Name _____

1. Kendra has 4 necklaces, 7 bracelets, and 5 rings. Draw a model to show the ratio that compares rings to bracelets.

2. There are 3 girls and 2 boys taking swimming lessons. Write the ratio that compares the number of girls taking swimming lessons to the total number of students taking swimming lessons.

_____

3. Luis adds 3 strawberries for every 2 blueberries in his fruit smoothie. Draw a model to show the ratio that compares the number of strawberries to the number of blueberries.

4. Sam has 3 green apples and 4 red apples. Select the ratios that compare the number of red apples to the total number of apples. Mark all that apply.

(A) 4 to 7

(B) 3 to 7

(C) 4 : 7

(D) 4 : 3

(E) $\frac{3}{7}$

(F) $\frac{4}{7}$

GO ON

Name _____

5. There are 3 girls and 4 boys taking music lessons. Write the ratio that compares the number of boys taking music lessons to the total number of students taking music lessons.

6. Camilla adds 2 cucumbers for every 5 tomatoes in a veggie mix. Draw a model to show the ratio comparing cucumbers to tomatoes.

7. Write the ratio 4 to 9 in two different ways.

8. Zena adds 4 cups flour for every 3 cups of sugar in her recipe. Draw a model that compares cups of flour to cups of sugar.

9. Julia has 2 green reusable shopping bags and 5 purple reusable shopping bags. Select the ratios that compare the number of purple reusable shopping bags to the total number of reusable shopping bags. Mark all that apply.

(A) 5 to 7

(D) 5 : 2

(B) 5 : 7

(E) $\frac{2}{5}$

(C) 2 to 7

(F) $\frac{5}{7}$

STOP

Name _____

1. A box of oat cereal costs $3.90 for 15 ounces. A box of rice cereal costs $3.30 for 11 ounces. Which box of cereal costs less per ounce? Use numbers and words to explain your answer.

2. Abby goes to the pool to swim laps. The graph shows how far Abby swam over time. Use equivalent ratios to find how far Abby swam in 7 minutes.
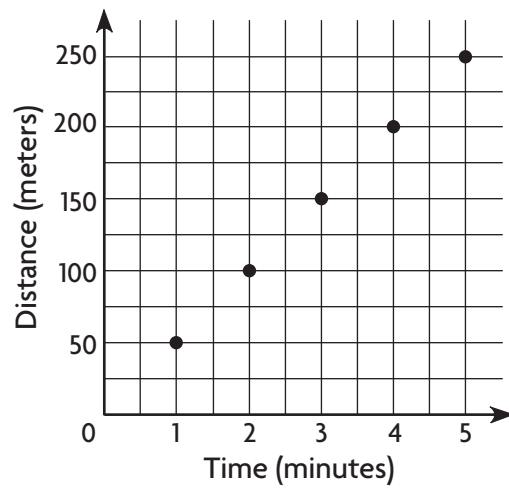
_____ meters

3. A rabbit runs 35 miles per hour. Select the animals who run at a faster unit rate per hour than the rabbit. Mark all that apply.

(A) Reindeer: 100 miles in 2 hours

(B) Ostrich: 80 miles in 2 hours

(C) Zebra: 90 miles in 3 hours

(D) Squirrel: 36 miles in 3 hours

GO ON

Name _____

4. A can of vegetable soup costs $2.88 for 12 ounces. A can of chicken soup costs $2.25 for 9 ounces. Which can of soup costs less per ounce? Use numbers and words to explain your answer.

5. Marc enjoys running. The graph shows how far Marc ran over time. Use equivalent ratios to find how far Marc ran in 7 minutes.
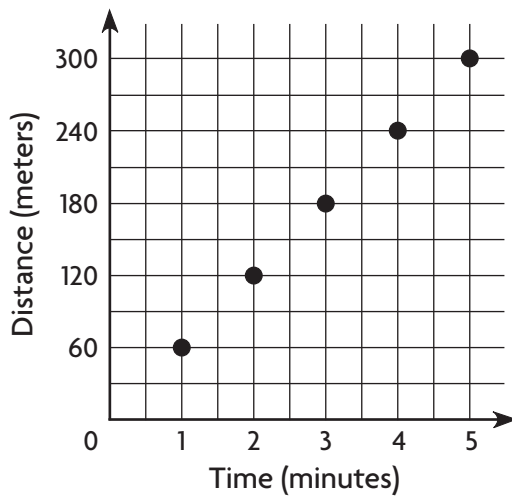
_____ meters

6. The corner grocery store sells apples for $1.19 per pound. Select the stores that sell apples at a lower unit price. Mark all that apply.

Ⓐ Store A: $2.50 for 2 pounds

Ⓑ Store B: $3.48 for 3 pounds

Ⓒ Store C: $3.80 for 4 pounds

Ⓓ Store D: $5.00 for 4 pounds

1. Jeff ran 2 miles in 12 minutes. Ju Chan ran 3 miles in 18 minutes. Did Jeff and Ju Chan run the same number of miles per minute? Complete the tables of equivalent ratios to support your answer.

Jeff				
Distance (miles)	2			
Time (minutes)	12			

Ju Chan				
Distance (miles)	3			
Time (minutes)	18			

2. Water is filling a bathtub at a rate of 3 gallons per minute.

Part A

Complete the table of equivalent ratios for the first 5 minutes of the bathtub filling up.

Amount of Water (gallons)	3				
Time (minutes)	1				

Part B

Emily said there will be 36 gallons of water in the bathtub after 12 minutes. Explain how Emily could have found her answer.

GO ON

Name _____

3. Look at the numbers on the tiles. Determine whether each ratio is equivalent to $\frac{1}{2}$, $\frac{3}{9}$, or $\frac{5}{6}$. Write the ratio in the correct box.

| $\frac{2}{6}$ | $\frac{3}{6}$ | $\frac{5}{10}$ | $\frac{10}{14}$ | $\frac{50}{100}$ | $\frac{20}{28}$ | $\frac{1}{3}$ | $\frac{8}{24}$ |

$\frac{1}{2}$	$\frac{3}{9}$	$\frac{5}{7}$

4. Edgar said $\frac{3}{5}$ is equivalent to $\frac{18}{32}$. Check his work by completing the table of equivalent ratios. Is Edgar correct? Explain your answer.

3					
5					

_____

5. The Garcias are driving to the beach. They are traveling at a rate of 30 miles per hour. Use the ordered pairs to graph the distance traveled over time.

Distance (miles)	30	60	90	120	150
Time (hours)	1	2	3	4	5

STOP
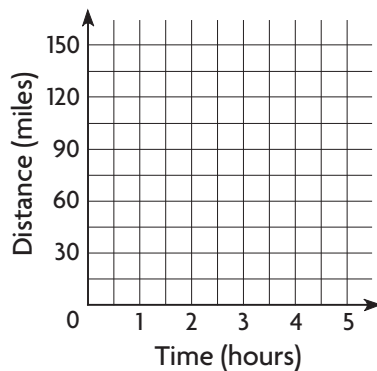
1. Scotty earns $35 for babysitting for 5 hours. If Scotty charges at the same rate, how many hours will it take him to earn $42?

_____ hours

2. Caleb bought 6 packs of pencils for $12.

Part A

How much will he pay for 9 packs of pencils? Use numbers and words to explain your answer.

Part B

Describe how to use a bar model to solve the problem.

3. Peri earned $27 for walking her neighbor's dog 3 times. If Peri charged the same rate and earned $36, how many times did she walk her neighbor's dog? Use a unit rate to find the unknown value.

$$\frac{27}{3} = \frac{36}{\boxed{}}$$

_____ times

4. Match each situation to its unit rate.

9 boxes for $54	6 bags for $42	12 tablets for $24	4 pounds for $12
•	•	•	•
•	•	•	•
1 to 2	1 to 3	1 to 6	1 to 7

GO ON

Name _____

5. Vicki earns $30 for washing 6 cars. If Vicki charges at the same rate, how many hours will it take her to earn $35?

_____ hours

6. Kayden bought 9 packs of paper for $27.

Part A

How much will he pay for 11 packs of paper? Use numbers and words to explain your answer.

Part B

Describe how to use a bar model to solve the problem.

7. Match each situation to its unit rate.

12 pages for $72	6 ounces for $12	8 bags for $24	4 cases for $28
●	●	●	●
●	●	●	●
1 to 2	1 to 3	1 to 6	1 to 7

8. Melinda rides her bike 18 miles in 2 hours. If she rides at a constant speed, select the answers below that are equivalent ratios to the speed she rides. Select all ratios that are equivalent.

(A) 27 miles in 4 hours

(B) 9 miles in 1 hour

(C) 36 miles in 2 hours

(D) 27 miles in 3 hours

(E) 36 miles in 4 hours

STOP

1. For numbers 1a–1d, choose Yes or No to indicate whether the percent and the fraction represent the same amount.

   1a. 50% and $\frac{1}{2}$ ○ Yes   ○ No

   1b. 45% and $\frac{4}{5}$ ○ Yes   ○ No

   1c. $\frac{3}{8}$ and 37.5%   ○ Yes   ○ No

   1d. $\frac{2}{10}$ and 210%   ○ Yes   ○ No

2. The school orchestra has 25 woodwinds, 15 percussionists, 30 strings and 30 brass instruments. Select the portion of the instruments that are percussion. Mark all that apply.

   Ⓐ 15%

   Ⓑ 1.5

   Ⓒ $\frac{3}{20}$

   Ⓓ 0.15

3. For a science project, $\frac{3}{4}$ of the students chose to make a poster and 0.25 of the students wrote a report. Rosa said that more students made a poster than wrote a report. Do you agree with Rosa? Use numbers and words to support your answer.

4. There are 88 marbles in a bin and 25% of the marbles are red.

   There are | 22 / 25 / 62 / 66 | red marbles in the bin.

Name _____

5. For numbers 5a–5b, choose <, >, or =.

5a.　25% of 60　| < > = |　40% of 30

5b.　30% of 60　| < > = |　75% of 40

6. Avery wants to put a variety of muffins in a display case. The case is large enough to hold 60 muffins.

Part A

Complete the table.

Type of Muffin	Percent of Maximum Number	Number of Muffins in Case
Blueberry	40%	
Pumpkin	20%	
Cranberry	30%	

Part B

Has Avery put the maximum number of muffins in the case? Use numbers and words to explain how you know. If she has not put the maximum number in the case, how many more muffins could she put in the case?

STOP

1. A construction crew needs to remove 2.5 tons of river rock during the construction of new office buildings.

The weight of the rocks is
800
2,000
5,000
pounds.

2. Select the conversions that are equivalent to 10 yards. Mark all that apply.

Ⓐ 20 feet   Ⓒ 30 feet

Ⓑ 240 inches   Ⓓ 360 inches

3. Harry received a package for his birthday. The package weighed 357,000 centigrams. Select the conversions that are equivalent to 357,000 centigrams. Mark all that apply.

Ⓐ 3.57 kilograms

Ⓑ 357 dekagrams

Ⓒ 3,570 grams

Ⓓ 3,570,000 decigrams

4. Nadia has a can of vegetables with a mass of 411 grams. Write equivalent conversions for 411 grams in the correct boxes.

| 4.11 | 41.1 | 0.411 |

kilograms	hectograms	dekagrams

GO ON

Name _____

5. Select the conversions that are equivalent to 25 yards. Mark all that apply.

Ⓐ 50 feet   Ⓑ 75 feet

Ⓒ 900 inches   Ⓓ 1,000 inches

6. A rectangular room measures 14 feet by 144 inches. Edgar said the area of the room is 2,016 square feet. Explain his mistake, then find the area in square feet.

