7th Grade Entering 8th Grade
Summer Math Practice

Symbolize and Solve Inequalities

1. **Directions: Select all the correct answers.**
Which of the following situations correspond to the inequality shown below?

$$3.25x + 12.25 > 26.2$$

- Marcie is trying to raise $26.20 to buy her dad his favorite team's cap for his birthday. She already has $12.25 saved up and her mother told her that she would give her $3.25 every time she vacuums the entire house. What is the minimum number of times, x, that Marcie needs to vacuum the house to be able to afford the cap?

- Coleen is participating in the River Run Marathon that is 26.2 miles. After she completed the first 12.25 miles, they announced that participants only have 3.25 hours remaining to cross the finish line to receive a River Run Medallion. What is the slowest speed, x, in miles per hour that she must run to receive a medallion?

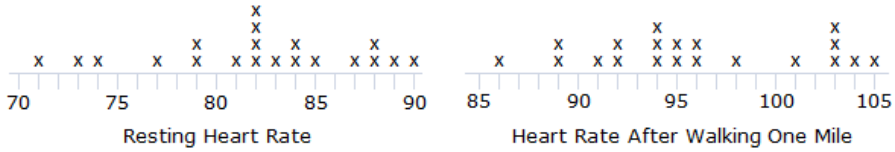
- Reina has a mini cake pan that will hold 26.2 ounces of batter. She has found a cake mix that comes in liquid form and needs to be mixed with eggs. The more eggs used, the fluffier the cake will be. The cake mix itself is 12.25 ounces and each egg is
3.25 ounces. What values of x represent the number of eggs Reina can use and not overflow the cake pan?

- Tarsha is having a bake sale to raise some extra spending money for an upcoming field trip with her class. She spent $26.20 on supplies to make cookies, brownies, and cupcakes. She has already had $12.25 in sales and packaged the rest of the items at
$3.25 for two cookies, one brownie, and one cupcake. What is the least number of packages, x, that Tarsha needs to sell to have some extra spending money for the field trip?

- Darius has a weed sprayer that will hold 26.2 cups of fluid. The broad-leaf herbicide that he uses comes in 12.25 cup packs that dissolve in water and it is recommended that 1 pack is used for every 1,000 square feet of yard being sprayed. The herbicide package also recommends adding in 3.25 cups of an adhesion agent every time the sprayer is filled for better absorption. What is the maximum number, x, of packs that Darius can add to the sprayer?

Central Tendency and Variability

2. **Directions: Write the correct answer in each box. Use numerals instead of words. If necessary, use / for the fraction bar(s).**
Makayla conducted an experiment on the 7th grade class. She took the resting heart rate of 20 of her classmates and then had them walk for one mile and took their heart rates again. She used the data that she collected to make the dot plots below.



Based on Makayla's data, the mean resting heart rate is 82 beats per minute with a mean absolute deviation of [ ]. The mean heart rate after walking one mile is 96 beats per minute with a mean absolute deviation of [ ].

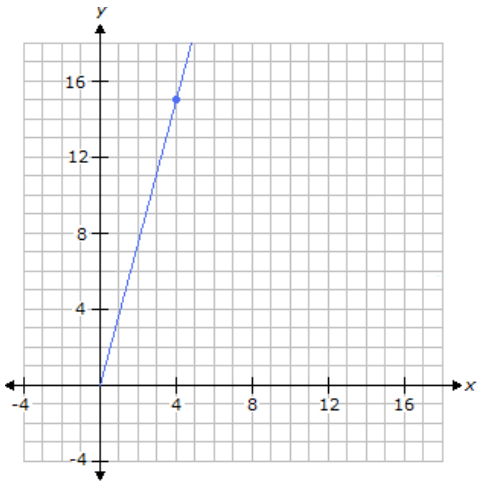
From the data, Makayla concluded the students' heart rates had less variability before or after walking one mile? [ ]

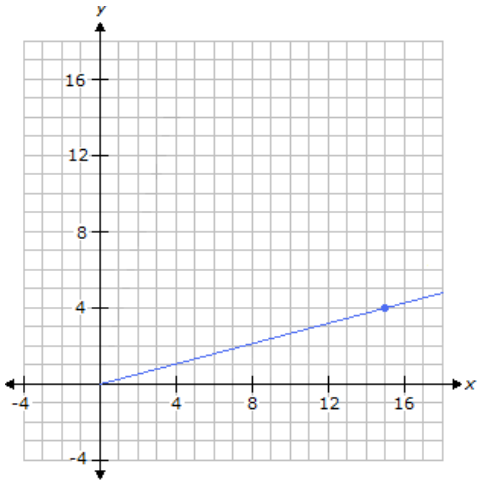
Proportional Relationships

3. Directions: Select all the correct answers.

At Thrasher Gaming Computers, Eli is the manager of the assembly department and has a team of employees that all build laptop computers. He made a graph representing the number of laptops built, *y*, based on the number of employee hours logged by the assembly department, *x*. The graph is a straight line that passes through the origin and the point (4, 15).

Which of the following graphs and statements fit the situation?





- The entire assembly department can build 15 laptops in 4 hours.
- The assembly department logs 4 employee hours for every 15 laptops built.
- The assembly department logs 15 employee hours for every 4 laptops built.

- The entire assembly department can build 4 laptops in 15 hours.

Symbolize and Solve Inequalities

4. Directions: Select all the correct answers.
Which of the following situations correspond to the inequality shown below?

$$3.8x + 14.5 < 32$$

- Charles stopped at a convenient store to get some gas and oil for his car. After putting $14.50 worth of gas in his car, he went inside the store to pay for the gas and purchase the oil he needs. Each quart of oil, *x*, of the brand that he uses cost $3.80. He opened his wallet and noticed that he only had $32. What is the maximum number of quarts of oil, *x*, that he can buy?

- Kenisha is running in the Real Deal CrossFit Challenge in which participants run a grueling 32-kilometer obstacle course. To make sure everyone stays safe and is not trying to go through obstacles in the dark, the challenge ends for everyone who has not crossed the finish line by the official time for sunset. When Kenisha is 14.5 kilometers into the challenge, they announce that there are 3.8 hours remaining before the initial sunset. What is the slowest speed, *x*, in kilometers per hour that she must run to complete the course before time is called?

