8th Enhanced Math Pretest Study Guide

Please use Khan Academy for additional practice:

https://www.khanacademy.org/math/cc-seventh-grade-math

Quick Reference Sheet

operations with DECIMALS & WHOLE NUMBERS

whole number place value:

5,854,902 =

Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
5	8	5	4	9	0	2

decimal place value:

Ten Thousands	Thousands	Hundreds	Tens	Ones	Decimal Point	Tenths	Hundredths	Thousandths	Ten Thousandths
5	8	5	4	9	.	2	4	8	2

adding & subtracting decimals:

- Line up the decimals vertically.
- Add zeroes to fill in empty place values.
- Add or subtract.
- Bring down the decimal into your answer.

estimating:

- Round each decimal to the nearest whole number.
- Re-write the problem.
- Add, subtract, multiply or divide.

multiplying decimals:

- Multiply without worrying about the decimal – yet.
- Count the total number of decimal places in the factors.
- Place the decimal point in the answer, using the same number of decimal places in the factors. Count from the right, moving left.

dividing decimals:

- Write the problem with the dividend inside a division bracket.
- Re-write the divisor as a whole number and move the decimal in the dividend as needed.
- Divide without worrying about the decimal – yet. Add zeroes until there is no remainder (or you notice repetition)
- Place the decimal point in the answer lined up with the decimal in the dividend.

Quick Reference Sheet

FRACTION OPERATIONS and INTEGER CONCEPTS

operations with fractions

adding and subtracting	multiplying	dividing
1. Change mixed numbers to improper fractions. 2. Find the least common denominator of the fractions. 3. Re-write each fraction using the common denominator. Don't forget to change the numerator as well, by multiplying by the same factor used to take that denominator to the LCD. 4. Add or subtract the numerators and keep the denominators the same. 5. Simplify the answer if necessary. This means, reduce fractions and re-write improper fractions as mixed numbers.	1. Turn any mixed numbers into improper fractions. 2. Multiply the numerator by the numerator. 3. Multiply the denominator by the denominator. 4. Simplify your answer.	1. Turn any mixed numbers into improper fractions. 2. Find the reciprocal of the divisor. The divisor is the second number. 3. Replace the division symbol with a multiplication symbol. 4. Multiply the numerator by the numerator. 5. Multiply the denominator by the denominator. 6. Simplify your answer.

absolute value

- Is : the distance a number is from zero.
- Looks like : $|-100| = 100$

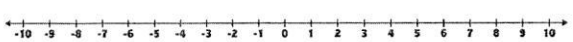
equivalent fractions

When you multiply the numerator and denominator of a fraction by the same number, the resulting fraction is equivalent to the original.

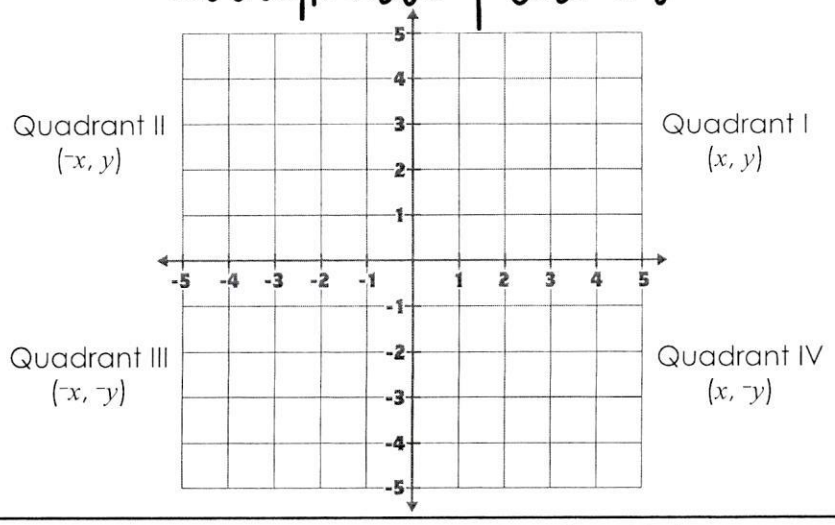
integers

Integers are positive and negative numbers with no fractional parts.

Integers can be found in the real world when dealing with money, temperature, height, depth and so much more!