7. Claire says that if she runs at an average rate of 6 miles per hour, it will take her about 2 hours to run 18 miles. Do you agree or disagree with Claire? Use numbers and words to support your answer.

_____

_____

_____

_____

8. The Wilson family's newborn baby weighs 84 ounces. Choose the numbers to show the baby's weight in pounds and ounces.

5		3	
6	pounds	4	ounces
7		5	

STOP

Name _____

1. Complete the table by finding the products. Then answer the questions in Part A and Part B.

Division	Multiplication
$\dfrac{1}{5} \div \dfrac{3}{4} = \dfrac{4}{15}$	$\dfrac{1}{5} \times \dfrac{4}{3} =$
$\dfrac{2}{13} \div \dfrac{1}{5} = \dfrac{10}{13}$	$\dfrac{2}{13} \times \dfrac{5}{1} =$
$\dfrac{4}{5} \div \dfrac{3}{5} = \dfrac{4}{3}$	$\dfrac{4}{5} \times \dfrac{5}{3} =$

Part A

Explain how each pair of division and multiplication problems are the same, and how they are different.

Part B

Explain how to use the pattern in the table to rewrite a division problem involving fractions as a multiplication problem.

GO ON

2. Explain how to use a model to find the quotient.

$1\frac{1}{4} \div 4 = \boxed{}$

3. $\frac{6}{7} \div \frac{1}{3} = \boxed{}$

4. Jillian picks some grapefruit. She places all the grapefruits that weigh exactly $\frac{1}{2}$ pound into a bag. The total weight of the grapefruits in the bag is $6\frac{1}{2}$ pounds. How many grapefruits are in the bag? Show your work and explain why you chose the operation you did.

5. For numbers 5a–5c, estimate to compare.
Choose $<$, $>$, or $=$.

5a. $18\frac{3}{10} \div 2\frac{5}{6}$ $\boxed{\begin{array}{c}<\\>\\=\end{array}}$ $30\frac{7}{9} \div 3\frac{1}{3}$

5b. $17\frac{4}{5} \div 6\frac{1}{6}$ $\boxed{\begin{array}{c}<\\>\\=\end{array}}$ $19\frac{8}{9} \div 4\frac{5}{8}$

5c. $35\frac{5}{6} \div 6\frac{1}{4}$ $\boxed{\begin{array}{c}<\\>\\=\end{array}}$ $11\frac{5}{7} \div 2\frac{3}{4}$

STOP

1. For numbers 1a–1d, choose Yes or No to indicate whether the equation is correct.

1a. $1{,}350 \div 5 = 270$ ○ Yes ○ No

1b. $3{,}732 \div 4 = 933$ ○ Yes ○ No

1c. $4{,}200 \div 35 = 12$ ○ Yes ○ No

1d. $1{,}586 \div 13 = 122$ ○ Yes ○ No

2. For numbers 2a–2d, choose Yes or No to indicate whether each equation is correct.

2a. $222.2 \div 11 = 22.2$ ○ Yes ○ No

2b. $400 \div 50 = 8$ ○ Yes ○ No

2c. $1{,}440 \div 36 = 40$ ○ Yes ○ No

2d. $7{,}236 \div 9 = 804$ ○ Yes ○ No

3. A one-celled organism measures 32 millimeters in length in a photograph. If the photo has been enlarged by a factor of 100, what is the actual length of the organism? Show your work.

GO ON

Name _____

4. For numbers 4a–4d, choose Yes or No to indicate whether each equation is correct.

4a. $300 \div 25 = 12$ ○ Yes ○ No

4b. $333.3 \div 11 = 30.3$ ○ Yes ○ No

4c. $1,440 \div 32 = 45$ ○ Yes ○ No

4d. $1,725 \div 25 = 69.1$ ○ Yes ○ No

5. A deer tick measures 29 centimeters in length in a photograph. If the photo has been enlarged by a factor of 100, what is the actual length of the deer tick? Show your work.

6. Select the quotient. Mark all that apply.
$2\overline{)629}$

Ⓐ 213

Ⓑ 314 R1

Ⓒ 314.5

Ⓓ 345

7. Select the quotient. Mark all that apply.
$25\overline{)2,515}$

Ⓐ 55

Ⓑ 95.6

Ⓒ 100.6

Ⓓ 100 R15

STOP

1. For numbers 1a–1d, choose Yes or No to indicate whether the equation is correct.

   1a. $1.7 + 4.03 = 6$ ○ Yes   ○ No

   1b. $2.58 + 3.5 = 6.08$ ○ Yes   ○ No

   1c. $3.21 - 0.98 = 2.23$ ○ Yes   ○ No

   1d. $14 - 1.3 = 0.01$ ○ Yes   ○ No

2. Four friends went shopping at a music store. The table shows the number of CDs each friend bought and the total cost. Complete the table to show the average cost of the CDs each friend bought.

Friend	Number of CDs Purchased	Total Cost (in dollars)	Average Cost (in dollars)
Lana	4	$36.72	
Troy	5	$40.50	
Juanita	5	$47.15	
Alex	6	$54.36	

3. The distance around the outside of Cedar Park is 0.8 mile. Joanie ran 0.25 of the distance during her lunch break. How far did she run? Show your work.

GO ON

Name _____

4. The Lowe family is going to a swim meet. They buy 2 cases of water for $3.98 each, 3 bags of ice for $1.99 each, and a bag of oranges for $8.89. Before they leave, they fill up the car with 10.2 gallons of gasoline at a cost of $3.80 per gallon.

Part A
Complete the table by calculating the total cost for each item.

Item	Calculation	Total Cost
Gasoline	10.2 × 3.80	
Water	2 × 3.98	
Ice	3 × 1.99	
Oranges	1 × 8.89	

Part B

What is the total cost for everything before tax? Show your work.

Part C

Mr. Lowe calculates the total cost for everything before tax using this equation.

Total cost = 10.2 + 3.80 × 2 + 3.98 × 3 + 1.99 × 8.89

Do you agree with his equation? Use numbers and words to explain why or why not. If the equation is not correct, write a correct equation.

STOP

1. Select two numbers that have 9 as their greatest common factor. Mark all that apply.

   Ⓐ 3, 9

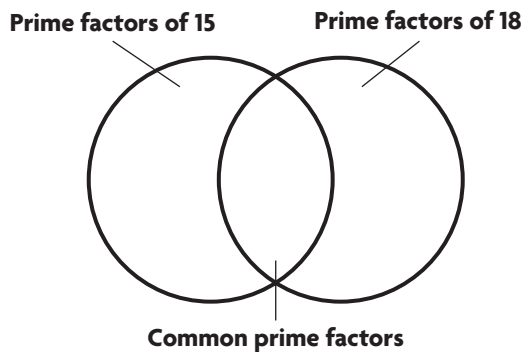   Ⓑ 3, 18

   Ⓒ 9, 18

   Ⓓ 9, 36

   Ⓔ 18, 27

2. The prime factorization of each number is shown.

$$15 = 3 \times 5$$
$$18 = 2 \times 3 \times 3$$

Part A

Using the prime factorization, complete the Venn diagram.

Prime factors of 15   Prime factors of 18

Common prime factors

Part B

Find the GCF of 15 and 18.

_____

3. Two-fifths of the fish in Gary's fish tank are guppies. One-fourth of the guppies are red. What fraction of the fish in Gary's tank are red guppies? Show your work.

GO ON

Name

4. There are 20 sixth graders and 25 seventh graders in the Junior Scholar Club. For their first community service project, the Scholar Club president wants to organize the club members into equal-sized groups. Each group will have only sixth graders or only seventh graders.

Part A

How many students will be in each group if each group has the greatest possible number of members? Show your work.

Part B

If each group has the greatest possible number of club members, how many groups of sixth graders and how many groups of seventh graders will there be? Use numbers and words to explain your answer.

5. The table shows Daniel's homework assignment. Daniel's teacher instructed the class to simplify each expression by dividing the numerator and denominator by the GCF. Complete the table by simplifying each expression and then finding the product.

Problem	Expression	Simplified Expression	Product
a	$\frac{5}{9} \times \frac{3}{10}$		
b	$\frac{3}{5} \times \frac{2}{7}$		
c	$\frac{5}{7} \times \frac{7}{10}$		
d	$\frac{4}{5} \times \frac{1}{8}$		

STOP

1. For numbers 1a–1d, choose Yes or No to indicate whether the situation can be represented by a negative number.

1a. Death Valley is located 282 feet below sea level.   ○ Yes   ○ No

1b. Austin's golf score was 3 strokes below par.   ○ Yes   ○ No

1c. The average temperature in Santa Monica in August is 75°F.   ○ Yes   ○ No

1d. Janai withdraws $20 from her bank account.   ○ Yes   ○ No

2. For numbers 2a–2d, choose Yes or No to indicate whether the situation can be represented by a negative number.

2a. Sherri lost 100 points answering a question wrong.   ○ Yes   ○ No

2b. The peak of a mountain is 2,000 feet above sea level.   ○ Yes   ○ No

2c. Yong paid $25 for a parking ticket.   ○ Yes   ○ No

2d. A puppy gained 3 pounds.   ○ Yes   ○ No

3. For numbers 3a–3d, choose Yes or No to indicate whether the situation can be represented by a negative number.

3a. Green Valley is 215 feet below sea level.   ○ Yes   ○ No

3b. The noon temperature was 5°F.   ○ Yes   ○ No

3c. Ahmad wrote a check for $25.   ○ Yes   ○ No

3d. Leroy received a gift card for $50.   ○ Yes   ○ No

4. For numbers 4a–4d, choose Yes or No to indicate whether the situation could be represented by the integer ⁻4.

4a. A football team loses 4 yards on a play.   ○ Yes   ○ No

4b. A student answers a 4-point question incorrectly.   ○ Yes   ○ No

4c. A temperature is 4°F below zero.   ○ Yes   ○ No

4d. An elevation is 4 feet above sea level.   ○ Yes   ○ No

GO ON

5. For numbers 5a–5d, choose Yes or No to indicate whether the situation could be represented by the integer $^+3$.

5a. A football team gains 3 yards on a play.   ○ Yes   ○ No

5b. A golfer's score is 3 over par.   ○ Yes   ○ No

5c. A student answers a 3-point question correctly.   ○ Yes   ○ No

5d. A cat loses 3 pounds.   ○ Yes   ○ No

6. Mr. Williams went scuba diving and took photographs of sea life at 25 feet below sea level. Write an integer to represent the depth at which Mr. Williams took photographs. Explain your answer.

7. Joyce recorded Tuesday's temperature as $^-5$°F. Describe where this number appears on a thermometer. Explain what $^-5$ means in terms of temperature.

STOP

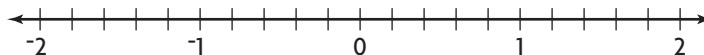**1.** A flag pole is located at point 0 on a map of Orange Avenue. Other points of interest on Orange Avenue are indicated by their distances, in miles to the right of the flag pole (positive numbers) or to the left of the flag pole (negative numbers). Graph and label each location on the number line.