- Marcus is washing cars to raise money for his soccer team. He spent $32.00 on soap, window cleaner, washing sponges, and drying towels for the car wash. For each car washed, *x*, he charges $3.80 and customers can give more if they choose, but it is not required. He has already made $14.50 from the car wash. What is the least number of cars, *x*, that he needs to wash in order to be making money for the soccer team?

- Miranda's doctor had advised her that she could safely lose 32 pounds and still be at a healthy weight. Over the last few weeks, she has lost 14.5 pounds. For each week, *x*, that she remains on her diet she will lose another 3.8 pounds. What is the most number of weeks, *x*, she can remain on the diet and retain a healthy weight?

- Bethany is writing a series of 32 short stories that are going to be made into a children's book. She received a call from her editor asking her to have the rough draft of the series completed in 3.8 weeks. To this point she has completed 14.5 stories. What is the minimum number of stories, *x*, that Bethany needs to write per week to meet the deadline?

Compute with Rational Numbers

5. Directions:
Let $A = 5$, $B = 4.4$, and $C = 4.25$. Find the value of each expression listed. Select the value from the choices below.

4.85	3.65	3.3	3.75

$B + C - A$ ⟷

$A - B + C$ ⟷

$A^2 \times (B - C)$ ⟷

$B \times (A - C)$ ⟷

Area, Surface Area, and Volume

6. Directions

The composite figures below are made of right prisms.

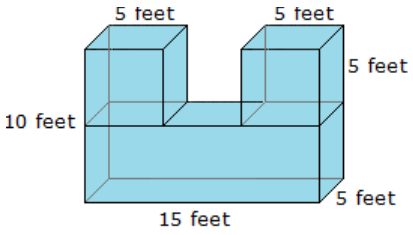


Figure 1

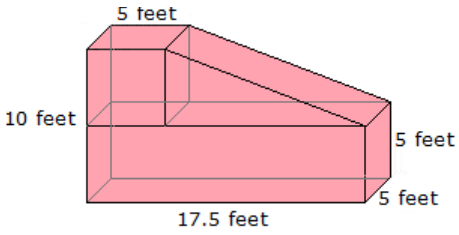


Figure 2

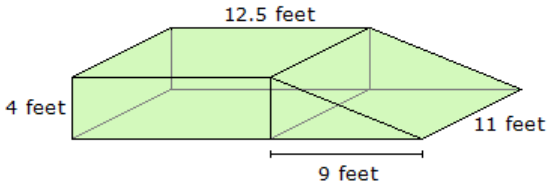


Figure 3

Note: figures not drawn to scale.

Place the figures in order from least volume to greatest volume.

Figure 2 **Figure 3** **Figure 1**

_____ , _____ , _____

Ratios and Proportions

7. Directions: Write the correct answer in each box.

Omar owns a sandwich shop, and his best selling sandwich is the BLT. When making BLT sandwiches, it takes $\frac{3}{4}$ of a pound of bacon to make 4 sandwiches. He uses $1\frac{1}{20}$ pounds of bacon for every 2 tomatoes used and 5 tomatoes for every full head of lettuce used.

If Omar is making enough BLT sandwiches to use 2 full heads of lettuce, then he is going to use [▾] pounds of bacon and will make a total of [▾] BLT sandwiches.

Symbolize and Solve Equations

8. Directions:

In hoping to make it onto the school's Gold Team, Bryan, Eli,and Damien took golf lessons over the summer.

Bryan signed up to take 4 lessons with a semi-pro instructor, and each lesson cost $32.00 for a 45-minute session. The instructor advised Bryan to buy a bag of bulk practice balls to use during his lessons. After buying a bag of 32 golf balls, the total cost for his lessons and golf balls is $132.48.

Eli signed up to take 6 lessons with a pro instructor, and each lesson cost $52.00 for a 1-hour session. Eli bought a bag of bulk practice balls to use during his lessons. After buying a bag of 40 golf balls, the total cost for his lessons and golf balls is $319.20.

Damien signed up to take 5 lessons with pro instructor, and each lesson cost $28.00 for a 30-minute session. Based on the instructor's advise, he bought a bag of 24 golf balls to use during his lessons. The total cost for his lessons and golf balls is $144.08.

Place the students in order from the least amount to the greatest amount that they paid per golf ball.

Damien | Eli | Bryan

_____ , _____ , _____

Probability

9. Directions:

An experiment consists of drawing a marble out of a jar. The jar has 10 orange marbles, 13 red marbles, 25 green marbles, and 32 blue marbles. Place the events in order from the least likely to occur to the most likely to occur.

Drawing a yellow marble. | Drawing any marble. | Drawing a blue marble. | Drawing an orange marble. | Drawing a red or green marble.

_____ , _____ , _____ , _____ , _____

Scale Drawings

10. Directions.
A map maker has created a new map of North America. The map has a length of 30 inches and a width of 24 inches and a scale of 1 inch = 200 miles. After creating the map, he sent it to the printing company. The printing company plans to make several scaled versions of the map. Since each size will have its own scale, they made a mock-up of each version and sent them to the map maker to get his final approval before they start printing.

Match the correct map dimensions to its correct scale, if shown. Use the dimensions below. Not all dimensions will be used.

1 inch = 300 miles	1 inch = 400 miles	scale not shown	1 inch = 600 miles
1 inch = 50 miles	1 inch = 100 miles		

Map 1:
width of 12 inches ⟶

Map 2:
length of 20 inches ⟶

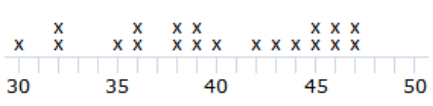
Map 3:
area of 80 square inches ⟶

Map 4:
width of 4 inches ⟶

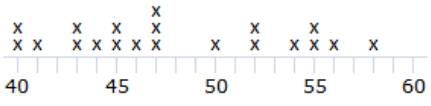
Map 5:
length of 60 inches ⟶

Central Tendency and Variability

11. Directions: Write the correct answer in each box.
Each student in a seventh grade physical education class did a one minute sit up test at the beginning of the six weeks period, and then did the same test again at the end of the six weeks period. The data is recorded in the dot plots below.