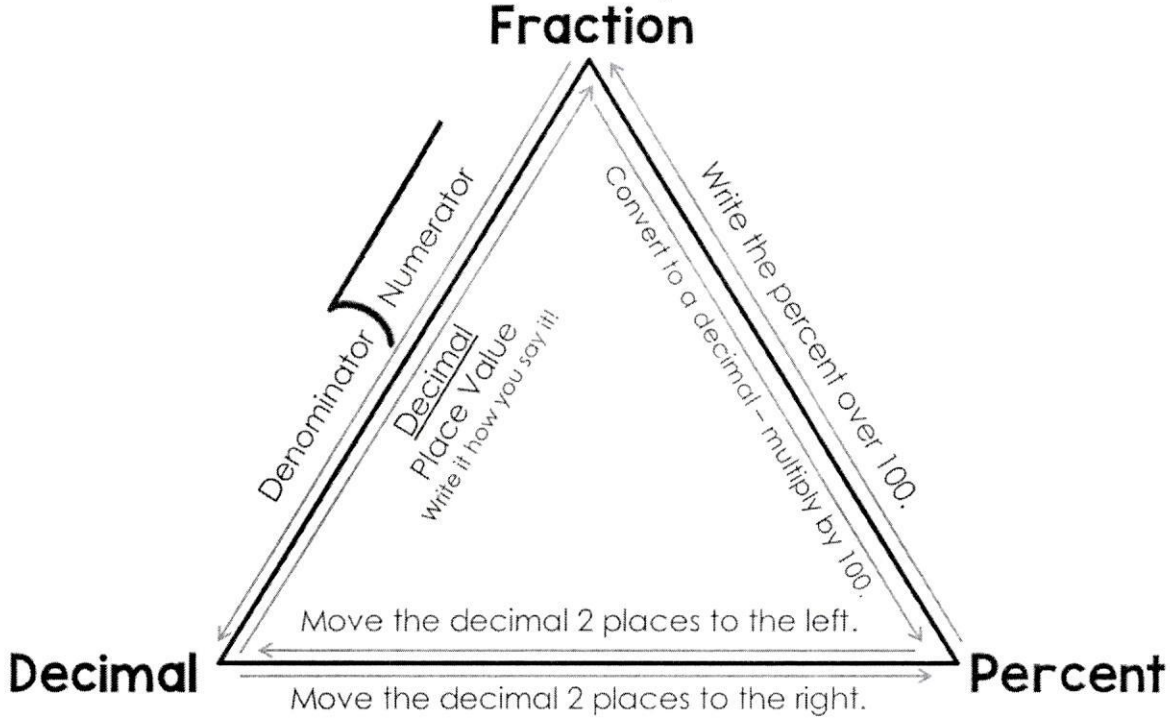
coordinate planes



Quick Reference Sheet

Ratios, Rates & PERCENTS

fractions, decimals and percents conversions



Ratios and Rates

- A ratio is a comparison of two numbers or quantities.
- A ratio can be written as a fraction, with a colon or with the word "to".
- A rate is a ratio that compares two quantities with different measures.
- A unit rate is when the ratio has a second term of one.
- To calculate a unit rate, divide the numerator of the ratio by the denominator of the ratio.
    - Hint : When dealing with cost, the dollar amount will be the numerator.

Proportions

Setting Up Proportions :

1) What do you need to find? Read the problem carefully to identify what piece of information is missing. This will be represented by a variable in your proportion.
2) What do you know? Read the problem carefully again to identify what pieces of information you have. Amounts and units are important.
3) Write a Proportion. Set up a proportion, keeping the units in the same place on both ratios.
4) Solve. Cross multiply and solve for the variable.
5) Check. Cross multiply to ensure your answer is correct.

Quick Reference Sheet

Ratios, Rates & PERCENTS

Customary measurement conversions

Length

- 12 in. = 1 ft.
- 3 ft. = 1 yd.
- 1,760 yd. = 1 mi.
- 5,280 ft. = 1 mi.

Capacity

- 8 oz. = 1 c.
- 2 c. = 1 pt.
- 2 pt. = 1 qt.
- 4 c. = 1 qt.
- 4 qt. = 1 gal.

Weight

- 16 oz. = 1 lb.
- 2,000 lb. = 1 T.

Time

- 60 sec = 1 min.
- 60 min. = 1 hr.

Percent of a Number

- Percent is the ratio of a number compared to 100.
- The percent symbol is %.
- Finding the percent of a number :
  - Change the percent to a decimal.
  - Multiply the decimal by the original number.

Scale

- To solve problems involving scale, you will set up a proportion.
- A scale factor is a ratio of two sets of measurements used when determining distance on a map, measurements on a scale drawing, etc.

Quick Reference Sheet

EXPRESSIONS

properties of math:

The Associative Property

"Grouping doesn't affect the sum or product"

$(4 + 3) + 1 = 4 + (3 + 1)$

The Commutative Property

"Order doesn't affect the sum or product"

$8 \cdot 3 \cdot 2 = 3 \cdot 2 \cdot 8$

The Identity Property

"A number multiplied by one or added together with zero will result in the same number."

$8 \cdot 1 = 8$ and $8 + 0 = 8$

The Distributive Property

A single number on the outside of a set of parentheses must be multiplied by all terms inside the parenthesis.

$4(3 + x) = 4 \cdot 3 + 4 \cdot x$

order of operations:

- P : Parenthesis
- E : Exponents
- MD : Multiplication or Division
- AS : Addition or Subtraction

operations with exponents:

- The exponent (little number up top) tells you how many times to multiply the base (big number at the bottom) by itself.
  - $6^2 = 6 \cdot 6$
  - $4^5 = 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4$

evaluating expressions:

1. Substitute the given value(s) for the variable(s) into the expression in place of the variable(s).
2. Simplify using the order of operations.

writing expressions key words:

Addition

More than
Increased by
Greater than
Add
Total
Plus
Sum

Subtraction

Decreased by
Difference
Take away
Less
Subtract
Less than
Subtracted from

Multiplication

Product
Times
Multiply
Of
Twice
Triple
Double

Division

Quotient
Divide
Divided by
Split
Equally

Quick Reference Sheet

EQUATIONS and INEQUALITIES

Key terms:

Expression
Numbers, symbols and operations that are grouped together that show the value of something.

Equation
A mathematical sentence that says two expressions are equal. The equal sign (=) is used to show equality.

Inequality
A mathematical sentence that says two expressions are NOT equal. One of four inequality symbols is used to show the expressions are not the same.

Graphing Inequalities:

Open or Closed?

- An open circle indicates that the circled number is not included in the solution set.
- A closed circle indicates that the circled number is included in the solution set.

The Direction:

- The direction the arrow points shows which numbers are included in the solution set for the inequality.

Solving equations & inequalities:

Use inverse operations!

- Multiplication – Division
- Addition – Subtraction

Independent vs. Dependent:

- Independent variable – the variable being manipulated. It is not affected by the other variable.
- Dependent variable – the variable whose value depends on the independent variable.

Writing Equations Key words:

Addition

- More than
- Increased by
- Greater than
- Add
- Total
- Plus
- Sum

Subtraction

- Decreased by
- Difference
- Take away
- less
- Subtract
- Less than
- Subtracted from

Multiplication

- Product
- Times
- Multiply
- Of
- Twice
- Triple
- Double

Division

- Quotient
- Divide
- Divided by
- Split equally

Equal Sign

- Is
- Equal
- Equal to

Quick Reference Sheet

graphing INEQUALITIES

the circle:

Open or Closed?

- An open circle indicates that the circled number is not included in the solution set.
- A closed circle indicates that the circled number is included in the solution set.