Name	Location
School	0.4
Post Office	1.8
Library	⁻1
Fire Station	⁻1.3

2. For numbers 2a–2e, choose Yes or No to indicate whether the number is between ⁻1 and ⁻2.

2a. $\dfrac{-4}{5}$ ○ Yes ○ No

2b. $1\dfrac{2}{3}$ ○ Yes ○ No

2c. ⁻1.3 ○ Yes ○ No

2d. $-1\dfrac{1}{4}$ ○ Yes ○ No

2e. $-2\dfrac{1}{10}$ ○ Yes ○ No

3. For numbers 3a–3d, choose Yes or No to indicate whether the statement is correct.

3a. $\dfrac{1}{5}$ is between 0 and 1. ○ Yes ○ No

3b. $-2\dfrac{2}{3}$ is between ⁻1 and ⁻2. ○ Yes ○ No

3c. $-3\dfrac{5}{8}$ is between ⁻3 and ⁻4. ○ Yes ○ No

3d. $4\dfrac{3}{4}$ is between 3 and 4. ○ Yes ○ No

GO ON

Name _____

4. For numbers 4a–4d, choose Yes or No to indicate whether the number is between ⁻1 and 1.

    4a. $\dfrac{-4}{5}$ ○ Yes   ○ No

    4b. ⁻0.9   ○ Yes   ○ No

    4c. $1\dfrac{1}{4}$ ○ Yes   ○ No

    4d. ⁻$1\dfrac{1}{10}$ ○ Yes   ○ No

5. For numbers 5a–5d, choose Yes or No to indicate whether the statement is correct.

    5a. $1\dfrac{7}{8}$ is between 1 and 2.   ○ Yes   ○ No

    5b. ⁻$3\dfrac{2}{3}$ is between ⁻2 and ⁻3.   ○ Yes   ○ No

    5c. ⁻$1\dfrac{3}{5}$ is between ⁻1 and ⁻2.   ○ Yes   ○ No

    5d. $5\dfrac{1}{4}$ is between 4 and 5.   ○ Yes   ○ No

6. A thermometer shows a temperature of ⁻4.5°C. A nearby thermometer shows a temperature of ⁻3.5°C. Explain how absolute value can be used to decide which temperature is warmer.

STOP

1. Identify the quadrant where each point is located. Write each point in the correct box.

   $(^-1, 3)$ $(4, ^-2)$ $(^-3, ^-2)$

   $(1, ^-3)$ $(^-1, 2)$ $(3, 4)$

Quadrant I	Quadrant II	Quadrant III	Quadrant IV

2. Mia's house is located at point (3, 4) on a coordinate plane. The location of Keisha's house is the reflection of Mia's house across the *y*-axis. In what quadrant is Keisha's house in?

   _____

3. Point *A* $(2, ^-3)$ is reflected across the *x*-axis to point *B*. Point *B* is reflected across the *y*-axis to point *C*. What are the coordinates of point *C*? Use words and numbers to explain your answer.

GO ON

Name _____

4. Rex's house is located at point (2, ⁻5) on a coordinate plane. The location of Terrell's house is the reflection of the coordinates of Rex's house across the *x*-axis. In what quadrant is Terrell's house?

_____

5. Point *R* (4, ⁻5) is reflected across the *y*-axis to point *S*. Point *S* is reflected across the *x*-axis to point *T*. What are the coordinates of point *T*? Use words and numbers to explain your answer.

6. Identify the quadrant where each point is located. Write each point in the correct box.

(⁻5, 2)   (6, ⁻4)   (⁻1, ⁻9)

(5, ⁻4)   (⁻3, 3)   (7, 2)

Quadrant I	Quadrant II	Quadrant III	Quadrant IV

Name _____

1. For numbers 1a–1d, choose Yes or No to indicate whether the statement is correct.

| A | B | C | D |

0   0.2   0.4   0.6   0.8   1.0
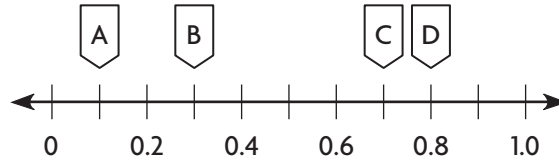
1a.   Point A represents 1.0.   ○ Yes   ○ No

1b.   Point B represents $\frac{3}{10}$.   ○ Yes   ○ No

1c.   Point C represents 6.5.   ○ Yes   ○ No

1d.   Point D represents $\frac{4}{5}$.   ○ Yes   ○ No

2. For numbers 2a–2d, choose Yes or No to indicate whether the statement is correct.

2a.   The *x*-coordinate of any point   ○ Yes   ○ No
on the *y*-axis is 0.

2b.   Point *D* ($^-$2, 1) is to the left of   ○ Yes   ○ No
the *y*-axis and below the *x*-axis.

2c.   The point where the axes   ○ Yes   ○ No
intersect is the origin.

2d.   If both the *x*- and *y*-coordinates   ○ Yes   ○ No
are positive, the point is to the
right of the *y*-axis and below
the *x*-axis.

3. Explain how to graph points *A*($^-$3, 0), *B*(0, 0), and *C*(0, $^-$3) on the coordinate plane. Then, explain how to graph point *D*, so that *ABCD* is a square.

Name _____

4. Write the decimal and fraction in simplest form represented by each point.

		C		A		B	D		

0   0.2   0.4   0.6   0.8   1.0
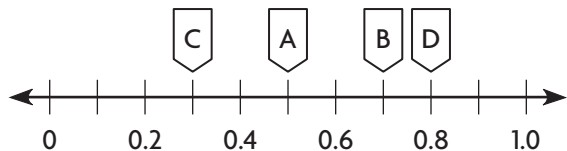
Point A [ ]   Point B [ ]

Point C [ ]   Point D [ ]

5. Write the values in order from least to greatest.

| $\frac{1}{3}$ | 0.45 | 0.39 | $\frac{2}{5}$ |

_____   _____   _____   _____

6. For numbers 6a–6d, choose Yes or No to indicate whether the statement is correct.

6a. Point A (2, ⁻1) is to the right of the y-axis and below the x-axis.   ○ Yes   ○ No

6b. Point B (⁻5, 2) is to the left of the y-axis and below the x-axis.   ○ Yes   ○ No

6c. Point C (3, 2) is to the right of the y-axis and above the x-axis.   ○ Yes   ○ No

6d. Point D (⁻2, ⁻1) is to the left of the y-axis and below the x-axis.   ○ Yes   ○ No

7. For numbers 7a–7b, compare. Choose $<$, $>$, or $=$.

7a. 0.25 | $<$ / $>$ / $=$ | $\frac{1}{4}$

7b. $1\frac{1}{5}$ | $<$ / $>$ / $=$ | 1.5

STOP

1. The low weekday temperatures for a city are shown.

Low Temperatures	
Day	**Low Temperature (°F)**
Monday	⁻5
Tuesday	⁻3
Wednesday	2
Thursday	⁻7
Friday	3

Part A

Using the information in the table, order the temperatures from lowest to highest.

_____

Part B

Explain how to use a vertical number line to determine the order.

2. Choose $<$, $>$, or $=$.

2a.   0.25 $\begin{array}{c} < \\ > \\ = \end{array}$ $\dfrac{3}{4}$

2c. $2\dfrac{7}{8}$ $\begin{array}{c} < \\ > \\ = \end{array}$ 2.875

2b. $\dfrac{1}{3}$ $\begin{array}{c} < \\ > \\ = \end{array}$ 0.325

2d. $\dfrac{-3}{4}$ $\begin{array}{c} < \\ > \\ = \end{array}$ $\dfrac{-1}{2}$

GO ON

3. Compare $^-\frac{2}{3}$ and $^-\frac{5}{9}$. Use words and numbers to explain your answer.

4. Choose <, >, or =.

4a. $^-\frac{3}{5}$ | < > = | $^-\frac{4}{5}$

4b. $^-\frac{2}{5}$ | < > = | $^-\frac{3}{4}$

4c. $^-6.5$ | < > = | $^-4.2$

4d. $^-2.4$ | < > = | $^-3.7$

5. Compare $\frac{^-1}{5}$ and $^-0.9$. Which number is greater? Use numbers and words to explain your answer.

Name _____

1. Golf scores compared to par are shown.

Part A

Using the information in the table, order the scores from lowest to highest.

_____

Golf Scores	
Player	**Score**
Alex	⁻4
Bart	⁻1
Cal	3
Deon	⁻2

Part B

Explain how to use a horizontal number line to determine the order.

_____

2. Four friends played a new game and Vance kept score.

When the game was finished, Vance wrote the scores in order from lowest to highest. Is Vance correct? Use words and numbers to explain why or why not. If Vance is incorrect, what is the correct order?

Player	**Score**
Lou	25
Mary	⁻20
Nina	⁻30
Otto	15

⁻30, ⁻20, 15, 25

GO ON

3. Choose $<$, $>$, or $=$.

3a. 1.75 meters $\boxed{\begin{matrix} < \\ > \\ = \end{matrix}}$ $1\frac{3}{4}$ meters

3c. $3\frac{7}{8}$ k $\boxed{\begin{matrix} < \\ > \\ = \end{matrix}}$ 3.375 k

3b. $\frac{-2}{3}$ point $\boxed{\begin{matrix} < \\ > \\ = \end{matrix}}$ $^-$0.667 point

3d. $\frac{-3}{8}$ ft $\boxed{\begin{matrix} < \\ > \\ = \end{matrix}}$ $\frac{-1}{2}$ ft

4. Jasmine recorded the low temperatures for 3 cities.

City	Temperature (°F)
A	6
B	$^-$4
C	2
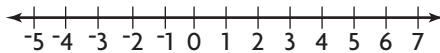
Draw a dot on the number line to represent the low temperature of each city. Write the letter of the city above the dot.

5. Travis made a list of his town's lowest recorded temperatures in March. He wrote the temperatures in order from coldest to warmest. Is Travis correct or incorrect? Explain your answer.

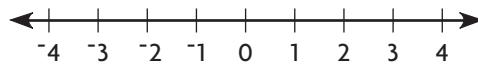| Date	Temperature (°F)
March 2	5
March 9	$^-$2
March 17	$^-$9
March 21	3

$\boxed{^-2,\ 3,\ 5,\ ^-9}$

STOP

1. Jeandre said |3| equals |⁻3|. Is Jeandre correct? Draw a number line and explain your answer.

2. Graph 4 and ⁻4 on the number line.

```
←──┼──┼──┼──┼──┼──┼──┼──┼──┼──→
  ⁻4 ⁻3 ⁻2 ⁻1  0  1  2  3  4
```
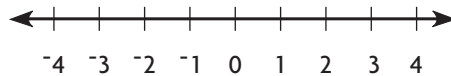
Tyler says both 4 and ⁻4 have an absolute value of 4. Is Tyler correct? Use the number line and words to explain why or why not.

3. Graph 2 and ⁻2 on the number line.

```
←──┼──┼──┼──┼──┼──┼──┼──┼──┼──→
  ⁻4 ⁻3 ⁻2 ⁻1  0  1  2  3  4
```

Keisha says that 2 and ⁻2 do not have the same absolute value. Is Keisha correct? Explain why or why not.

GO ON

4. Graph 6 and ⁻6 on the number line.

$$\xleftarrow{\hspace{0.3cm}|\hspace{0.3cm}|\hspace{0.3cm}|\hspace{0.3cm}|\hspace{0.3cm}|\hspace{0.3cm}|\hspace{0.3cm}|\hspace{0.3cm}|\hspace{0.3cm}|\hspace{0.3cm}|\hspace{0.3cm}|\hspace{0.3cm}|\hspace{0.3cm}}\rightarrow$$

⁻6   ⁻5   ⁻4   ⁻3   ⁻2   ⁻1   0   +1   +2   +3   +4   +5   +6

Wilson says both 6 and ⁻6 have an absolute value of 6. Is Wilson correct? Use the number line and words to explain why or why not.