Number of Sit Ups in One Minute
At Beginning of Six Weeks Period



Number of Sit Ups in One Minute
At End of Six Weeks Period

Based on the dot plot data, the mean number of sit ups at the beginning of the six weeks period is 40 sit ups per minute with a mean absolute deviation of [▾]. The mean number of sit ups at the end of the six weeks period is 48 sit ups per minute with a mean absolute deviation of [▾].

From the data, it can be concluded that the students' number of sit ups had more variability at the ▾ of the six weeks period.

Sampling Analysis

12. Directions: Select all the correct answers.

Seth wants to know how long the wait times are for rides at a theme park. Which of the following represent a random sample for this information?

- Seth randomly chooses 2 rides in each section and surveys every 6th person exiting each ride.
- Seth randomly surveys 5 people exiting every other ride he walks by.
- Seth walks around the park and randomly surveys 5 adults every 5 minutes.
- Seth randomly chooses 1 ride and surveys every 5th person exiting the ride.
- Seth goes to the theme park every day at 5 p.m. and randomly chooses 1 ride and surveys 6 people for 20 days.

Linear Expressions

13. Directions: Select all the correct answers.

$$\frac{1}{3} - 3\left(\frac{2}{7}x - 4\right)$$

Which of the expressions are equivalent to the expression above?

- $\frac{1}{3} - 6\left(\frac{1}{7}x - 2\right)$
- $-11\frac{2}{3} - \frac{6}{7}x$
- $\frac{1}{3} - (3)\left(\frac{2}{7}x\right) - (3)(4)$
- $\frac{1}{3} + (-3)\left(\frac{2}{7}x\right) - (-3)(4)$
- $\frac{1}{3} - \frac{6}{7}x + 12$
- $12\frac{1}{3} - \frac{6}{7}x$

Properties of Addition and Subtraction

14. Directions:

Consider the situations in the table below.

Situation A	Situation B
A scuba diver descended 25.34 feet, and then he ascended 12.67 feet.	A football team gained $\frac{3}{5}$ of a yard in one play, and then lost $\frac{1}{5}$ of a yard in the next play.
Situation C	**Situation D**
A player earned 65.43 points in a game, and then he lost 68.20 points.	A runner ran $\frac{5}{12}$ of a mile on Monday and $\frac{7}{12}$ of a mile on Tuesday.

Calculate the sum of each situation. Order the situations from least to greatest based on the numeric value of the sums.

Situation A | Situation B | Situation C | Situation D

_____ , _____ , _____ , _____

Compute with Rational Numbers

15. Directions: Let $A = 2$, $B = \frac{2}{5}$, and $C = \frac{3}{8}$. Find the value of each expression below. Select an answer from the choices below.

$2\frac{1}{40}$ $1\frac{3}{20}$ $1\frac{7}{40}$ $1\frac{39}{40}$

$A \times C + B$ ⟷

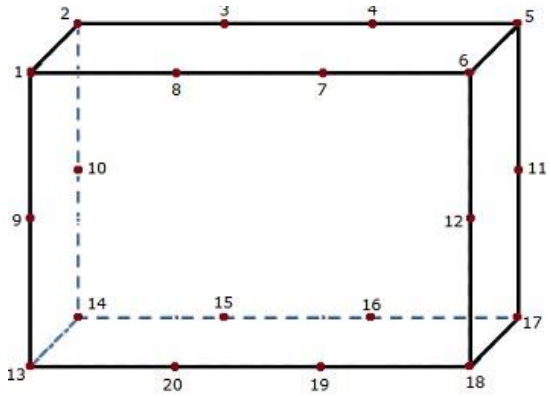
$A - B + C$ ⟷

$A \times B + C$ ⟷

$A + B - C$ ⟷

Three-Dimensional Figures

16. Directions



In the rectangular prism shown above, the distance between any two neighboring points on a line segment is the same. For example, the distance between points 1 and 2 is the same as the distance between points 13 and 20, which is the same as the distance between points 15 and 16.

Place the cross sections indicated by the tiles in order from least area to greatest area.

Cross section through points 8, 3, 11, 12	Cross section through points 7, 4, 16, 19	Cross section through points 5, 6, 13, 14	Cross section through points 9, 10, 11, 12	Cross section through points 2, 5, 18, 13

_____ , _____ , _____ , _____ , _____

Properties of Multiplication and Division

17. Directions: Write the correct answer in each box. Use numerals instead of words. If necessary, use / for the fraction bar(s).

Nathan went down to Candy World and bought $9\frac{2}{3}$ pounds of lemon drops for him, Darren, and Mitchel to take on a week long field trip. Nathan gave $\frac{5}{8}$ of the lemon drops to Darren, and Darren gave $\frac{3}{5}$ of his lemon drops to Mitchel.

Mitchel wanted to know how many pounds of lemon drops he received.

Nathan told him that he needed to start with the initial amount, multiply by the fraction that Darren received, and then multiply the result by the fraction of Darren's that he received, that is to simplify the expression $\left(9\frac{2}{3} \times \frac{5}{8}\right) \times \frac{3}{5}$.

Darren told him that he needed to find the fraction of the whole amount by multiplying their fractional amounts together first and then multiply by the initial amount, that is to simplify the expression $9\frac{2}{3} \times \left(\frac{5}{8} \times \frac{3}{5}\right)$.

By using Nathan's expression, Mitchel should have received [ ] pounds of lemon drops. By using Darren's expression, Mitchel should have received [ ] pounds of lemon drops. The difference in the amount of lemon drops Mitchel should have received using Nathan's expression instead of Darren's expression is [ ] pounds.

Unit Rates

18. Directions: An oval-shaped walking path at a local park is $\frac{3}{4}$ of a mile long. Four walkers recorded the number of laps they walked and the time it took them in the table below.

Walker	Number of Laps	Number of Minutes
Amber	3	40
Bruno	4	54
Cady	5	75
Drake	6	72

Match each walker with their corresponding unit rate in miles per hour.