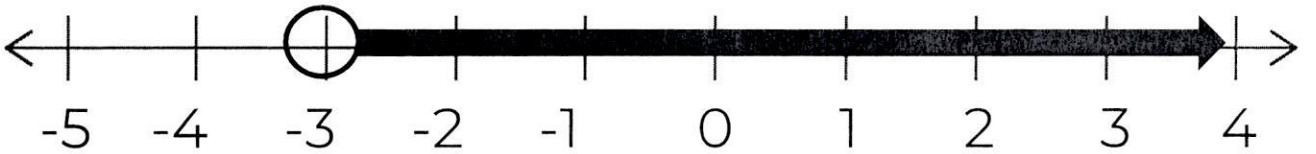
the arrow:

The Direction:

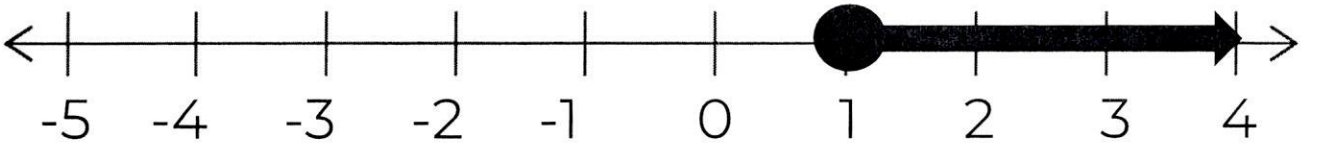
- The direction the arrow points shows which numbers are included in the solution set for the inequality.

examples:

$x > -3$

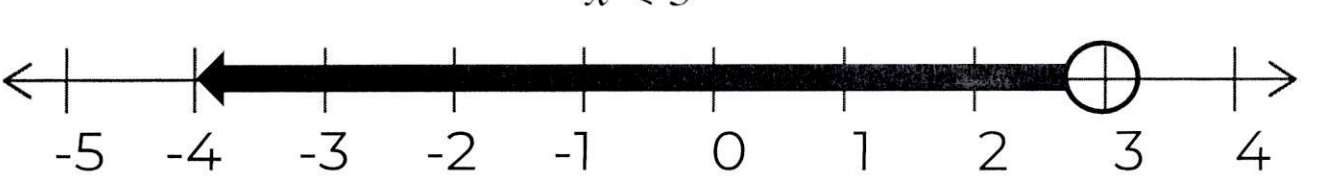


$x \geq 1$



$x \leq 2$

$x < 3$



Quick Reference Sheet

GEOMETRY

area formulas:

Square

$A = b \cdot h$ OR $A = s^2$

Rectangle

$A = b \cdot h$

Triangle

$A = \frac{1}{2} b \cdot h$

Parallelogram

$A = b \cdot h$

Trapezoid

$A = \frac{b_1 + b_2}{2} \cdot h$

area of special shapes:

- Special shapes are non-traditional figures that are composed of shapes such as triangles and rectangles.

To find the area of special shapes :

1. Using your pencil, break apart the shape into squares, rectangles and/or triangles. There are many ways to break apart the shape!
2. Highlight the side length(s) that do not have a measurement.
3. Looking at the opposite sides, fill in the missing side lengths.
4. Find the area of each individual shape.
5. Add the area of each shape to get the total area.

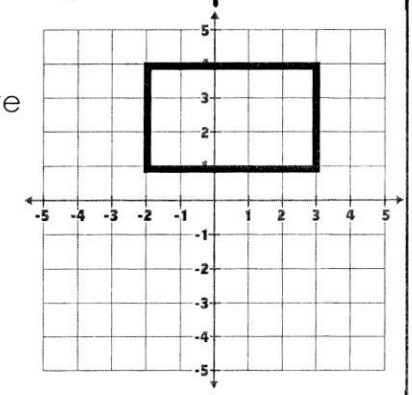
Volume of Rectangular prisms:

- The space inside of a 3D object.
- Measured in cubic units (units^3)
- Found by multiplying the length, width and height.

surface area:

- Surface area is the sum of the area of each face of a three-dimensional object.
- Measured in square units (units^2)

polygons in the coordinate plane:



- Sometimes shapes are graphed on a coordinate plane. Each box on the plane could represent a single unit or a different number of units.
- To find the area of a figure on the coordinate plane, first identify the length of each side of the shape, as well as the height (for triangles, trapezoids and parallelograms).
- Calculate the area using the area formulas you have learned.

Quick Reference Sheet

Area of SPECIAL SHAPES

area formulas:

Square

$A = b \cdot h$ OR $A = s^2$

Rectangle

$A = b \cdot h$

Triangle

$A = \frac{1}{2} b \cdot h$

Parallelogram

$A = b \cdot h$

Trapezoid

$A = \frac{b_1 + b_2}{2} \cdot h$

area of special shapes:

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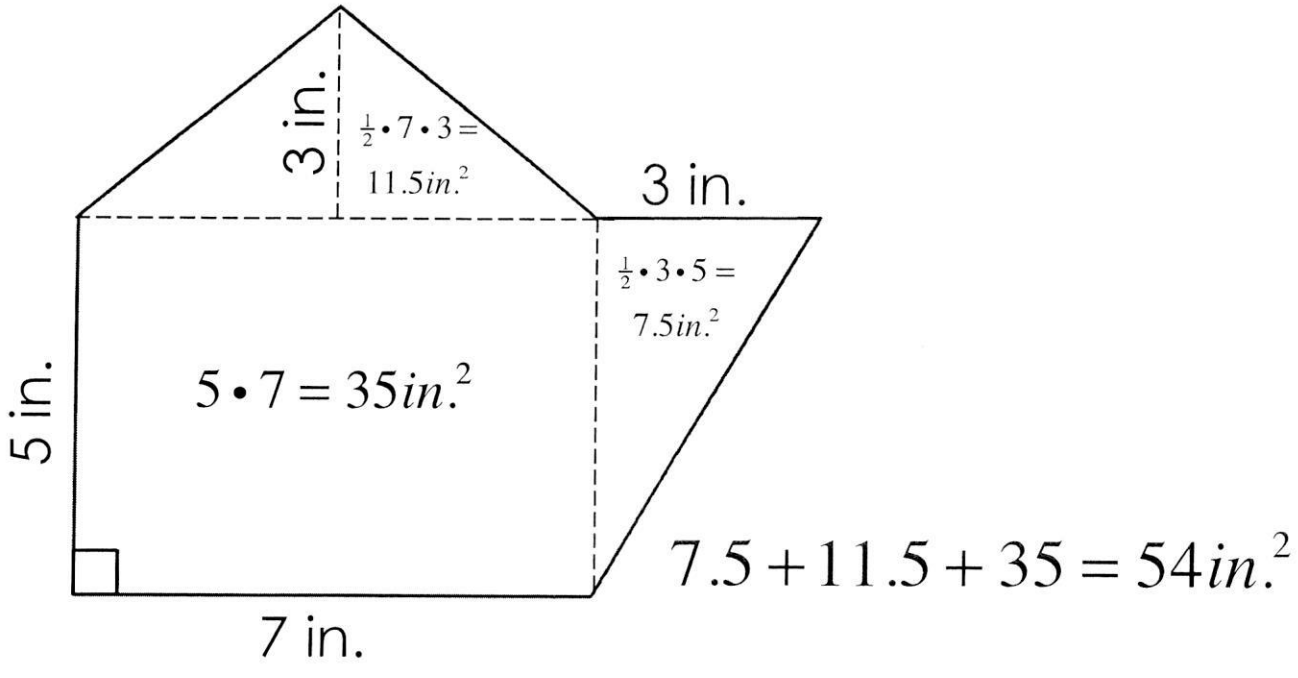
5. Add the area of each shape to get the total area.