5. Which point on the number line has an absolute value of 3? Mark all that apply.

A   B   C   D   E   F

⁻5   ⁻4   ⁻3   ⁻2   ⁻1   0   1   2   3   4   5

(A) *A*   **(C)** *D*

(B) *B*   **(D)** *E*

6. What is the absolute value of Point *Z* on the number line?

Z

⁻5   ⁻4   ⁻3   ⁻2   ⁻1   0   1   2   3   4   5

(A) ⁻2   **(C)** 1

(B) 0   **(D)** 2

STOP

Name _____

1. Write the values in order from least to greatest.

$|{}^-4|$ $|2|$ $|{}^-12|$ $|8|$

_____ _____ _____ _____

2. Lindsay and Will have online accounts for buying music. Lindsay's account balance is $^-\$20$ and Will's account balance is $^-\$15$. Express each account balance as a debt. Tell whose debt is greater. Explain your answer.

3. Write the values in order from least to greatest.

$|{}^-2|$ $|3|$ $|{}^-6|$ $|1|$

_____

4. Write the values in order from least to greatest.

$|5|$ $|{}^-4|$ $|2|$ $|{}^-7|$

_____

GO ON

Name _____

5. Roger and Mary have an online account for buying movies. Roger's account balance is ⁻$25 and Mary's is ⁻$10. Express each account balance as a debt. Tell whose debt is greater. Explain your answer.

6. Write the values in order from least to greatest.

| ⁻6| |0| | ⁻14| |9|

_____   _____   _____   _____

7. Devon and Gwen have an account at an online bookstore. Devon's account balance is ⁻$15 and Gwen's account balance is ⁻$5. Whose account balance shows the greater debt? Explain your answer.

8. Marvin has an online account for playing games. In March his account balance was ⁻$6. In May his account balance was ⁻$3. Express the account balances as a debt and tell in which month Marvin's debt was greater.

STOP

1. The map shows the location *J* of Jose's house and the location *F* of the football field. Jose is going to go to Tyrell's house and then the two of them are going to go to the football field for practice.

Part A

Tyrell's house is located at point *T*, the reflection of point *J* across the *y*-axis. What are the coordinates of points *T*, *J*, and *F*?

_____

Part B

If each unit on the map represents 1 block, what was the distance Tyrell traveled to the football field and what was the distance Jose traveled to the football field? Use numbers and words to explain your answer.
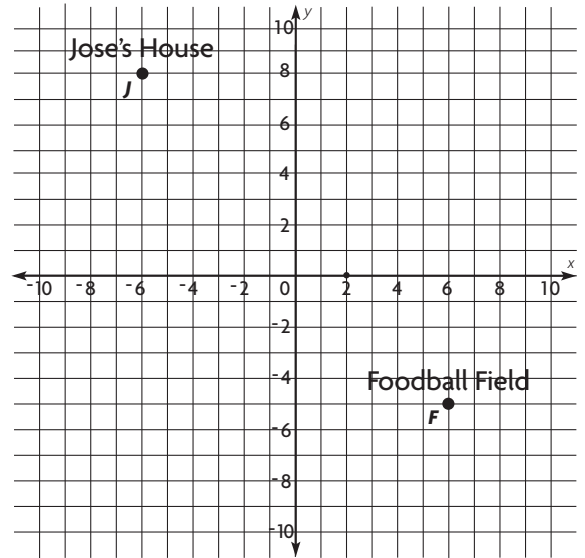
2. Select the pairs of points that have a distance of 10 units between them. Mark all that apply.

- (A) (3, ⁻6) and (3, 4)

- (B) (⁻3, 8) and (7, 8)

- (C) (4, 5) and (6, 5)

- (D) (4, 1) and (4, 11)

GO ON

Name

3. Points A (3, 8) and B ($^-$4, 8) are located on a coordinate plane. Graph the pair of points. Then find the distance between them. Use numbers and words to explain your answer.
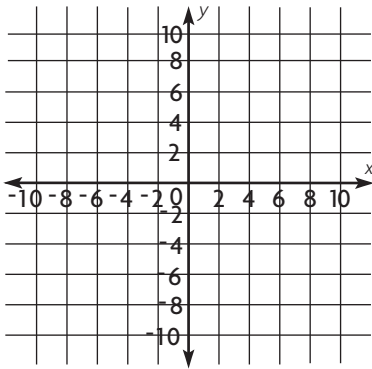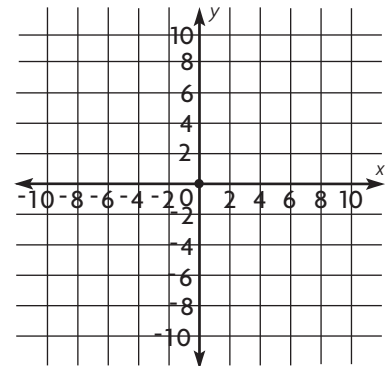
4. A map of the city hosting the Olympics is placed on a coordinate plane. Olympic Stadium is located at the origin of the map. Each unit on the map represents 2 miles.

Graph the locations of the four Olympic sites listed in the table.

Max said the distance between the Aquatics Center and the Olympic Village is greater than the distance between the Media Center and the Basketball Arena. Do you agree with Max? Use words and numbers to support your answer.

Building	Location
Olympic Village	($^-$8, 4)
Aquatics Center	(8, 4)
Media Center	(4, $^-$5)
Basketball Arena	($^-$8, $^-$5)

STOP

1. Ms. Hall wrote the expression $2 \times (3 + 5)^2 \div 4$ on the board. Shyann said the first step in evaluating the expression is to evaluate 5^2. Explain Shyann's mistake. Then evaluate the expression.

_____

_____

2. Select the expressions that are equivalent to 32. Mark all that apply.

(A) 2^5

(B) 8^4

(C) $2^3 \times 4$

(D) $2 \times 4 \times 4$

3. Use exponents to write the expression.

$3 \times 3 \times 3 \times 3 \times 5 \times 5$

$3^{\boxed{}} \times 5^{\boxed{}}$

4. Write 4^3 using repeated multiplication. Then find the value of 4^3.

_____

5. Mr. Ruiz writes the expression $5 \times (2 + 1)^2 \div 3$ on the board. Chelsea says the first step is to evaluate 1^2. Explain Chelsea's mistake. Then evaluate the expression.

GO ON

6. Cari evaluates the expression $(5 + 4)^2 - 5 \times 2$.

Part A

Cari shows her work on the board. Use numbers and words to explain her mistake.

$(5 + 4)^2 - 5 \times 2$

$(5 + 16) - 5 \times 2$

$21 - 5 \times 2$

16×2

32

Part B

Evaluate the expression $(5 + 4)^2 - 5 \times 2$ using the order of operations. Show your work.

1. A cell phone company charges $40 per month plus $0.05 for each text message sent. Select the expressions that represent the cost in dollars for one month of cell phone usage and sending *m* text messages. Mark all that apply.

(A) $40m + 0.05$

(B) $40 + 0.05m$

(C) 40 more than the product of 0.05 and *m*

(D) the product of 40 and *m* plus 0.05

2. Jake writes this word expression.

the product of 7 and *m*

Write an algebraic expression for the word expression. Then, evaluate the expression for *m* = 4. Show your work.

3. An online sporting goods store charges $12 for a pair of athletic socks. Shipping is $2 per order.

Part A

Write an expression that Hana can use to find the total cost in dollars for ordering *n* pairs of socks.

_____

Part B

Hana orders 3 pairs of athletic socks, and her friend, Charlie, orders 2 pairs of athletic socks. What is the total cost, including shipping, for both orders? Show your work.

GO ON

Name _____

4. An online store sells specialty bags. They charge $8 for shipping and $21 per bag ordered. Write an expression that can be used to find the cost in dollars for *b* bags including shipping.

_____

5. Andrew owns 3 fewer DVDs than Paul. Let *k* represent the number of Paul's DVDs. Identify the expression that can be used to find the number of DVDs that Andrew owns.

(A) $k - 3$

(B) $3 - 2k$

(C) $2k - 3$

(D) $3k - 3$

6. Sam is 5 centimeters taller than Olivia. Select the expressions that represent Sam's height if Olivia's height is *h* centimeters. Mark all that apply.

(A) $h + 5$ (C) *h* increased by 5

(B) $h - 5$ (D) *h* less than 5

7. Which expresses the calculation *add 7 to b*?

(A) $b + 7$

(B) $b - 7$

(C) $7b$

(D) $b \div 7$

STOP

1. Kennedy bought *a* pounds of almonds at $5 per pound and *p* pounds of peanuts at $2 per pound. Write an algebraic expression for the cost of Kennedy's purchase.

---

2. Jasmine is buying beans. She bought *r* pounds of red beans that cost $3 per pound and *b* pounds of black beans that cost $2 per pound. The total amount of her purchase is given by the expression $3r + 2b$. Select the terms of the expression. Mark all that apply.

(A) 2

(B) $2b$

(C) 3

(D) $3r$

3. Darryl is buying apples and bananas. He bought *a* pounds of apples that cost $2 per pound and *b* pounds of bananas that cost $1 per pound. The total amount of her purchase is given by the expression $2a + b$. Select the terms of the expression. Mark all that apply.

(A) $2a$

(B) 2

(C) *a*

(D) *b*

(E) $1b$

GO ON

Name _____

4. Circle the terms in the expression. Explain how you know they are terms.

$$10a + a^2 - 9 \div 2$$

_____

_____

_____

5. Circle the terms in the expression. Then explain how you know your answer is correct.

$6 \div 2 - a^2$

6. Jasmine bought 2 pounds of apples at $3 per pound and 4 pounds of bananas at $1 per pound. Write an algebraic expression for the cost of Jasmine's purchase.

_____

7. Elliot bought some grapes. He bought x pounds of red grapes that cost $4 per pound and y pounds of green grapes that cost $2 per pound. He used the expression $4x + 2y$ to describe the total amount of his purchase. What are the terms in the expression? Mark all that apply.

(A) 4

(B) $4x$

(C) 2

(D) $2y$

STOP

1. The surface area of a cube can be found by using the formula $6s^2$, where s represents the length of the side of the cube.

The surface area of a cube that has a side length of

3 meters is
54
108
2,916
meters squared.

2. Choose the number that makes the sentence true.

The formula $V = s^3$ gives the volume V of a cube with side length s. The volume of a cube that has a side length of 8 inches

is
24
64
512
inches cubed.

3. Liang is ordering new chairs and cushions for his dining room table. A new chair costs $88, and a new cushion costs $12. Shipping costs $34. The expression $88c + 12c + 34$ gives the total cost for buying c sets of chairs and cushions. Simplify the expression by combining like terms.

_____

4. Logan works at a florist. He earns $600 per week plus $5 for each floral arrangement he delivers. The expression $600 + 5f$ gives the amount in dollars that Logan earns for delivering f floral arrangements. How much will Logan earn if he delivers 45 floral arrangements in one week? Show your work.

GO ON

Name _____

5. A bike rental company charges $10 to rent a bike plus $2 for each hour the bike is rented. An expression for the total cost of renting a bike for h hours is $10 + 2h$. Complete the table to find the total cost of renting a bike for h hours.

Number of Hours, h	$10 + 2h$	Total Cost
1	$10 + 2 \times 1$	
2		
3		
4		

6. Olivia delivers packages. She earns $300 per week plus $6 for each package she delivers. The expression $300 + 6p$ gives the amount in dollars that Olivia earns for delivering p packages. How much will Olivia earn if she delivers 55 packages in one week? Show your work.

7. Simon wrote the expression $x - 2 = 7$.

Choose Yes or No to indicate if each expression below has the same value as $x - 2 = 7$.