$3\frac{2}{3}$ mph	Bruno	Drake	Cady	3 mph	$3\frac{3}{8}$ mph	$3\frac{1}{3}$ mph
Amber	$3\frac{1}{4}$ mph	$3\frac{3}{4}$ mph				

_____ ⟷ _____

_____ ⟷ _____

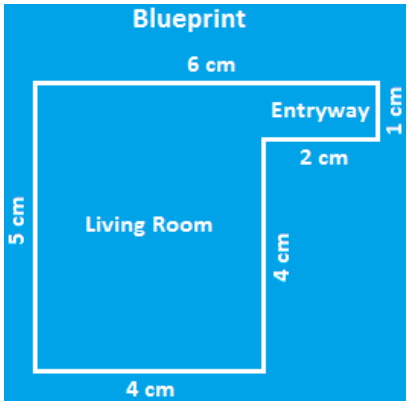
_____ ⟷ _____

_____ ⟷ _____

Scale Drawings

19. Directions: Write the correct answer in each box. Use numerals and/or variables instead of words. If necessary, use * for the multiplication symbol and / for division.

Hannah is having a new house built. The following is an initial blueprint of her new living room and entryway.



The perimeter of the scale drawing is ☐ centimeters.

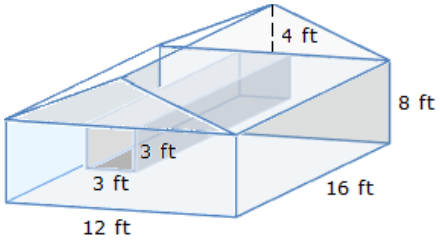
If the scale is 1 centimeter = 5 feet, the perimeter of Hannah's actual living room and entryway would be ☐ feet.

Numerically, the value of the actual perimeter of Hannah's living room and entryway would be ☐ times the value of the perimeter of the scale drawing.

Based on these results, if the scale is 1 centimeter = *k* feet, the perimeter of Hannah's actual living room and entryway would be ☐ feet.

Area, Surface Area, and Volume

20. Directions: Write the correct answer in the box. Use numerals instead of words. If necessary, use / for the fraction bar.



Note: figure not drawn to scale.

To avoid mildew and mold, Clay's new oat barn has an open shaft lengthwise through the barn with small holes drilled throughout that allows gases to escape just in case any wet oats get placed inside the barn. Clay is able to use the entire volume of the barn, except for the air vent shaft, to store oats which he uses for planting crops and feeding his livestock. He has decided to fill the barn to capacity to be prepared for the upcoming winter and planting season.

Clay called the Farmers CO-OP and ordered ☐ cubic feet of oats.

Probability

21. **Directions:** Laurie conducts an experiment where she spins the spinner shown below. The sections are all the same size.

Order the events from least likely to occur to most likely to occur.

Landing on a multiple of 4
Landing on a 2-digit number
Landing on an even number
Landing on a prime number
Landing on an odd number

Least Likely

↓ _____

↓ _____

↓ _____

↓ _____

_____

Most likely

Symbolize and Solve Equations

22. Directions: Select all the correct answers.

Which of the following situations corresponds to the equation below?

$$\frac{1}{3}x + 8 = 18\frac{2}{3}$$

- Jesse gives piano lessons in the evenings for 20 minutes each. To be able to make her monthly car payment, she needs to give a total of $18\frac{2}{3}$ hours worth of lessons each month. If she have already given 8 hours worth of lessons this month, how many more lessons, *x*, does Jesse need to give?

- Myron has been practicing throwing a football through a tire at 8 yards. His coach asked him to move back so he is throwing at a distance of $18\frac{2}{3}$ yards. How many feet, *x*, does Myron need to move back?

- Carmello is building a bridge out of balsa wood for a physics contest. His bridge already fits the dimensions needed for the contest and currently weighs $18\frac{2}{3}$ ounces. He has 3 pieces of balsa wood with a combined weight of 8 ounces that can be cut and added to the bridge as support beams to reach the contests maximum allowable weight, *x*. What is the maximum allowable weight, *x*?

- Brenton has entered a mozzarella stick eating contest. Each order of mozzarella sticks contains 3 sticks. The record for the contest is $18\frac{2}{3}$ orders in the time allotted. If he has already eaten 8 orders, how many more mozzarella sticks, *x*, does he need to eat to tie the record?

- Keneda is packing some suitcases to take on a cruise. The cruise line allows each guest to bring up to three pieces of luggage with a limit on total weight. So far, she has packed $18\frac{2}{3}$ pounds worth of items. She can add 8 more pounds to her luggage to be at the cruise lines maximum allowable weight for lugguage, *x*. What is the maximum allowable weight, *x*?

Circles

23. Directions: Write the correct answer in each box. Use numerals instead of words. Use 3.14 for π.

Wayne's class is building a wagon to be used as a float for the upcoming Pioneers Day Parade. The outsides of the four wagon wheels are going to be covered in brown felt so they can draw pictures on them. Rubber stripping will go around the wheel to help give it a smoother ride during the parade.

If each wheel has about 94.2 inches of rubber around it, the diameter of each wheel is [ ] inches.

Given this diameter, they need [ ] square inches of felt to cover each wheel.

If they can buy a rectangular piece of felt that has a width equal to the diameter of the wheel, the rectangular piece of felt would need to have a length of at least [ ] inches in order for each of the four wheel covers to be a solid piece. Though to account for any cutting errors, it should probably be a little longer.

Scale Drawings

24. Directions: Drag each device to the correct location on the Screen Comparisons table.

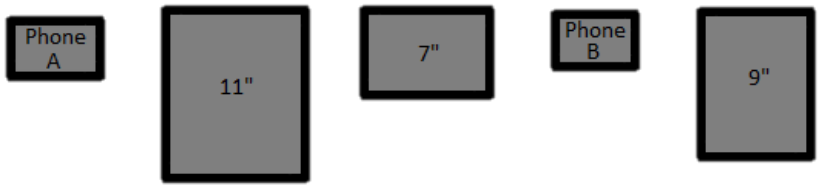
An online company is expanding their website to properly fit various mobile devices such as tablets and smartphones. The original website was designed for screen dimensions of 16 inches by 9 inches. On this screen, the logo has an area of 8 square inches. The following table lists the dimensions of the screens of five mobile devices they are doing research on.

Screen Dimensions

Device	Length (inches)	Width (inches)
Phone A	5	2.8
Phone B	4	2.25
7" tablet	6	3.4
9" tablet	8	4.5
11" tablet	10	5.6

For smartphones, the logo will be $\frac{1}{2}$ of a square inch. For tablets, the image will be 2 square inches.