example:



$7.5 + 11.5 + 35 = 54in.^2$

Quick Reference Sheet

DATA displays

Box & Whisker Plots:

- Identify these five data points :
  - Minimum – smallest data point
  - 1st Quartile – median of the 1st half
  - Median – middle data point
  - 3rd Quartile – median of the 2nd half
  - Maximum – largest data point
- Draw a number line.
- Plot each of the five points.
- Connect the 1st and 3rd quartiles with a box. Identify the median.
- Connect the minimum and maximum to the box with a line.

Measures of Center & Variation:

- **Mean** - To find the mean you first find the sum of all pieces of data and then divide the sum by the number of pieces of data.
- **Median** - To find the median you first put the numbers in numerical order and then find the digit in the middle. If there are two numbers in the middle, add the numbers and divide by two.
- **Range** – To find the range you first find the highest and lowest number in the set. Then, subtract the lowest from the highest.
- **Interquartile Range** – To find the IQR you subtract the 1st quartile from the 3rd quartile.

Histograms:

1. Separate your data into equal groups.
2. If each category is a range of numbers, each should use the same interval.
3. Label the y-axis with the number of times data will occur in each group. (be consistent)
4. Label the x-axis with the intervals or categories.
5. Create a bar to represent the total pieces of data in each interval or category.
   - The bars must touch.

Stem & Leaf Plots:

The steps:

1. The left side of the plot is called the stem.
2. Write the values in the tens place and higher down the left side. The numbers should be written from least to greatest.
3. The numbers on the right side of the plot are the leaves.
4. These numbers will be the values in the ones place from each piece of data.
5. The leaves should be written from least to greatest.
6. Since this is a data display, be sure to include a title and a key.

Line plots:

1. Create a number line with your categories at the bottom.
2. Place an "X" or a dot above each each response for the number of times it occurs
   - 6 responses = 6 X's

Quick Reference Sheet

BOX and WHISKER PLOTS

Constructing box & whisker plots:

- Identify these five data points :
  - Minimum – smallest data point
  - 1st Quartile – median of the 1st half
  - Median – middle data point
  - 3rd Quartile – median of the 2nd half
  - Maximum – largest data point
- Draw a number line.
- Plot each of the five points.
- Connect the 1st and 3rd quartiles with a box. Identify the median.
- Connect the minimum and maximum to the box with a line.

Example:

Math Test Scores

55, 60, 66, 70, 75, 80, 85, 89, 96

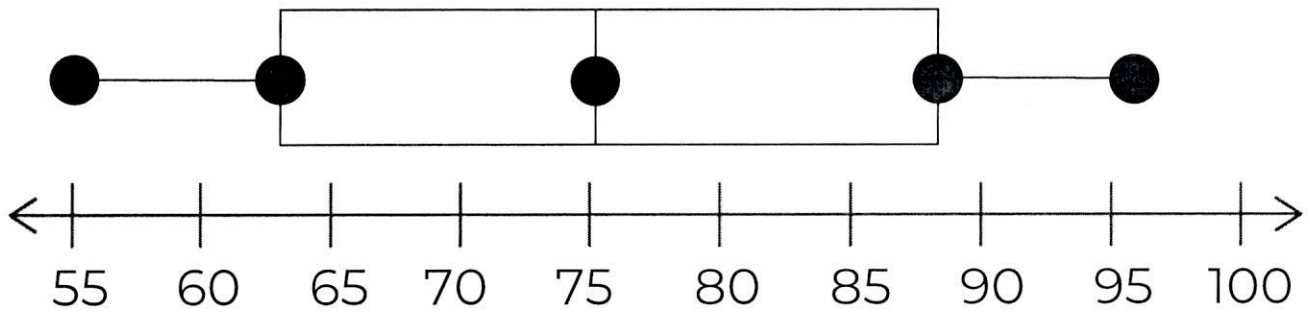
Minimum

Q1 = 63

Median

Q3 = 87

Maximum



HISTOGRAMS

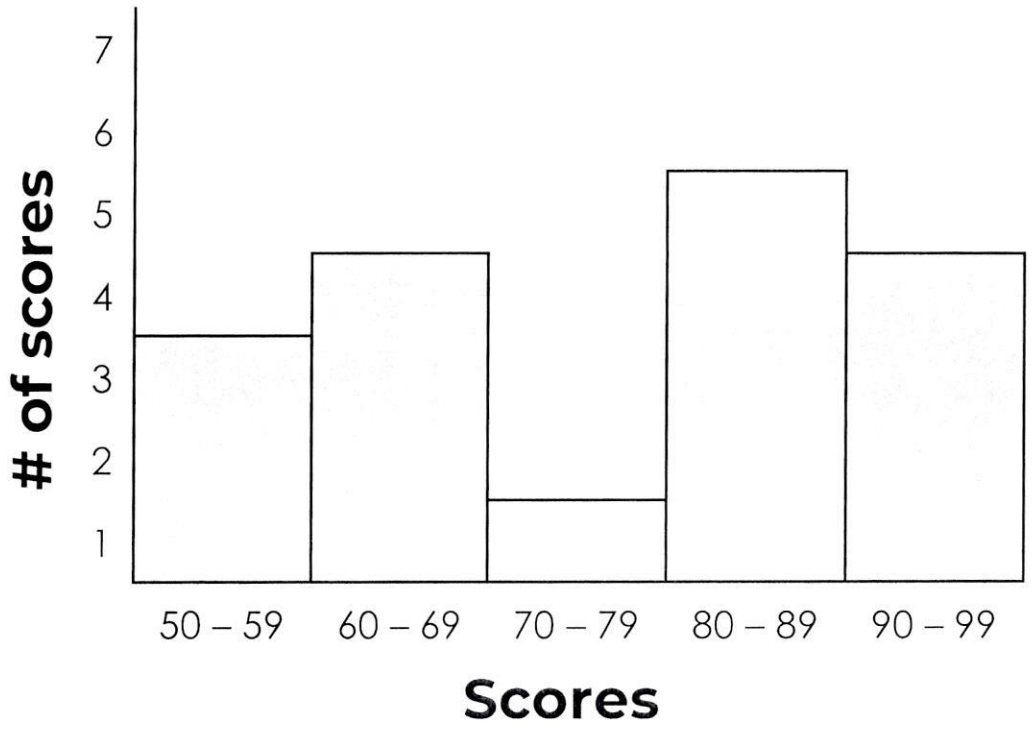
Constructing Histograms:

1. Separate your data into equal groups.
2. If each category is a range of numbers, each should use the same interval.
3. Label the y-axis with the number of times data will occur in each group. (be consistent)
4. Label the x-axis with the intervals or categories.
5. Create a bar to represent the total pieces of data in each interval or category.
   - The bars must touch.

Example:

Math Test Scores

50, 52, 55, 60, 60, 61, 66, 70, 80, 85, 85, 88, 89, 90, 92, 96, 99



Quick Reference Sheet

MEASURES OF CENTER and variation

data:

For all examples on this page, the following ages of soccer camp attendees will be used.

5, 6, 8, 9, 11, 9, 10, 10, 10, 11, 9, 8, 8

mean:

Mean - To find the mean you first find the sum of all pieces of data and then divide the sum by the number of pieces of data.

The sum of the ages of the children in the soccer camp is 114. There were 13 children in the camp.

median:

Median - To find the median you first put the numbers in numerical order and then find the digit in the middle. If there are two numbers in the middle, add the numbers and divide by two.

The soccer player ages in order from least to greatest are:

5, 6, 8, 8, 8, 9, (9), 9, 10, 10, 10, 11, 11

The median age is 9.

quartiles:

A numerical set of data has four quartiles. Quartile 1, Quartile 2 (Median), Quartile 3 and Quartile 4 (Maximum). Quartile 1 is the median of the first half of the data and Quartile 3 is the median of the second half of the data.

(5) 6, 8, 8, 8, (9) 9, 10, 10, 10, 11, (11)

Minimum — Q1 = 8 — Median — Q3 = 10 — Maximum

Range:

Range – To find the range you first find the highest and lowest number in the set. Then, subtract the lowest from the highest.

The maximum age is 11 and the minimum age is 5. The range of ages is 11 – 5 = 6 years.

Interquartile Range:

Interquartile Range – To find the IQR you subtract the 1st quartile from the 3rd quartile.

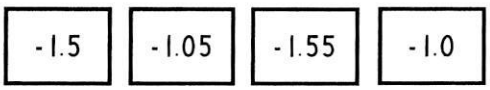
Q3 is 10 and Q1 is 8. The interquartile range is 10 – 8 = 2 years.

THE NUMBER SYSTEM
QUICK CHECK

Name _____

Date _____ Pd_____

1. Meredith must order the cards from greatest to least. Which list is correct?



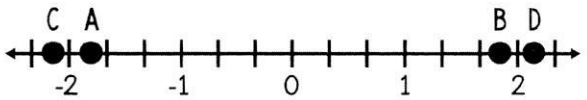
A. -1.55, -1.5, -1.05, -1.0

B. -1.0, -1.05, -1.55, -1.5

C. -1.0, -1.05, -1.5, -1.55

D. -1.5, -1.55, -1.0, -1.05

2. The following numbers are placed on a number line. Which of the following best represents point A?



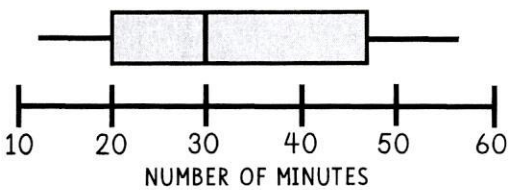
A. $-2\frac{1}{6}$ B. $-1\frac{5}{6}$ C. $2\frac{1}{6}$ D. $1\frac{5}{6}$

3. The table below shows the number of miles run each day of the week. Which list shows the number of miles run in order from least to greatest?

MONDAY	TUESDAY	WEDNESDAY	THURSDAY
$3\frac{1}{3}$	$3\frac{2}{5}$	$3\frac{3}{8}$	$3\frac{1}{2}$

A. Monday, Thursday, Wednesday, Tuesday
B. Thursday, Tuesday, Wednesday, Monday
C. Monday, Wednesday, Tuesday, Thursday
D. Tuesday, Monday, Wednesday, Thursday

4. Students record the number of minutes they read each day. The box plot shows the summary of the results. Which statement best describes the data?



A. A quarter of the students read for 20-30 minutes.
B. The least number of students read less than 30 minutes.
C. Over half the students read for 40 minutes or more.
D. The average number of minutes read was 47.

5. Which of the following situations does **not** represent the number -14?

A. The temperature drops 14°F.

B. An account is credited $14.

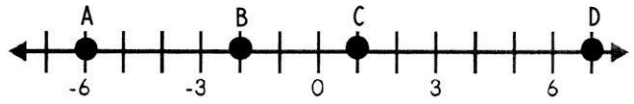
C. A football player runs for a loss of 14 yards.