7a. $x - 2 = 7 + 2$ ○ Yes   ○ No

7b. $x - 2 + 2 = 7 + 2$ ○ Yes   ○ No

7c. $x + 7 = 2 - x - 7$ ○ Yes   ○ No

7d. $2 + 7 - 2 = x - 2$ ○ Yes   ○ No

STOP

Practice Test

COMMON CORE **6.EE.3**
*Apply and extend previous
understandings of arithmetic to algebraic
expressions.*

1. Vincent is ordering accessories for his surfboard. A set of fins costs $24 each, and a leash costs $15. The shipping cost is $4 per order. The expression $24b + 15b + 4$ can be used to find the cost in dollars of buying b fins and b leashes plus the cost of shipping.

For numbers 1a – 1c, choose Yes or No to indicate whether the statements are correct.

1a.   The terms are $24b$, $15b,$ and 4.   ○ Yes   ○ No

1b.   The like terms are $24b$ and $15b$.   ○ Yes   ○ No

1c.   The simplified expression is $43b$.   ○ Yes   ○ No

2. Write the algebraic expression in the box that shows an equivalent expression.

| $6(z + 5)$ | $6z + 5z$ | $2 + 6z + 3$ |

$6z + 5$	$11z$	$6z + 30$

3. Sora has some bags that each contain 12 potatoes. She takes 3 potatoes from each bag. The expression $12p - 3p$ represents the number of potatoes p left in the bags. Simplify the expression by combining like terms. Draw a line to match the expression with the simplified expression.

● $15p$

● $13p$

$12p - 3p$ ●

● $11p$

● $9p$

GO ON

4. Write the algebraic expression in the box that shows an equivalent expression.

| $3(k + 2)$ | $3k + 2k$ | $2 + 6k + 3$ |

$6k + 5$	$5k$	$3k + 6$

5. Emir is ordering sets of guitar strings and bags of picks for his guitar. A new set of strings costs $12, and a new bag of picks cost $4. Shipping costs $6. The expression $12g + 4g + 6$ gives the total cost for buying g sets of strings and picks. Simplify the expression by combining like terms.

_____

6. Draw a line to match the property with the equivalent expression.

Associative Property of Addition   ●   ● $11 + (1 + c) = (11 + 1) + c$

Commutative Property of Addition ●   ● $0 + 11 = 11$

Identity Property of Addition   ●   ● $11 + c = c + 11$

7. Choose the word that makes the sentence true.

Paulo wrote the expression $3 \times (d + 5)$ in his notebook. He uses the

Commutative
Associative
Distributive

Property to write the equivalent expression $3d + 15$.

STOP

1. Select the expressions that are equivalent to $3(x + 2)$. Mark all that apply.

(A) $3x + 6$

(B) $3x + 2$

(C) $5x$

(D) $x + 5$

2. Use properties of operations to determine whether $5(n + 1) + 2n$ and $7n + 1$ are equivalent expressions.

3. Alisha buys 5 boxes of peanut butter granola bars and 5 boxes of cinnamon granola bars. Let p represent the number of peanut butter granola bars and c represent the number of cinnamon granola bars. Jaira and Emma each write an expression that represents the total number of granola bars Alisha bought. Are the expressions equivalent? Justify your answer.

Jaira	Emma
$5p + 5c$	$5(p + c)$

4. Use properties of operations to determine whether $4(n + 2) + 2n$ and $6n + 2$ are equivalent expressions.

GO ON

Name _____

5. Myles bought 4 rose bushes and 4 tulip plants. Let r represent the number of roses in bloom on each rose bush and t represent the number of tulips in bloom on each tulip plant. Myles and Jenna each wrote an expression that represents the total number of flowers in bloom. Are the expressions equivalent? Justify your answer.

Myles: Jenna:

$4r + 4t$ $4(r + t)$

6. Identify each expression as either Represents or Does Not Represent the surface area of the cube.

s^3 $6s$ $4s^4$ $6s^2$ $2(s^2) + 4(s^2)$ $s^2 + s^2 + s^2 + s^2 + s^2 + s^2$
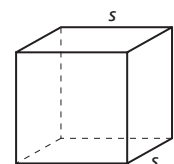
Represents	Does Not Represent

7. Use the Distributive Property to write two equivalent expressions that represent the area of the diagram. Choose from the numbers and symbols below the diagram. Not all choices will be used.
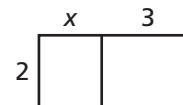
$(x + 3)$ 2 $-$ $2x$ $6x$ $+$ 6 3 $=$

7a.   Represent the area as the sum of exactly two terms.

7b.   Represent the area as a product in which one factor is a sum.

_____   _____

7c.   Explain why the expressions are equivalent.

STOP

1. For numbers 1a–1c, choose Yes or No to indicate whether the given value of the variable is a solution of the equation.

   1a. $\frac{2}{5}v = 10$; $v = 25$ ○ Yes   ○ No

   1b. $n + 5 = 15$; $n = 5$ ○ Yes   ○ No

   1c. $5z = 25$; $z = 5$ ○ Yes   ○ No

2. The distance from third base to home plate is 88.9 feet. Romeo was 22.1 feet away from third base when he was tagged out. The equation $88.9 - t = 22.1$ can be used to determine how far he needed to run to get to home plate. Using substitution, the coach determines that Romeo needed

   to run | 66
           | 66.8 | feet to get to home plate.
           | 111

3. The maximum number of players allowed on a lacrosse team is 23. The inequality $t \leq 23$ represents the total number of players, *t*, allowed on the team.

   Two possible solutions for the inequality are | 23 | and | 26. |
                                                  | 25 | | 24. |
                                                  | 27 | | 22. |

4. Mr. Charles needs to have at least 10 students sign up for homework help in order to use the computer lab. The inequality $h \geq 10$ represents the number of students, *h*, who must sign up. Select possible solutions of the inequality. Mark all that apply.

   (A) 7   (D) 10

   (B) 8   (E) 11

   (C) 9   (F) 12

GO ON

Name _____

5. The marking period is 45 school days long. Today is the twenty-first day of the marking period. The equation $x + 21 = 45$ can be used to find the number of days left in the marking period. Using substitution, Rachel determines

there are
20
24
26
days left in the marking period.

6. In a basket of fruit, $\frac{5}{6}$ of the pieces of fruit are apples. There are 20 apples in the display. The equation $\frac{5}{6}f = 20$ can be used to find how many pieces of fruit, f, are in the basket. Use words and numbers to explain how to solve the equation to find how many pieces of fruit are in the basket.

_____

_____

_____

7. Use exponents to write the expression.

$2 \times 2 \times 2 \times 2 \times 2 \times 4 \times 4 \times 4$

$2^{\square} \times 4^{\square}$

8. Write the algebraic expression in the box that shows an equivalent expression.

| $2(j + 3)$ | $2j + 3j$ | $3 + 6j + 2$ |

5j	5 + 6j	2j + 6

1. A plumber charges $10 for transportation and $55 per hour for repairs. Write an expression that can be used to find the cost in dollars for a repair that takes h hours.

_____

2. Ellen is 2 years older than her brother Luke. Let k represent Luke's age. Identify the expression that can be used to find Ellen's age.

(A) $k - 2$ (C) $2k$

(B) $k + 2$ (D) $\dfrac{k}{2}$

3. Abe is 3 inches taller than Chen. Select the expressions that represent Abe's height if Chen's height is h inches. Mark all that apply.

(A) $h - 3$ (C) the sum of h and 3

(B) $h + 3$ (D) the difference between h and 3

4. Erika writes the word expression

| the quotient of 24 and k |
.

Write an algebraic expression for the word expression. Then, evaluate the expression for $k = 3$. Show your work.

GO ON

Name _____

5. A resort rents surfboards for $15 plus $3 for each hour the surfboard is rented. An expression for the total cost of renting a surfboard for h hours is $15 + 3h$. Complete the table by finding the total cost of renting a surfboard for h hours.

Number of hours, h	$15 + 3h$	Total Cost
1		
2		
3		
4		

6. An online camping supplies outlet charges $14 for a canteen, and shipping is $2 per order.

Part A

Write an expression that CJ can use to find the total cost in dollars for ordering n canteens.

_____

Part B

CJ orders 2 canteens, and his friend Cameron orders 4 canteens. What is the total cost, including shipping, for both orders? Show your work.

1. Match each scenario with the equation that can be used to solve it.

Jane's dog eats 3 pounds of food a week. How many days will a 24-pound bag last?

$3x = 39$

There are 39 students in the gym, and there are an equal number of students in each class. If three classes are in the gym, how many students are in each class?

$4x = 24$

There are 4 games at the carnival. Kevin played all the games in 24 minutes. How many minutes did he spend at each game if he spent an equal amount of time at each?

$3x = 24$

2. Bryan rides the bus to and from work on the days he works at the library. In one month, he rode the bus 24 times. Solve the equation $2x = 24$ to find the number of days Bryan worked at the library. Draw a model.

GO ON

Name _____

3. Malorie uses $\frac{2}{3}$ foot of string to make a bracelet. She bought 6 feet of string.

Part A

Write and solve an equation to find how many bracelets, *x,* she can make from 6 feet of string.

Part B

Explain how you determined which operation was needed to write the equation.

4. Suzan's tulips are 6 inches shorter than her rose bush. The rose bush is 13 inches tall. Write and solve an addition equation to find the height of her tulips.

5. Danny and Carly like to work on jigsaw puzzles. Danny has 2 puzzles. If together they have 9 puzzles, then we can use the equation $x + 2 = 9$ to determine how many puzzles Carly has. How many puzzles does Carly have?

STOP

1. The maximum capacity of the school auditorium is 420 people. Write an inequality for the situation. Tell what type of numbers the variable in the inequality can represent.

_____

2. Match the inequality to the word sentence it represents.

$w < 70$ •

• The temperature did not drop below 70 degrees.

$x \leq 70$ •

• Dane saved more than $70.

$y > 70$ •

• Fewer than 70 people attended the game.

$z \geq 70$ •

• No more than 70 people can participate.

3. Cydney graphed the inequality $d \leq 14$.
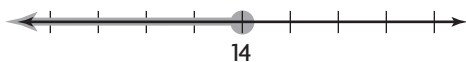
Part A

Dylan said that 14 is not part of the solution of the inequality. Do you agree or disagree with Dylan? Use numbers and words to support your answer.

Part B

Suppose Cydney's graph had an empty circle at 14. Write the inequality represented by this graph.

_____

GO ON

Name _____

4. The minimum wind speed for a storm to be considered a hurricane is 74 miles per hour. The inequality $w \geq 74$ represents the possible wind speeds of a hurricane.

Two possible solutions for the inequality $w \geq 74$

are

| 71 |
| 73 |
| 75 |

and

| 80. |
| 60. |
| 40. |

5. Match the inequality with the word sentence it represents.

$r > 10$ •   • Walter sold more than 10 tickets.

$s \leq 10$ •   • Fewer than 10 children are at the party.

$t \geq 10$ •   • No more than 10 people can be seated at a table.

$w < 10$ •   • At least 10 people need to sign up for the class.

6. Alena graphed the inequality $c \leq 25$.

Darius said that 25 is not part of the solution of the inequality. Do you agree or disagree with Darius? Use numbers and words to support your answer.
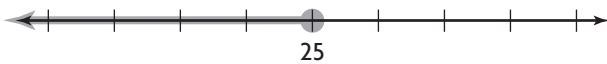
25

_____

_____

STOP

1. A box of peanut butter crackers contains 12 individual snacks. The total number of individual snacks, s, is equal to 12 times the number of boxes of crackers, b.

The independent variable is

$b.$
$s.$

The dependent variable is

$b.$
$s.$

The equation that represents the relationship between the variables is

$b = 12s.$
$s = 12b.$

2. A stationery store charges $8 to print logos on paper purchases. The total cost, c, is the price of the paper, p, plus $8 for printing the logo.