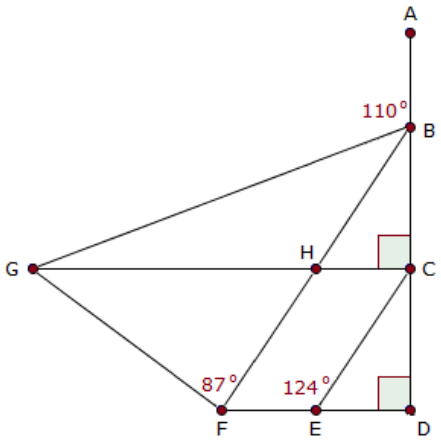
For each device pictured, determine if the ratio of the area of the logo to the area of the screen is less than, equal to, or greater than the ratio of the area of the logo to the area of the screen on the original website.



DO NOT COMPLETE QUESTION #24

Angles

25. Directions



In the diagram shown above, quadrilateral CEFH is a parallelogram.

Using properties of angles, triangles, and quadrilaterals, order the angles listed on the tiles from least measure to greatest measure.

Angle FGH Angle HGB Angle GBH Angle ECD

_____<_____<_____<_____

Linear Expressions

26. Directions: Match the equivalent expressions. Not all expressions will be used.

$x - 7$ $-x + 7$ $5x + 3$ $x + 3$ $-x + 3$ $5x - 3$

$(2x + 5) + (3x - 2)$ ⟷

$(2x + 5) - (3x - 2)$ ⟷

$(3x - 2) - (2x + 5)$ ⟷

Unit Rates

27. Directions: Write the correct answer in the box. Use numerals instead of words. If necessary, use / for the fraction bar.

Blake has entered a mountain bike competition at Starvation Flats Bike Park. Placement in the competition is determined by a person's average speed over four laps around the course. The course itself is $\frac{2}{5}$ of a mile long. If Blake completed the four laps in 12 minutes, then his average speed around the track is _____ miles per hour.

Single-Step Real World Problems

28. Directions: Select the correct location on the number line.

Chauncey's birthday is in January. For his last birthday, the low temperature for the day was 9 ºF. It was only 12 degrees above the all-time record low for Dallas, Texas. What is the all-time record low for Dallas?

DO NOT COMPLETE QUESTION #28

Triangles

29. Directions: Drag each label to the correct location on the image.

Julius needs to determine how much information needs to be given about an isosceles triangle to be able to draw an isosceles triangle. He is looking at six different cases and is trying to determine if that amount of detail will allow him to construct just one isosceles triangle or if it allows for more than one isosceles triangle.

Case 1. The length of the two congruent sides and the measure of the included angle.

Case 2. The lengths of two non-congruent sides and the measure of the included angle.

Case 3. The lengths of two non-congruent sides.

Case 4. The measure of the two congruent angles and the included side.

Case 5. The measure of two non-congruent angles.

Case 6. The measure of two non-congruent angles and the included side.

Place each case in under the correct heading in the table.

Case 1 Case 2 Case 3 Case 4 Case 5 Case 6

DO NOT COMPLETE QUESTION #29

Proportional Relationships

30. Directions: Write the correct answer in the box. Spell all words correctly. Use numerals instead of words. If necessary, use * for multiplication and / for division.

Phillip's Soup Kitchen charges the same price, $8.95, for a bowl of any of their soups. The Ragdale Family Reunion was being held at a park across the street from Phillip's Soup Kitchen. For lunch at the reunion, people had a choice of a bologna sandwich or a bowl of soup from Phillip's Soup Kitchen.

If *R* people ended up ordering a bowl of soup for lunch, then the equation *P* = _____ can be used to determine the total price, *P*, that was charged for the soup.

Sampling Analysis

31. Directions: Drag each sample to the correct location on the table.

Bernice wants to know which ice cream parlor is the most popular among students at her school. Which samples are random for this population and which are not?

DO NOT COMPLETE QUESTION #31

every third girl that walks by the school cafeteria

every sixth person at Bernice's favorite ice cream parlor

four people from each of Bernice's classes

two people from every class during fourth period at Bernice's school

every fifth person that walks by the school library

Multi-Step Real World Problems

32. Directions:

J & B Research is conducting a survey to see if people still live in the state in which they were born. They hired Kimberly, Emily, and Ava to conduct the survey.

Kimberly surveyed 400 people with 38% of respondents answering yes.

Emily surveyed 364 people with 3 out of 7 respondents answering yes.

Ava surveyed 350 people with 0.44 of respondents answering yes.

Place the survey takers in order from least number of respondents answering yes to greatest number of respondents answering yes.

Kimberly Ava Emily

_____ , _____ , _____

Properties of Multiplication and Division

33. Directions: Write the expression in the correct location on the table.

Determine whether each expression is positive, negative, or undefined.

$\frac{-1+5}{3-3}$ $-\left(\frac{20}{5+-4-1}\right)$ $\frac{-4+2}{-1}$ $\frac{3-2}{-5}$ $-\left(\frac{-12}{-13}\right)$ $\frac{5-9}{4-1}$

POSITIVE	NEGATIVE	UNDEFINED

Proportional Relationships

34. Directions: Select all the correct answers.

In the Trans-Yukon Rally Race, which is currently underway, they give a four minute window between start times for each team to space the vehicles out on the course. Each team's finish in the race is then determined by their individual time to complete the course. There are five teams that are sponsored by American motor companies. The drivers of the American teams, their current mileage into the race, and their official times at that point of the race are listed in the table below.

Name	Mileage	Time (hours:minutes:seconds)
Adam	$68\frac{5}{8}$	1:49:48
Allen	$58\frac{4}{5}$	1:36:00
Nigel	$32\frac{3}{10}$	0:51:00
Owen	$44\frac{1}{10}$	1:12:00
William	$54\frac{3}{8}$	1:27:00

Which sets of drivers are progressing at the same pace?

- ☐ Adam and William
- ☐ Allen and Owen
- ☐ Nigel and Owen
- ☐ Adam and Allen
- ☐ Owen and William
- ☐ Nigel and William

Multi-Step Real World Problems

35. Directions

At Brick House Masonry Supply, it is time for annual pay raises for the fork lift operators.