D. A submarine is 14 meters below sea level.

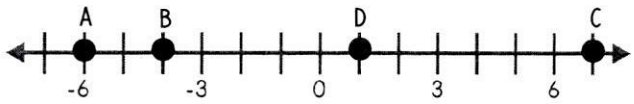
6. The following integers are placed on a number line. Which of the following best represents their location on the number line?

A. -6	B. -4	C. 7	D. -1

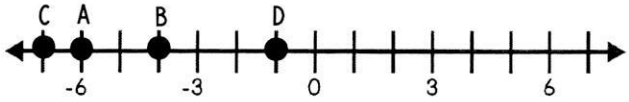
A.



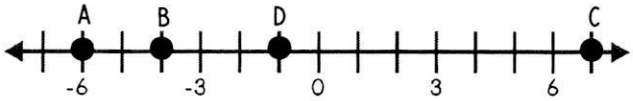
B.



C.



D.



7. Which of the following statements correctly matches its description?

A. $-7 > -9$; -7 is located to the left of -9

B. $-8 < -2.5$; -2.5 is located to the right of -8

C. $-2\frac{2}{3} > -5$; -5 is located to the right of $-2\frac{2}{3}$

D. $-10 < -9$; -9 is located to the left of -10

8. What is the area of the figure below?

A. 142.5 cm^2

B. 154.5 cm^2

C. 97.85 cm^2

D. 210 cm^2

9. The table below includes information about a number. Which of the following best represents the missing information?

NUMBER	OPPOSITE	ABSOLUTE VALUE
6	-6	?
-4	4	4
-13	13	13

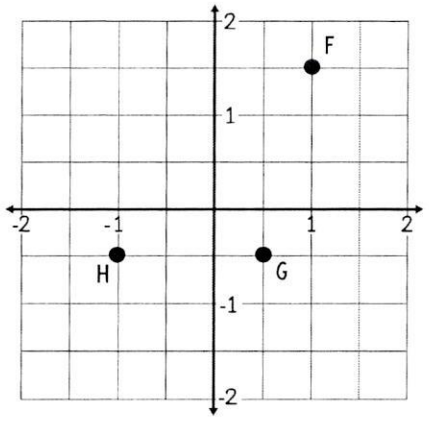
A. 6

B. -6

C. 0

D. -4

10. Three points form a triangle and are graphed on the coordinate plane. Which of the ordered pairs below represents a point on the triangle?



A. (-1, -0.5)

B. (2, 3)

C. (1, -1.5)

D. (-1, -1)

RATIONAL NUMBER OPERATIONS
QUICK CHECK

Name _____

Date _____ Pd _____

1. Maryanne is making a friendship necklace at summer camp using beads that are each 1.6 cm long. What is the total length if she uses 24 beads?

A. 22.4 cm B. 40 cm C. 33.8 cm D. 38.4 cm

2. Marcy will earn 3 reward points for each movie she attends. Which equation represents the relationship between y, the total points, and x the number of movies?

A. $y = 3x$ B. $y = -3x$ C. $x = 3y$ D. $x = -3y$

3. On a radio morning show, every 12th caller receives concert tickets, and every 16th caller receives an autographed album. What is the first caller number will receive both a concert ticket and an autographed album?

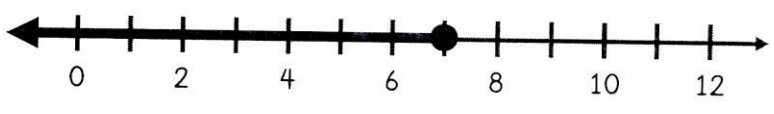
A. 24 B. 192 C. 48 D. 84

4. Mrs. Barker displays a math problem on the white board. Which of the following expressions is also equal to the problem on the white board?

$$\frac{3}{4} \div \frac{5}{8}$$

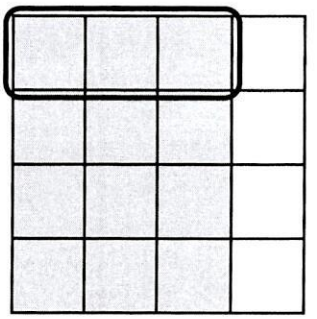
A. $\frac{3}{4} \cdot \frac{5}{8}$ B. $\frac{4}{3} \cdot \frac{5}{8}$ C. $\frac{3}{4} \cdot \frac{8}{5}$ D. $\frac{4}{3} \cdot \frac{8}{5}$

5. The number line below represents the solution to which inequality?



A. $x + 8 \geq 15$ B. $x + 8 \leq 15$ C. $x - 8 \leq 15$ D. $x - 8 \geq 15$

6. Which of the following equations does the model below represent?



A. $\frac{3}{4} \div 4 = \frac{3}{16}$

B. $\frac{3}{4} \div \frac{1}{4} = \frac{3}{16}$

C. $\frac{2}{3} \div 4 = \frac{8}{3}$

D. $\frac{2}{3} \div \frac{1}{4} = \frac{2}{12}$

7. A local food bank is creating Thanksgiving baskets. There are 72 cans of green beans, 96 cans of corn, and 48 cans of pumpkin. What is the greatest number of baskets that can be filled equally?

A. 9

B. 15

C. 18

D. 24

8. Amanda uses $\frac{1}{3}$ of a cup of milk each time she makes a batch of pancakes. How many batches can she make if she only has $\frac{11}{12}$ of a cup of milk left?

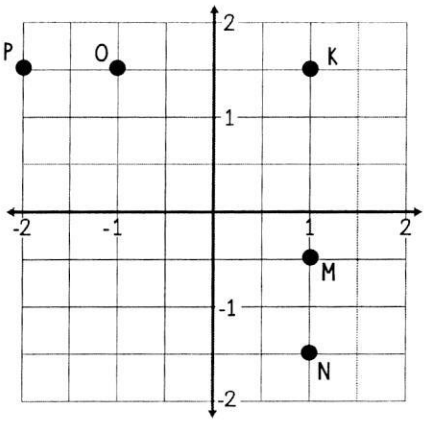
A. $1\frac{3}{4}$

B. $2\frac{3}{4}$

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

D. $2\frac{1}{4}$

9. Point K is reflected across the x-axis. Which of the following points best represents K'?



A. point M B. point N C. point O D. point P

10. The parent teacher association is raising money for a new swing set. They need $682.56 to purchase the swing set and receive a $200.00 donation. The remaining amount will be equally divided among 8 different student groups to raise. How much money will each student group need to raise in order to purchase the swing set?