For numbers 2a–2d, choose Yes or No to indicate whether the statement is true.

2a. The total cost, c, depends on the price of the paper.   ○ Yes   ○ No

2b. c is the dependent variable.   ○ Yes   ○ No

2c. p is the independent variable.   ○ Yes   ○ No

2d. The equation that represents the relationship between the variables is $c = 8p$.   ○ Yes   ○ No

3. Miranda's wages are $15 per hour. Write a linear equation that gives the wages, w, in dollars that Miranda earns in h hours.

_____
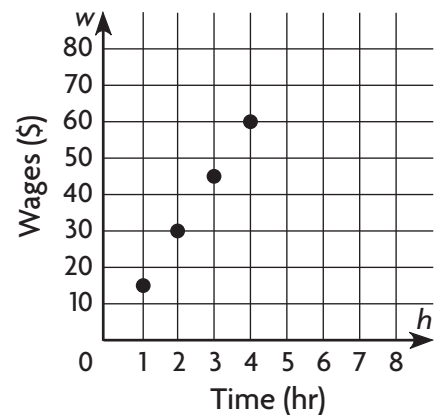
GO ON

Name _____

4. Alex swims 20 minutes per day for exercise. The total number of minutes, *m,* she swims equals 20 times the number of days, *d,* she swims.

What is the dependent variable?

What is the independent variable?

Write the equation that represents the relationship between the *m* and *d.*

5. To rent a beach chair and umbrella, there is a rental fee of $10. Then it costs $2 per day. Use the equation $c = 2d + 10$ to complete the table.

Input	Output
Days, d	**Cost ($), c**
2	
4	
6	
8	

6. Brian claims the linear equation for the relationship shown by the graph is $c = 35d.$ Use numbers and words to support Brian's claim.
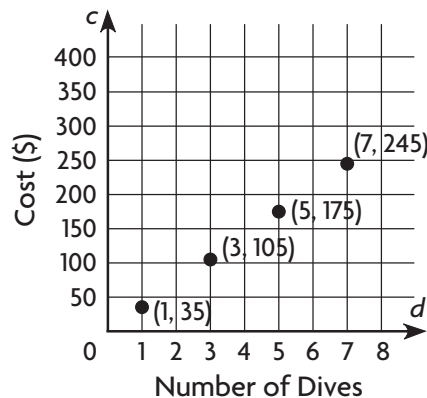
1. Find the area of the parallelogram.

7 in.

8 in.

9 in.
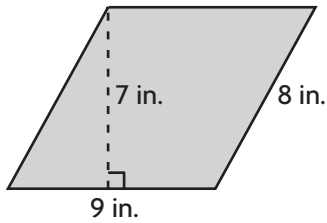
The area is _____ in.²

2. A wall tile is two different colors. What is the area of the white part of the tile? Explain how you found your answer.

5.5 in.

4 in.
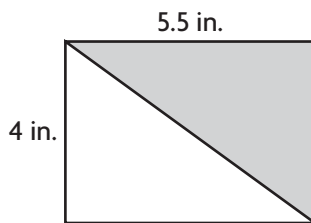
3. A carpenter needs to replace some flooring in a house.

7 ft

10 ft

12 ft

14 ft
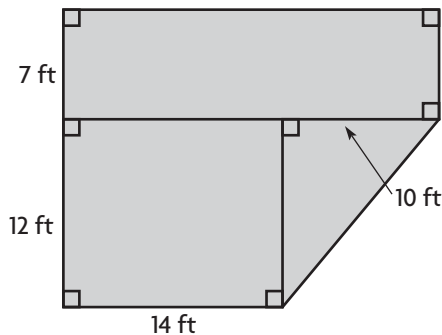
Select the expression that can be used to find the total area of the flooring to be replaced. Mark all that apply.

Ⓐ 19×14

Ⓒ $19 \times 24 - \frac{1}{2} \times 10 \times 12$

Ⓑ $168 + 12 \times 14 + 60$

Ⓓ $7 \times 24 + 12 \times 14 + \frac{1}{2} \times 10 \times 12$

GO ON

Name _____

4. A trapezoid has an area of 30 in.² If the lengths of the bases are 4.8 in. and 5.2 in., what is the height?

_____ in.

5. A quilt is in the shape of a regular pentagon. It is made from 5 pieces of fabric that are congruent triangles. Each triangle has an area of 16 in.² What is the area of the quilt?

_____ in.²

6. Name the polygon and find its area. Show your work.

4 in.

3.1 in.
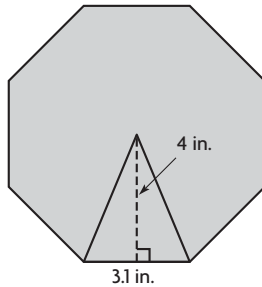
polygon: _____   area: _____

7. The roof of Braeden's house is shaped like a parallelogram. The base of the roof is 12 m and the area is 114 m². Choose a number and unit to make a true statement.

The height of the roof is

| 102 |
| 30 |
| 19 |
| 9.5 |

| m. |
| m². |
| m³. |

STOP

1. A prism is filled with 44 cubes with $\frac{1}{2}$-unit side lengths. What is the volume of the prism in cubic units?

_____ cubic units

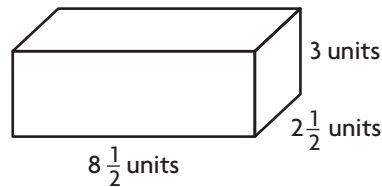**2.** Dominique has a box of sewing buttons that is in the shape of a rectangular prism.

2 in.
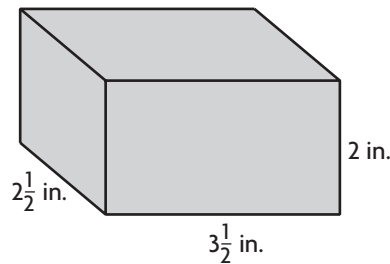
$2\frac{1}{2}$ in.

$3\frac{1}{2}$ in.

The volume of the box is $2\frac{1}{2}$ in. $\times$ $3\frac{1}{2}$ in. $\times$

2 in.		8 in³.
$2\frac{1}{2}$ in.	$=$	$17\frac{1}{2}$ in.³
$3\frac{1}{2}$ in.		35 in³.

3. Select the following expressions that can be used to find the volume of the rectangular prism. Mark all that apply.

3 units

$2\frac{1}{2}$ units

$8\frac{1}{2}$ units

Ⓐ $2\frac{1}{2}$ units $\times$ $8\frac{1}{2}$ units $\times$ 3 units

Ⓑ $4(8\frac{1}{2}$ units $\times$ 3 units$)$ + $2(2\frac{1}{2}$ units $\times$ 3 units$)$

Ⓒ 63.75 cubic units

Ⓓ $2(8\frac{1}{2}$ units $\times$ $2\frac{1}{2}$ units$)$ + $2(8\frac{1}{2}$ units $\times$ 3 units$)$
   + $2(2\frac{1}{2}$ units $\times$ 3 units$)$

GO ON

Name _____

4. A box measures 5 units by 3 units by $2\frac{1}{2}$ units.
For numbers 4a–4b, choose Yes or No to indicate
whether the statement is correct.

4a. The greatest number of cubes   ○ Yes   ○ No
with a side length of $\frac{1}{2}$ unit that
can be packed inside the box is 300.

4b. The volume of the box is $37\frac{1}{2}$ cubic units.   ○ Yes   ○ No

5. A box measures 4 units by $2\frac{1}{2}$ units by $1\frac{1}{2}$ units.
For numbers 5a–5b, choose Yes or No to indicate
whether the statement is correct.

5a. The greatest number of cubes with a side   ○ Yes   ○ No
length of $\frac{1}{2}$ unit that can be packed inside
the box is 100.

5b. The volume of the box is 15 cubic units   ○ Yes   ○ No

6. Gary wants to build a shed shaped like a rectangular prism in his
backyard. He goes to the store and looks at several different options.
The table shows the dimensions and volumes of four different sheds.

Use the formula $V = l \times w \times h$ to complete the table.

	Length (ft)	Width (ft)	Height (ft)	Volume (ft³)
Shed 1		10	8	960
Shed 2	18		10	2,160
Shed 3	12	4		288
Shed 4	10	12	10	

7. A prism is filled with 25 cubes with $\frac{1}{2}$-unit side lengths.
What is the volume of the prism in cubic units?

☐ cubic units

STOP

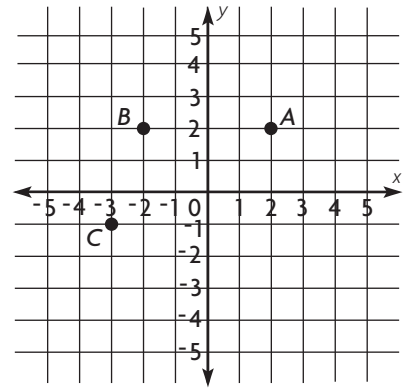**1.** Kareem is drawing parallelogram *ABCD* on the coordinate plane.

Find and label the coordinates of the fourth vertex, *D*, of the parallelogram. Draw the parallelogram.

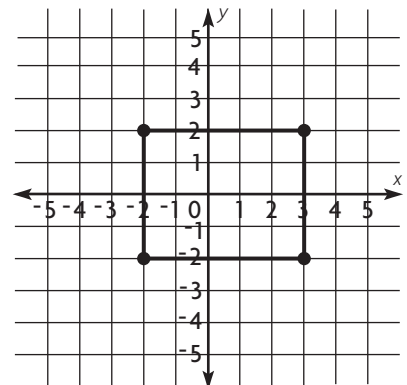What is the length of side *CD*? How do you know?

_____

_____

2. Suppose the point (3, 2) is changed to (3, 1) on this rectangle. What other point must change so the figure remains a rectangle? What is the area of the new rectangle?

Point : _____ would change to _____.

The area of the new rectangle is _____ square units.

3. Eliana is drawing a figure on the coordinate grid. For numbers 3a–3d, choose Yes or No to indicate whether the statement is true.
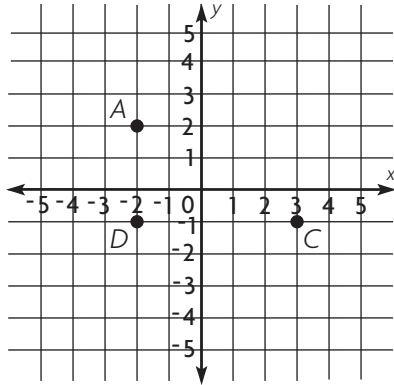
3a. The point (⁻1, 1) would be the fourth vertex of a square.　　○ Yes　　○ No

3b. The point (1, 1) would be the fourth vertex of a trapezoid.　　○ Yes　　○ No

3c. The point (2, ⁻1) would be the fourth vertex of a trapezoid.　　○ Yes　　○ No

3d. The point (⁻1, ⁻1) would be the fourth vertex of a square.　　○ Yes　　○ No
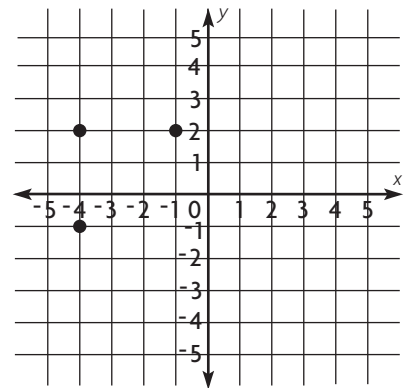
GO ON

Name _____

4. Hsiu wants to draw a parallelogram on the coordinate plane. He plots points *A*, *D*, and *C*.

Part A

Find and label the coordinates of the fourth vertex, *B*, of the parallelogram. Draw the parallelogram.