Cody currently earns $23.04 per hour and is receiving a raise equivalent to 3.125% of his current pay.

Gregg currently earns $22.75 per hour and is receiving a raise equivalent to 0.04 of his current pay.

Kendall currently earns $22.60 per hour and is receiving a raise equivalent to $\frac{1}{20}$ of his current pay.

List the employees in order from least hourly pay to greatest hourly pay based on their pay after the raises have gone into effect.

Gregg Kendall Cody

_____ , _____ , _____

Percents

36. Directions: Write the correct answer in each of the boxes.

Aerial's grandmother gave her $5,500.00 to save for her college education. She went to the bank to open a savings account. The bank told her they had two options available.

Account A will pay 5.5% simple interest until the account is closed.

Account B will pay 4.5% simple interest and if the account is left open for longer than 3 years, then at the end of the third year a bonus account will be opened with $250 that also earns 4.5% for the remainder of the time the initial account is open. When the initial account is closed, the bonus account will be closed as well and the money from the two accounts will be combined.

If Aerial is planning on leaving the money in the account for 4 years and then withdrawing all funds, then account ____ is the better choice earning her ____ more.

Circles

37. Directions: Write the correct answer in each box. Use numerals instead of words. Use 3.14 for π.

Jenna is planting four circular gardens. She is planting one garden each for tomatoes, carrots, cabbage, and strawberries. Each garden will have a fence around it to keep rabbits out. The tomato, carrot, and cabbage gardens will all be the same size. Since Jenna loves strawberries, the strawberry garden will be larger. It will use the same amount of fencing as the other three gardens combined. She used a total of about 113.04 feet of fencing material.

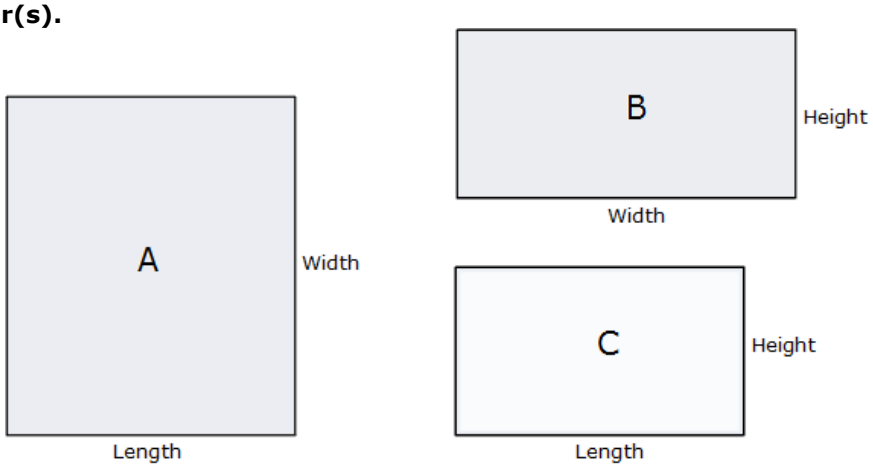
The area of the each smaller garden is about ____ square feet.

The area of the larger garden is about ____ square feet.

The area of the larger garden is ____ times larger than the area of the smaller garden.

Three-Dimensional Figures

38. Directions: Write the correct answer in each box. Use numerals instead of words. If necessary, use / for the fraction bar(s).



The cross sections shown above are from a rectangular prism.

Cross section A is from a plane that is parallel to the base cutting through the prism. Cross section A has an area of 90 units squared.

Cross section B is from a plane that is perpendicular to the base and parallel to the sides of the prism cutting

through the prism. Cross section B has an area of 50 units squared.

Cross section C is from a plane that is perpendicular to the base and parallel to the front of the prism cutting through the prism. Cross section C has an area of 45 units squared.

The prism in which the cross sections were taken has a length of _____ units, width of _____ units, and a height of _____ units.

Central Tendency and Variability

39. Directions: Write the correct answer in each box.

Marcus conducted an experiment in which he collected data on the weight of red delicious apples and granny smith apples. He measured the weight, in ounces, of 20 red delicious apples and 24 granny smith apples. Based on the collected data, he determined the following.

Statistical Data for the Apple Weights	Red Delicious	Granny Smith
Minimum	3	4
Maximum	14	15
Mean	8	9.5
Median	8	9.5
Mean Absolute Deviation	2.4	3.0
Interquartile Range	4.5	6.0

If a dot plot is made of the combined data, there [ ] overlap in the data.

The combined data would appear as [ ] of data being measured.

The weight of red delicious apples has [ ] the weight of granny smith apples according to this data.

Compute with Rational Numbers

40. Directions: Drag each tile to the correct box.

Place the complex fractions in order from least to greatest.

$\frac{\frac{4}{5}}{\frac{11}{9}-1}$ $\frac{\frac{2}{3}+1}{1-\frac{3}{5}}$ $\frac{\frac{3}{4}+1}{\frac{2}{5}}$

_____ < _____ < _____

Triangles

41. Directions:

Each of the conditions below create different numbers of triangles. Match the conditions based on the number of triangles the conditions create. Assume inches are the only units used.

Condition A: one length of 4 inches, one length of 5 inches, and the angle between them measures 60º

Condition B: angles measuring 75º, 70º, and 45º

Condition C: a base of 5 inches and a height of 2 inches

Condition D: one side measuring 4 inches, one side measuring 2 inches, and a whole number perimeter

Condition E: a right triangle, an area less than 10 inches and even-numbered leg lengths

Condition 1: angles measuring 25º, 70º, and 85º ⟷

Condition 2: one side length of 3 inches, one side length of 4 inches, and a perimeter of 9 inches ⟷

Condition 3: one side length of 6 inches, one side length of 2 inches, and a perimeter of 10 inches ⟷

Condition 4: two sides with a length of 3 inches and a whole number perimeter ⟷

Triangles

42. Directions: Write the correct answer in the box. Use numerals instead of words. If necessary, use / for the fraction bar.