RATIOS & PROPORTIONALITY
QUICK CHECK

Name _____

Date _____ Pd_____

1. Four students write algebraic expressions and equations on their white board. Which of the students wrote expressions?

STUDENT 1	STUDENT 2	STUDENT 3	STUDENT 4
$\frac{1}{2}x + 6$	$3x = \frac{2}{3}$	$4 - \frac{3}{4} = x$	$5 - x$

A. Students 1 and 4 B. Students 2 and 3 C. Students 1, 3, and 4 D. Students 2 and 4

2. Diana uses 30 grams of coffee beans to make 48 fluid ounces of coffee. When guests come, she makes 96 fluid ounces of coffee. How many grams of coffee beans does Diana use when she has visitors?

A. 160 grams B. 60 grams C. 98.2 grams D. 14.4 grams

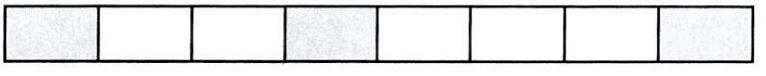
3. Margo must sell at least 38 tubs of cookie dough to support the student council fundraiser. She has already sold 19 tubs of cookie dough. Which inequality best represents the number of tubs of cookie dough Margo still needs to sell?

A. $x + 19 > 38$ B. $x + 19 \leq 38$ C. $x + 19 < 38$ D. $x + 19 \geq 38$

4. Sarah Beth babysits and earns $10.50 per hour. Which of the following best represents the relationship between the number of hours, h, and the total earnings, t?

A. $t = 10.50 + h$ B. $t = 10.50h$ C. $h = 10.50 + t$ D. $h = 10.50t$

5. The model below shows the ratio of gray to white squares. Which of the following is not an equivalent ratio of gray squares to total squares?



A. 9/24 B. 21/60 C. 15/40 D. 27/72

6. Isabella decides to sell handmade stationery. She decides to sell 2 cards for $9. Which table below show the possible values of *c*, the number of cards Isabella sells, and *d*, the number of dollars she charges?

A.

CARDS, c	2	9	11	15
DOLLARS, d	9	40.5	50.5	67.5

B.

CARDS, c	9	18	27	36
DOLLARS, d	2	4	6	8

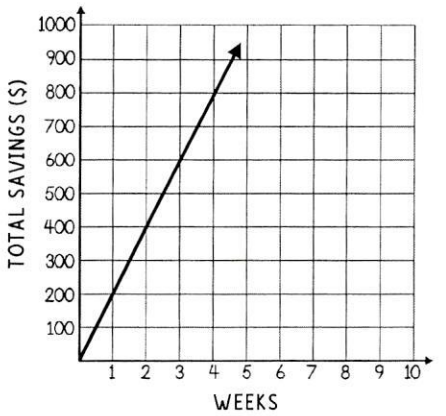
C.

CARDS, c	2	4	7	10
DOLLARS, d	9	18	31.5	45

D.

CARDS, c	2	3	4	5
DOLLARS, d	9	10	11	12

7. The graph shows the amount of money that Janice saves each week from her summer job. Which equation best represents the graph?



A. y = 200x
B. y = x + 200
C. x = 200y
D. x = y + 200

8. The table below shows the relationship between the number of bridesmaid bouquets and the number of flowers. Which equation best represents the relationship?

NUMBER OF BOUQUETS (B)	NUMBER OF FLOWERS (F)
2	30
3	45
7	105

A. b = 15f
B. f = 15b
C. f = b + 15
D. f = 15 – b

9. Miguel weighs himself and discovers he weighs 83,600 grams. How many kilograms does Miguel weigh?

A. 8.36 kg
B. 83.6 kg
C. 8,360 kg
D. 83,600,00 kg

10. Jameson pays $39.90 for 3.8 pounds of almonds. What is the price per pound of almonds?

PERCENTS
QUICK CHECK

Name _____

Date _____ Pd_____

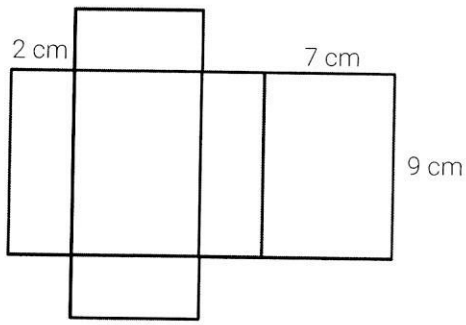
1. There are 200 end-of-the-year school dance tickets available. Students who have perfect attendance are able to purchase them in advance. If 18 tickets were purchased in advance, what percent of the tickets were purchased in advance?

A. 18%
B. 22%
C. 9%
D. 14%

2. A survey shows that 85% of students carry a backpack to school. If there are 320 students in the school, then how many students carry a backpack?

A. 302
B. 220
C. 190
D. 272

3. The dimensions of the rectangular prism are shown on the net below. What is the total surface area of the figure?

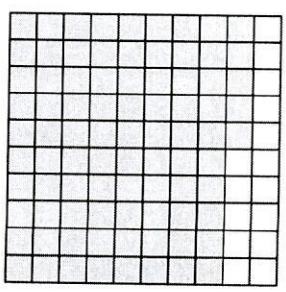


A. 85 cm^2
B. 126 cm^2
C. 63 cm^2
D. 190 cm^2

4. Eighty percent is best represented by which of the following fractions?

A. $\frac{8}{100}$ B. $\frac{4}{5}$ C. $\frac{3}{4}$ D. $\frac{8}{20}$

5. What number does the model below best represent?



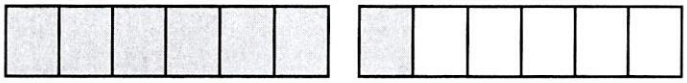
A. $\frac{17}{20}$ B. 0.80

C. 75% D. $\frac{16}{20}$

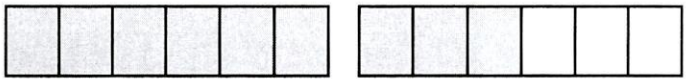
6. Two piggy banks have a sum of $36.50. The first piggy bank has $13.75. How much does the second piggy bank have in it?