Part B

What is the length of side *AB*? How do you know?

5. Suppose the point (3, ⁻1) is changed to (3, 0) on this rectangle. What other point must change so the figure remains a rectangle? What is the area of the new rectangle?

Point _____ would change to _____.

The area of the new rectangle is _____ square units.

STOP
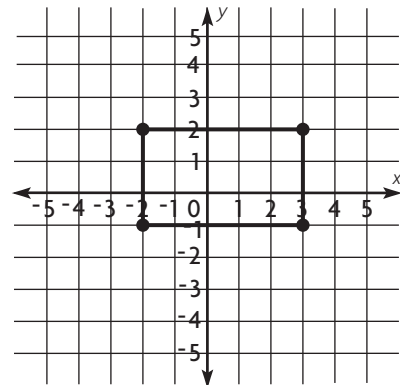
1. Elaine makes a rectangular pyramid from paper.

The base is a

| rectangle. |
| square. |
| triangle. |

The lateral faces are
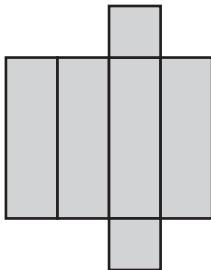
| rectangles. |
| squares. |
| triangles. |

2. Tina cut open a cube-shaped microwave box to see the net. How many square faces does this box have?

_____ square faces

3. Charles is painting a treasure box in the shape of a rectangular prism.

Which nets can be used to represent Charles' treasure box?
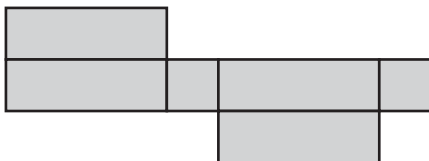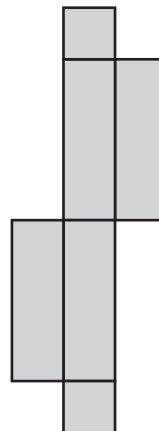Mark all that apply.

Ⓐ

Ⓒ

Ⓑ

Ⓓ

GO ON

Name _____

4. Jason is covering an ottoman with fabric. The ottoman
is in the shape of a rectangular prism that is 37 cm long,
21 cm wide, and 30 cm high. How much fabric is needed
to cover the sides and top of the ottoman? Explain your strategy.

5. Eli made a wooden box in the shape of a rectangular prism. The
box has a length of 5 inches, a width of $3\frac{1}{2}$ inches, and a height
of 7 inches.

Part A

Eli wants to paint the entire box green and give the box to his
dad as a gift. What is the total area that he will paint? Explain
how you found your answer.

Part B

Can the box hold 200 cubic inches of packing peanuts?
Explain how you know.

6. A gift box measures 8 inches by 10 inches by 3 inches. What is
the surface area of the box?

[____] in.²

STOP

1. Michael's teacher asks, "How many items were sold on the first day of the fund raiser?" Explain why this is not a statistical question.

```

```

2. For numbers 2a–2d, choose Yes or No to indicate whether the question is a statistical question.

2a. What is the height of the tallest tree in each of the national parks? ○ Yes ○ No

2b. What is the difference in height between the tallest tree and the shortest tree in each of the national parks? ○ Yes ○ No

2c. How tall is the cypress tree on the north side of the lake this morning? ○ Yes ○ No

2d. What are the heights of the trees that are taller than 30 feet? ○ Yes ○ No

3. For numbers 3a–3c, choose Yes or No to indicate whether the question is a statistical question.

3a. How many minutes did it take Ethan to complete his homework last night? ○ Yes ○ No

3b. How many minutes did it take Madison to complete her homework each night this week? ○ Yes ○ No

3c. How many more minutes did Andrew spend on homework on Tuesday than on Thursday each week? ○ Yes ○ No

GO ON

4. A researcher asks, "How much electricity did Home 12 use on Day 1?" Explain why this is not a statistical question.

5. Is the question a statistical question? Select Yes or No for each question.

a.   How many pets do you have in your home?   ○ Yes   ○ No

b.   How tall are basketball players?   ○ Yes   ○ No

c.   Who is the tallest 6th grade student?   ○ Yes   ○ No

d.   How many minutes long is a lunch period in a school?   ○ Yes   ○ No

e.   How much time do 6th grade students spend doing homework every night?   ○ Yes   ○ No

6. For numbers 6a–6e, choose Yes or No to indicate whether or not the question is a statistical question.

6a.   How many notebooks do you have?   ○ Yes   ○ No

6b.   What is the average height of an Olympic swim team?   ○ Yes   ○ No

6c.   What is the area of a football field?   ○ Yes   ○ No

6d.   How many people eat ice cream during the summer?   ○ Yes   ○ No

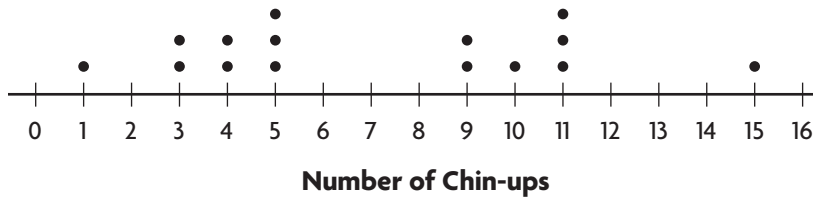6e.   How long can students in a class hold their breath?   ○ Yes   ○ No

STOP

1. The dot plot shows the number of chin-ups done by a gym class.

Number of Chin-ups

For numbers 1a–1e, choose Yes or No to indicate whether the statement is correct.

1a.	There are two peaks.	○ Yes	○ No
1b.	There are no clusters.	○ Yes	○ No
1c.	There is a gap between 6 and 8.	○ Yes	○ No
1d.	The most chin-ups anyone did was 15.	○ Yes	○ No
1e.	The modes are 3, 4, and 9.	○ Yes	○ No

2. The histogram shows the high temperatures in degrees Fahrenheit of various cities for one day in March.
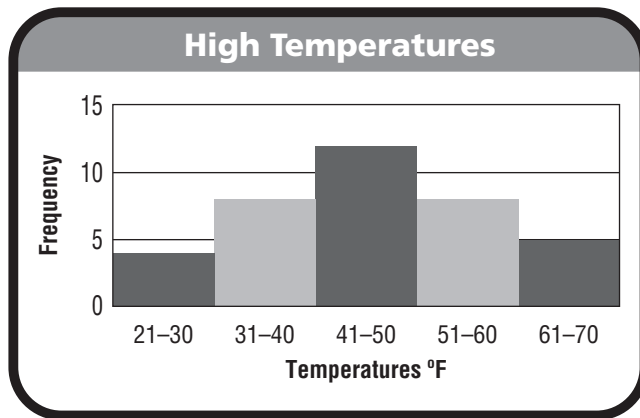
Select the best words to complete each sentence.

The histogram has
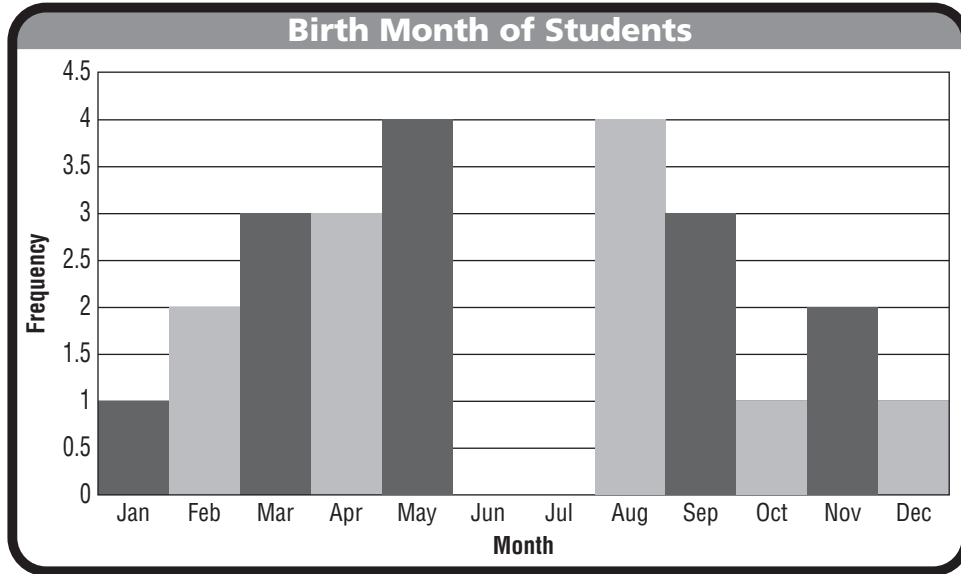| zero |
| one |
| two |
peak(s). The histogram
| has |
| does not have |
line symmetry.

GO ON

3. Mrs. Gutierrez made a histogram of the birth month of the students in her class. Describe the patterns in the histogram by completing the chart.

Birth Month of Students

Identify any peaks.	Indentify any increases across the intervals.	Indentify any decreases across the intervals.

4. Diego collected data on the number of movies seen last month by a random group of students.

Number of Movies Seen Last Month												
0	1	3	2	1	0	5	12	2	3	2	2	3

Draw a box plot of the data and use it to find the interquartile range and range.
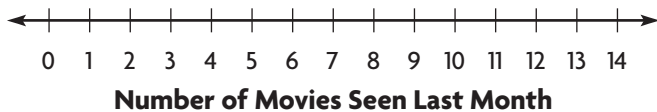
Interquartile range _____

Range _____

Number of Movies Seen Last Month

STOP

1. Kylie's teacher collected data on the heights of boys and girls in a sixth grade class. Use the information in the table to compare the data.

Heights (in.)							
Girls	55	60	56	51	60	63	65
Boys	72	68	70	56	58	62	64

The mean of the boys' heights is [the same as / less than / greater than] the mean of the girls' heights.

The range of the boys' heights is [the same as / less than / greater than] the range of the girls' heights.

2. The box plot shows the number of boxes of paper sold at an office supply store each day for a week.

Boxes of Paper Sold

2   4   6   8   10   12   14   16   18   20   22
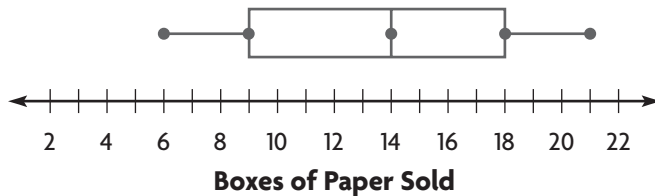
For numbers 2a–2d, choose Yes or No to indicate whether the statement is correct.

2a.	The median is 18.	○ Yes	○ No
2b.	The range is 15.	○ Yes	○ No
2c.	The interquartile range is 9.	○ Yes	○ No
2d.	The upper quartile is 18.	○ Yes	○ No

3. Jake's final grade in his science class is calculated by finding the mean of his scores for six project reports. The scores Jake received on his first five reports are 66, 80, 88, 82, and 72.
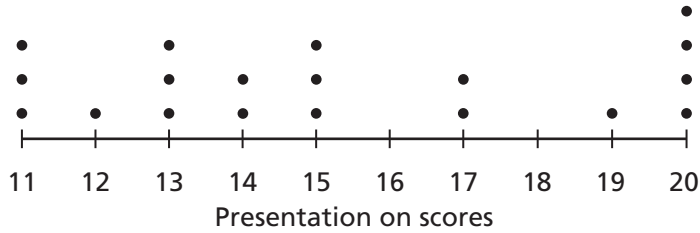
What is the lowest–possible score Jake can earn on his last report in order to have at least an 80 for his final grade?