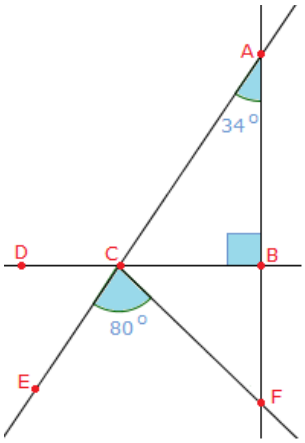
Theo is building a garden against his house. He bought two pieces of wood that are each five feet long. He wants to create a triangular garden against his house using the two pieces of wood, without cutting them. His house will be the third side of the triangle. He also wants the perimeter of his garden to be a whole number.

There are _____ different triangles he can create that fit these conditions.

Of these triangles, there are _____ isosceles, _____ scalene, and _____ equilateral.

Angles

43. Directions: Write the correct answer in each box. Use numerals instead of words. If necessary, use / for the fraction bar.



Let *x* represent the measure of angle ACD, and let *y* represent the measure of angle BCF.

The value of *x* is ____° and the value of *y* is ____°.

Unit Rates

44. Directions: Write the correct answer in the box. Use numerals instead of words. If necessary, use / for the fraction bar.

At West Painting, they get about three calls a day asking for an estimate of the cost for having the interior of a house painted. To write up an estimate for the cost of a job, they need to know how much paint a job will take. If they average painting $\frac{3}{4}$ of a room with $\frac{2}{5}$ of a gallon of paint, then they can paint, on average, ____ rooms per gallon.

Ratios and Proportions

45. Directions: Write the correct answer in each box.

Sandy's orchard has only apple trees and pear trees and she is wanting to add some avocado trees. Currently, there are 4 apple trees for every 3 pear trees. She is wanting to plant enough avocado trees so that she has 2 avocado trees for every 5 pear trees in the orchard.

Sandy is planting 18 avocado trees, making the ratio of avocado trees to apple trees be ____ to ____ .

Properties of Multiplication and Division

46. Directions: Write the correct answer in the box. Use numerals instead of words. If necessary, use / for the fraction bar.

Sarah went trick-or-treating for Halloween. Because of her braces, she could not eat $\frac{2}{3}$ of the candy she received since it was either sticky or chewy. Of the candy she could not eat, she gave $\frac{3}{7}$ of it to her older brother Bradley and $\frac{2}{7}$ of it to her younger brother Shane.

Bradley and Shane were trying to determine how much of Sarah's candy they received in all. Bradley said that they could find the amount by simplifying the expression $\frac{2}{3} \times \left(\frac{3}{7} + \frac{2}{7}\right)$. Shane thought for a moment and determined that Bradley must be wrong and said that they could find the amount by simplifying the expression $\left(\frac{2}{3} \times \frac{3}{7}\right) + \left(\frac{2}{3} \times \frac{2}{7}\right)$.

The absolute value of the difference between the two methods proposed by Bradly and Shane is _____.

Ratios and Proportions

47. Directions: Write the correct answer in the box. Use numerals instead of words. If necessary, use / for the fraction bar.

Bueno Mart has a distribution warehouse in Arizona that services their stores in the southwest part of the country. At the Arizona warehouse, they have learned that to keep things running efficiently they need 4 workers for each bay and 3 supervisors for every 54 bay workers. If a new warehouse is being built in North Carolina to service the stores they are opening on the east coast, and the new warehouse is going to have 36 bays, then they will need to hire _____ supervisors to run the new warehouse efficiently.

Circles

48. Directions:

Three pizzerias claim they offer the pizza with the largest circumference.

Each of the 8 slices of Mario's Pizzeria's large pizza has an area of 14.13 square inches.

Each of the 16 slices of Tito's Pizzeria's large pizza has an area of 12.56 square inches.

Each of the 10 slices of Peter's Pizzeria's large pizza has an area of 15.386 square inches.

Place the pizzas in order of least to greatest circumference. Assume all pizzas are circles and assume all pizzas have the same thickness. Use 3.14 for π.

Mario's Pizzeria Tito's Pizzeria Peter's Pizzeria

_____ , _____ , _____

Symbolize and Solve Equations

49. Directions: Select all the correct answers.

Which of the situations correspond to the equation below?

$$0.35(t + \$850) = \$339.50$$

- ☐ Manuel received a 35% discount for a savings of $339.50 by purchasing a set of four tires at $212.50 each plus a road hazard warranty for *t*.
- ☐ Monica read in the paper that the Formal Gown Warehouse is offering 35% of the cost of a gown toward a pair of dress shoes. The gown that Monica wants cost $850.00 and the shoes that go with the dress are also on sale for *t*, which would give her a total savings of $339.50.
- ☐ After paying *t* toward her tuition, Julie still owed 35% of her total tuition of $850.00, leaving an amount due of $339.50.
- ☐ Rainy's neighbor was having a new fence installed and asked her to pay 35% of the cost based on the portion of the fence that ran between their houses. He asked her for $339.50 to cover $850.00 worth of materials plus labor costs, *t*.
- ☐ Chase donated *t* to the school's fundraiser, which put their fundraising total at $339.50 or 35% of their goal target of $850.

Symbolize and Solve Inequalities

50. Directions: Write the correct answer in each box. Spell all words correctly, and use numerals instead of words for numbers.

The golf club needs to raise $2,620.00 for a trip to play golf at Augusta Country Club. They are selling boxes of personalized golf balls for $25.00 per box. They have already raised $1,225.00 from the fundraiser.

The percussion club needs to raise $2,400.00 to pay for a trip to the state capital to participate in a parade. They are selling 3-gallon tubs of caramel popcorn for $18.25 each. They have already raised $1,314.00 from the fundraiser.

If both clubs are going to meet their goals, from this point on the _____ club needs to sell _____ more items from their fundraiser than the _____ club needs to sell from their fundraiser.

Properties of Addition and Subtraction

51. Directions: Select all the correct answers.

Which of the following situations describe quantities that combine to make 0?

