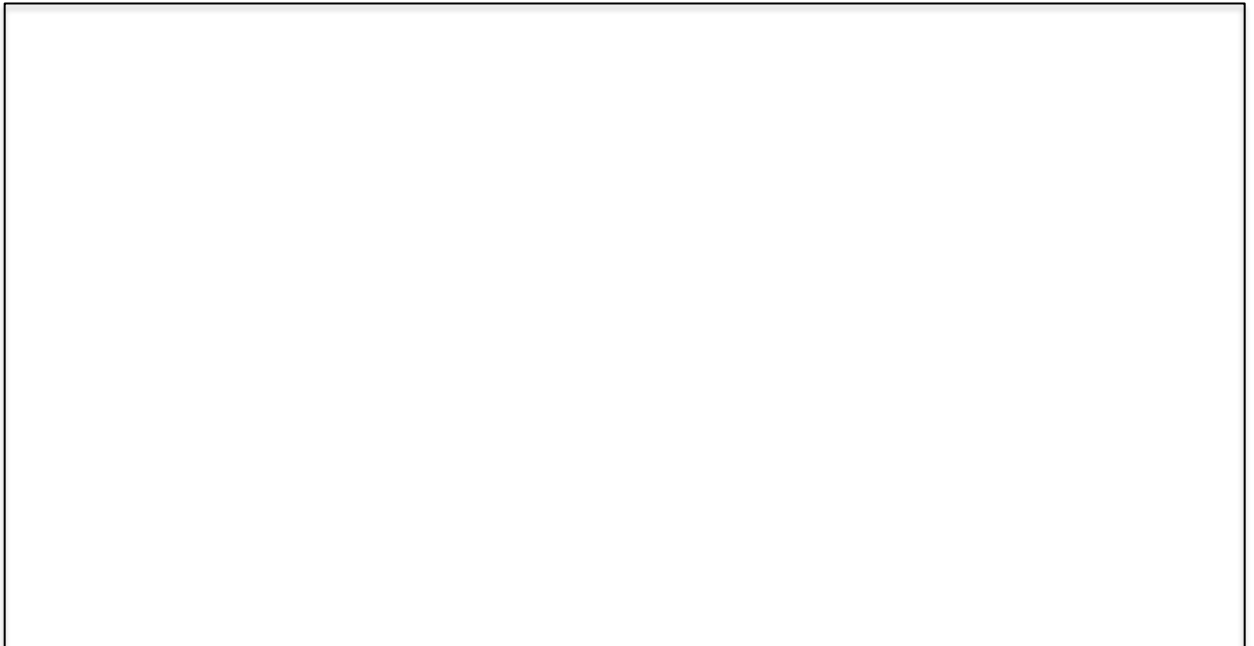
Sign Here: _____

Option 2: Build a snowman outside. Get creative and build the best snowman you can, the bigger the better! Please take a photo of yourself next to your snowman to receive credit. If you cannot take a photo of your snowman please record the height and width of your snowman below.

Snowman height: _____ **Snowman width:** _____

Option 3: If there is no snow outside or you are unable to go outside use items around the house to create an obstacle course. Your obstacle course can include exercises to complete at different points of the course, clues around the house, things around your home to jump over (safely). Use what you have and get creative!!! Either take a photo of your obstacle course or use the space below to sketch a picture or describe each part of your obstacle course.

Obstacle Course Sketch:



READING – 8TH GRADE

Name: _____

For each AMI snow day, students should spend 20 minutes reading. Please use the space below to log your reading.

Title: _____

Format (mark one)

_____ Book

_____ Magazine

_____ eBook

_____ Other: _____

Minutes spent reading: _____

ELECTIVES – 8TH GRADE

Student Name: _____

Directions: Choose **ONE** activity from this list of options to complete for each day of AMI work. Please have an adult initial any activities that you complete for AMI days.

Art	Draw or paint a still life picture of something in your home. _____ initials _____ date	Create a short movie about what you like to do on a snow day _____ Initials _____ date
Music	Practice your band instrument. _____ initials _____ date	Listen to your favorite song and sing along, or . . . Compose an original song. _____ Initials _____ date
Industrial Tech PLTW EbD	Repair something in your home, or . . . Build a fort, either inside your home or with snow outside. _____ initials _____ date	Create a Rube Goldberg machine, or . . . Build a bridge out of something in your home. _____ Initials _____ date
Drama	Act our or record a skit with a family member or friend. _____ initials _____ date	Watch a comedy movie or musical. _____ Initials _____ date
Family and Consumer Science	Ask your adults about budgeting tips. _____ initials _____ date	Make yourself a snack using or creating a recipe. _____ Initials _____ date
World Language / Cultures	Find something in your home from another country and write or tell someone about it. _____ initials _____ date	List your favorite holiday traditions and ask family members or acquaintances about their origins. _____ Initials _____ date