(A) 86   (C) 92

(B) 88   (D) 96

GO ON

4. Calculate the range and interquartile range for the data displayed in the dot plot. Show your work.

Presentation on scores

Range: _____

Interquartile range: _____

_____

5. The box plot shows the number of points scored in each game by a football team one season.
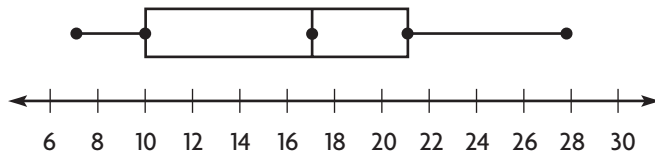
For numbers 5a–5d, choose Yes or No to indicate whether the statement is correct.

5a. The range is 22. ○ Yes   ○ No

5b. The median is 18. ○ Yes   ○ No

5c. The lower quartile is 10. ○ Yes   ○ No

5d. The interquartile range is 11. ○ Yes   ○ No

STOP

Name _____

1. The data set shows the ages of the members of the cheerleading squad. Plot the data on the dot plot. What is the most common age of the members of the squad? Explain how you found your answer.

Ages of Cheerleaders (years)				
8	11	13	12	14
12	10	11	9	11

```
  +----+----+----+----+----+----+----+----+----+
  7    8    9   10   11   12   13   14   15
```
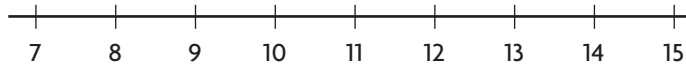
2. Ian collected data on the number of children in 13 different families.

Number of Children												
1	2	4	3	2	1	0	8	1	1	0	2	3

Draw a box plot of the data and use it to find the interquartile range and range.

```
 <--+----+----+----+----+----+----+----+----+----+----+-->
    0    1    2    3    4    5    6    7    8    9   10
```

Interquartile range: _____   Range: _____

GO ON
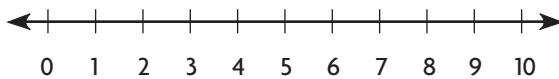
Name _____

3. The frequency table shows the TV ratings for the show *American Singer*. Complete the histogram for the data.

TV Ratings	
Rating	**Frequency**
14.1–14.5	2
14.6–15.0	6
15.1–15.5	6
15.6–16.0	5
16.1–16.5	1

TV Ratings

Frequency
6
5
4
3
2
1
0
14.1–14.5 14.6–15.0 15.1–15.5 15.6–16.0 16.1–16.5
Rating

4. The data set shows the total points scored by the middle school basketball team in the last 14 games. What is the most common number of points scored in a game? Explain how to find the answer using a dot plot.
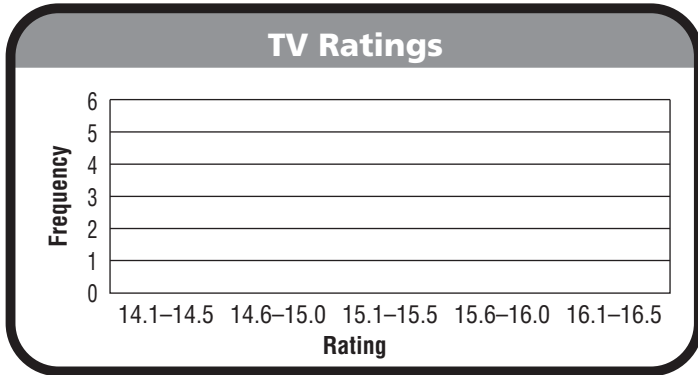
Total Points Scored						
42	36	35	49	52	43	41
32	45	39	50	38	37	39

_____

_____

5. The data set shows the number of desks in 12 different classrooms.

Classroom Desks											
24	21	18	17	21	19	17	20	21	22	20	16

Find the values of the points on the box plot.

A   B   C D   E

$A =$ ☐ $B =$ ☐ $C =$ ☐ $D =$ ☐ $E =$ ☐

STOP
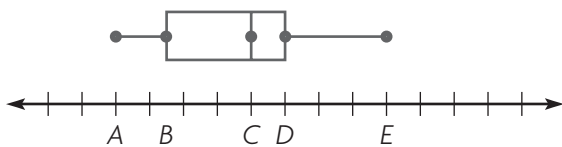
1. Describe the data set by writing the attribute measured, the unit of measure, the likely means of measurement, and the number of observations in the correct location on the chart.

Heights of 6th Graders (in.)						
50	58	56	60	58	52	50
53	54	61	48	59	48	59
55	59	62	49	57	56	61

21

yardstick

inches

heights of 6th graders

Attribute	Unit of Measure	Likely Means of Measurement	Number of Observations

2. Describe the data set by writing the attribute measured, the unit of measure, the likely means of measurement, and the number of observations in the correct location on the chart.

Daily Temperature (°F)						
64	53	61	39	36	43	48

7   thermometer   degrees Fahrenheit   daily temperature

Attribute	Unit of Measure	Likely Means of Measurement	Number of Observations

GO ON

3. A teacher surveys her students to find out how much time the
students spent eating lunch on Monday.

She uses | hours / minutes / seconds | as the unit of measure.

Monday Lunch Time (min.)			
15	18	18	14
15	20	16	15
15	19	15	19

4. Describe the data set by writing the attribute measured, the unit
of measure, the likely means of measurement, and the number of
observations in the correct location on the chart.

100-Meter Run Data						
12.8 seconds	12.5 seconds	12.9 seconds	13.4 seconds	13.5 seconds	13.7 seconds	12.8 seconds

7	stopwatch	seconds	time to run a 100-meter race

Attribute	Unit of Measure	Likely Means of Measurement	Number of Observations

5. A teacher surveys her students to find out how much time
the students spent completing their art project.

She uses | hours / minutes / seconds | as the unit of measure.

Art Project Time (min.)			
35	50	25	30
20	15	55	30
20	35	50	15

6. Debra surveys her classmates to find out
how much time each night they spend sleeping.

She uses | hours / minutes / seconds | as the unit of measure.

Time Spent Sleeping (hr.)			
7	9	9	6
8	7	8	6
7	9	9	8

STOP

1. The numbers of sit-ups students completed in one minute are 10, 42, 46, 50, 43, and 49. The mean of the data values is 40 and the median is 44.5. Which measure of center better describes the data, the mean or median? Use words and numbers to support your answer.

_____

_____

_____

2. The Martin family goes out for frozen yogurt to celebrate the last day of school. The costs of their frozen yogurts are $1, $1, $2, and $4. For items 2a–2d, choose Yes or No to indicate whether the statement is correct.

2a. The mean cost for the frozen yogurts can be found by adding each cost and dividing that total by 4.　　○ Yes　　○ No

2b. The mean cost of the four frozen yogurts is $2.　　○ Yes　　○ No

2c. The difference between the greatest cost and the mean is $1.　　○ Yes　　○ No

2d. The difference between the least cost and the mean is $1.　　○ Yes　　○ No

3. Larry is training for a bicycle race. He records how far he rides each day in a table. Find the mode of the data.
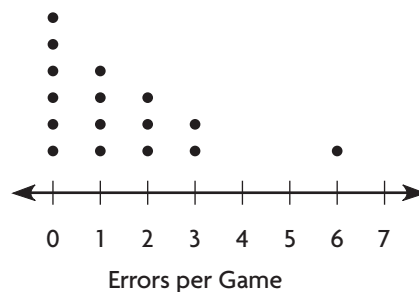
Miles Larry Rides each Day					
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
15	14	12	16	15	15

_____

GO ON

4. The dot plot shows the number of errors made by a baseball team in the first 16 games of the season. For numbers 4a–4e, choose Yes or No to indicate whether the statement is correct.


Errors per Game

4a. There is a gap from 4 to 5.	○ Yes	○ No
4b. There is a peak at 0.	○ Yes	○ No
4c. The dot plot has line symmetry.	○ Yes	○ No
4d. There are two modes.	○ Yes	○ No
4e. There is one cluster.	○ Yes	○ No

5. The data set shows the number of soccer goals scored by players in 3 games. For numbers 5a–5c, choose Yes or No to indicate whether the statement is correct.

Number of Goals Scored			
Player A	1	2	1
Player B	2	2	2
Player C	3	2	1

5a. The mean absolute deviation of Player A is 1. ○ Yes ○ No

5b. The mean absolute deviation of Player B is 0. ○ Yes ○ No

5c. The mean absolute deviation of Player C is greater than the mean absolute deviation of Player A. ○ Yes ○ No

6. The box plot shows the heights of corn stalks from two different farms.

Farm A
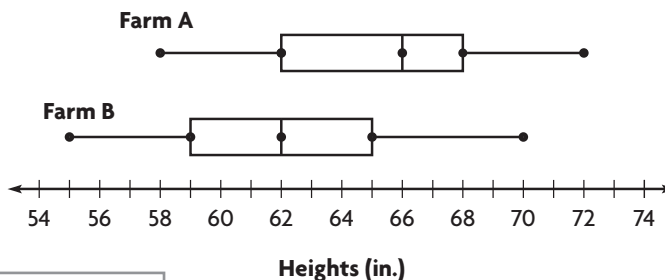
Farm B

Heights (in.)

The range of Farm A's heights is

the same as
less than
greater than

the range of Farm B's heights.

STOP

1. The numbers of points scored by a football team in 7 different games are 26, 38, 33, 20, 27, 3, and 28. For numbers 1a–1c, choose Yes or No to indicate whether the statement is true.

   1a. The outlier in the data set is 3. ○ Yes ○ No

   1b. The difference between the outlier and the lowest number of points scored is 17. ○ Yes ○ No

   1c. The outlier in this set of data affects the mean by increasing it. ○ Yes ○ No

2. The amounts of money Connor earned each week from mowing lawns for 5 weeks are $12, $61, $71, $52, and $64. The mean amount earned is $52 and the median amount earned is $61. Identify the outlier and describe how the mean and median for this set of data are affected by it.

3. The prices of mesh athletic shorts at five different stores are $9, $16, $18, $20, and $22. The mean price is $17 and the median price is $18. Identify the outlier and describe how the mean and median for this set of data are affected by it.

4. The number of miles Madelyn drove between stops was 182, 180, 181, 184, 198, and 185. Which measure of center best describes the data?

   A mean   **C** mode

   B median   **D** range

GO ON

Name _____

5. The amounts of money Brittany earned each week from babysitting for 5 weeks are $12, $62, $70, $54, and $62. The mean amount earned is $52 and the median amount earned is $62. Identify the outlier and describe how the mean and median for this data set are affected by it.

6. The high temperatures for the week in Cincinnati, in degrees Fahrenheit, were 43, 43, 45, 42, 26, 43, and 45. For numbers 6a–6c, choose Yes or No to indicate whether the statement is correct.

6a. The outlier in the data set is 26. ○ Yes ○ No

6b. The difference between the outlier ○ Yes ○ No
and the highest temperature is 19.

6c. The outlier in this set of data affects ○ Yes ○ No
the mean by increasing it.

7. The numbers of emails Reese received each hour are 8, 7, 10, 8, 1, 9, 8, and 11. The mean of the data values is 7.75 and the median is 8.5. Which measure of center better describes the data, the mean or median? Use words and numbers to support your answer.

8. Luis' bowling scores were 195, 194, 191, 190, 208, and 192. Which measure of center best describes Luis' bowling scores?

(A) mean

(B) median

(C) mode

(D) range

STOP