- ☐ Emily received a check from her grandmother for $40.00 for her birthday. To cash the check, her bank requires her to deposit the funds into her account. Since she wanted to spend the money that afternoon, she withdrew $40.00 in the same transaction.
- ☐ Jacoby went on a hiking trip on the Rocky Bend Loop. Starting at an elevation of 1,200 feet, he hiked up the eastern trail leading to a change in elevation of 782 feet to get to the campsite. The next day he hiked down the western trail which had a change in elevation of 782 feet to get back to his car.
- ☐ Marcus runs a sightseeing service in the Appalachian Mountains. The first leg of the tour is a 16.2-mile horseback ride from the stables up the side of a mountain. The second leg of the tour is a 20.6-mile four-wheeler ride taking a different path down the mountain to the customer parking lot.
- ☐ A carbon 12 atom has six neutrons, six protons, and six electrons. The neutrons have no charge, each proton has a positive charge, and each electron has a negative charge of the same magnitude.
- ☐ To start the second half of the basketball game, the Eagles made a jump shot for two points. The Bulldogs then took the ball down the court on a fast break and made a layup for two points.
- ☐ During the top of the fourth inning of a baseball game, the Ravens scored three runs. During the bottom of the fourth inning, the Raiders scored five runs to tie the game.

Probability

52. Directions

For a new board game, each player must spin a spinner like the one shown below. Each section is of equal size.

Sort the events according to their likelihood of occurring.

Spin a one-digit number | Spin a multiple of 3 | Spin a number greater than 4 | Spin a multiple of 2 | Spin a multiple of 5

LEAST LIKELY _____ _____ _____ _____ _____ MOST LIKELY

Linear Expressions

53. Directions: Write the correct answer in each box. Use numerals instead of words. If necessary, use / for the fraction bar(s).
Completely factor the following expressions.

$4x - 12 =$ ____

$\frac{1}{4}x + \frac{3}{4} =$ ____

$0.3x - 1.5 =$ ____

Three-Dimensional Figures

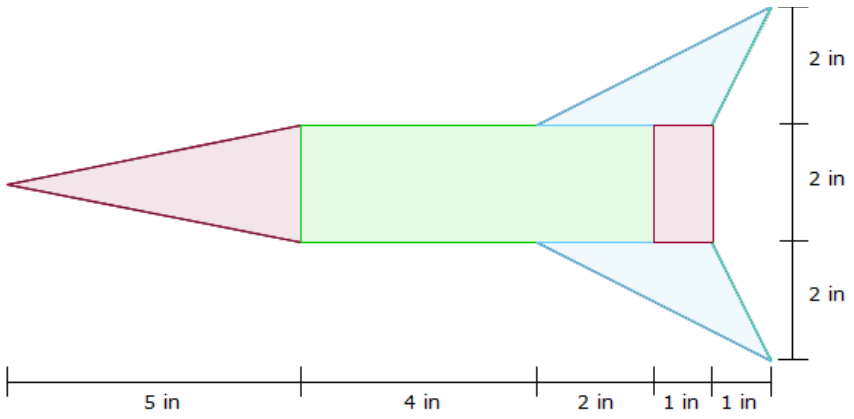
54. Directions: Drag each tile to the correct location on the table. Each tile can be used more than once.
Match the attributes to each three-dimensional shape that has the cross-section described.

Only consider cross-sections with whole number dimensions parallel to a side of one of the prisms or the base of the pyramid.

DO NOT COMPLETE QUESTION #54

Area, Surface Area, and Volume

55. Directions: Write the correct answer in each box. Use numerals instead of words. If necessary, use / for the fraction bar(s).
In science class, the students are going to build and launch rockets. Before they start actually building the rockets, each student in the class has to submit a two-dimensional scale drawing of the rocket they want to build and write a paper over why they chose that design. Jameson's drawing of the rocket he wants to build is shown below.



Note: figure not drawn to scale.

In Jameson's drawing, the nose cone has an area of ____ square inches, each of the fins has an area of ____ square inches, and the total area of the drawn rocket is ____ square inches.

Sampling Analysis

56. Directions: Select the correct answer from each drop-down menu.

Paula wants to know what movie people are going to see at her favorite local theater Friday night.

If she surveys every fifth woman that buys a ticket at the box office, this sample is [ ].

If she surveys every third person that enters theater four, this sample is [ ].

If she surveys every fourth person that walks by the concession stand, this sample is [ ].

If she surveys every sixth child in the arcade, this sample is [ ].

If she surveys every fifth person that goes through the exit, this sample is [ ].

DO NOT COMPLETE QUESTION #56

Single-Step Real World Problems

57. Directions: Select the correct location on the number line.

Tristan just had a baby brother named Trey. Trey's feet are $\frac{1}{5}$ of a foot long. Tristan's feet are $\frac{3}{5}$ of a foot longer than Trey's. How long are Tristan's feet?

DO NOT COMPLETE QUESTION #57

Single-Step Real World Problems

58. Directions: Select all the correct answers.

$$\frac{2}{3} \times \frac{2}{5}$$

Which scenarios match the expression above?

- ☐ Felicia and her friend ordered a $\frac{2}{3}$-pound hamburger to share. She ate $\frac{2}{5}$ of it. How much of a pound of hamburger did she eat?
- ☐ Wanda is painting $\frac{2}{3}$ of her house. If she has already painted $\frac{2}{5}$ of it, how much of her house does she have left to paint?
- ☐ Henrietta's school is $\frac{2}{3}$ of a mile from her house. If she has walked $\frac{2}{5}$ of a mile, how much of the way has she walked?
- ☐ Giselle has $\frac{2}{3}$ of a bag of cat food. She pours $\frac{2}{5}$ of it into the cat feeder. How much of a full bag did she pour into the cat feeder?
- ☐ Cynthia jogged $\frac{2}{3}$ of a mile. Then, she walked another $\frac{2}{5}$ of a mile. How many miles did she travel?

Percents

59. Directions: Write the correct answer in the box. Use numerals instead of words.
Neil took his family of five out to dinner at HogTastic Pit BBQ. They all ordered the buffet and drink at $12.80 each. Neil left a 15% gratuity for the waitress on the after-tax bill. Based on a tax rate of 7.5%, Neil ended up paying a total of $ _____ for dinner.

Percents

60. Directions: Write the correct answer in the box. Use numerals instead of words.
At Blooming Gardens nursery, they are currently running the following promotion: Buy three trees of the same kind at the regular price and get the fourth at 80% off. Jocelyn is needing some trees for her backyard and decided to buy four red oak trees using the promotion. The regular price for a red oak tree is $390.00. Based on a tax rate of 8.25%, Jocelyn ended up saving $ _____ by using the promotion.