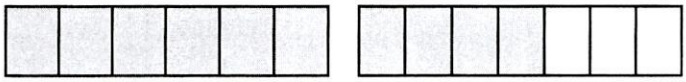
A. $22.75
B. $50.25
C. $2.65
D. $501.88

7. If the shaded strip diagram represents 100%, then which strip diagram represents 150%?

A. 

B. 

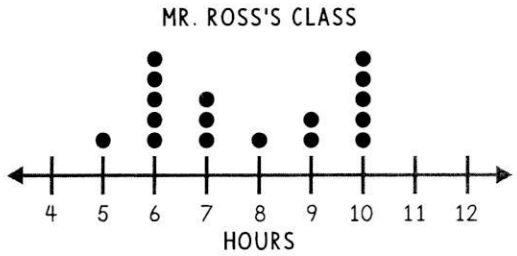
C. 

D. 

8. On a spelling test, Marcy got 15% of the questions incorrect. If there were 40 questions on the spelling test, then how many questions did Marcy get correct?

A. 6
B. 12
C. 15
D. 34

9. The dot plot shows the number of hours the students in Mr. Ross's class slept last night. Which of the following statements is not correct?



A. There are a total of 17 students in Mr. Ross's class.
B. Exactly 9 students slept for less than 8 hours.
C. More than half of the students slept for at least 7 hours.
D. All of the students in Mr. Ross's class need more sleep.

10. Paula earned a 56% on her science test. If she got 14 problems correct, then how many questions were on the test?

ALGEBRAIC REPRESENTATIONS
QUICK CHECK

Name _____

Date _____ Pd_____

1. Burger Town sells cheeseburgers for $7.95 per cheeseburger, *c*. Which of the following equations best represents the total cost, *t*, of a cheeseburger?

A. $t = 7.95c$

B. $t = 7.95c + 1.00$

C. $t = 8.95c$

D. $t = 7.95 + 1.00c$

2. A standard bathtub fills at a rate of y = 12x. Which of the following tables bests represents the equation?

A.

X	1	2	4	5
Y	0	12	24	36

B.

X	1	3	4	5
Y	12	24	36	48

C.

X	0	2	4	5
Y	0	24	48	72

D.

X	1	2	3	4
Y	12	24	36	48

3. The table shows the relationship between the distance away from the airport and the cost of a taxi ride to the airport. Which equation best represents the relationship in the table?

NUMBER OF MILES (d)	5	10	15	20	25
TOTAL COST (c)	$12.50	$25.00	$37.50	$50.00	$62.50

A. $c = 2.5d$

B. $d = 2.5c$

C. $c = \frac{d}{2.5}$

D. $c = d + 12.5$

4. The table below shows the relationship between the number of miles traveled and the number of gallons of gas used. Which of the following statements best represents the relationship?

NUMBER OF MILES	35	70	105	140	175
NUMBER OF GALLONS	1	2	3	4	5

A. The number of miles is the dependent quantity, and the number of gallons is the independent quantity.

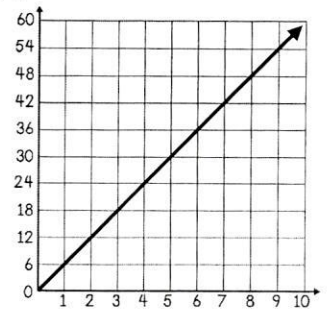
B. The number of miles and the number of gallons are both dependent quantities.

C. The number of gallons and the number of miles are both independent quantities.

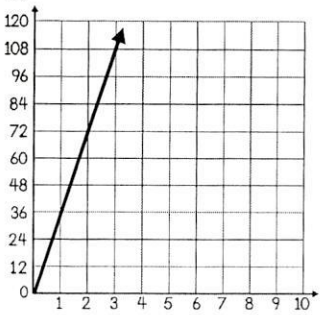
D. The number of miles is the independent quantity, and the number of gallons is the dependent quantity.

5. Which graph best represents the relationship between x and y in the equation y = 12x?

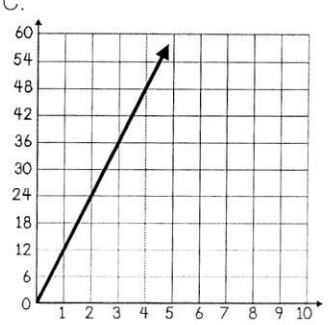
A.



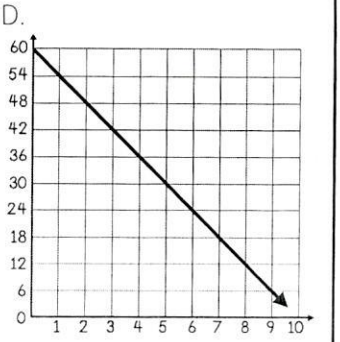
B.



C.



D.



6. A bike travels 24 miles in 3 hours. At this rate, how many miles will the bike travel in 10 hours?

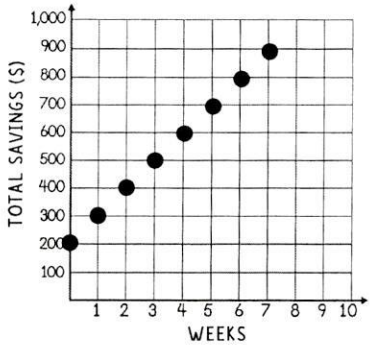
A. 192 miles
B. 80 miles
C. 32 miles
D. 124 miles

7. The expression below is evaluated when f = 6, g = 5, and h = 3. What is the value of the expression?

$$5f - 3h + g^2$$

A. 46
B. 64
C. 24
D. 31

8. The graph shows the amount of money that Janice saves each week from her summer job. Which best represents the dependent variable?



A. The number of weeks
B. The amount earned each week
C. The total savings in dollars
D. The number of hours worked each week

9. In the month of January, Sarah drove her car 3,219.2 miles. That brought the car's total mileage to 65,470.5 miles. How many miles were on the car before January?

A. 68,689.7 miles
B. 62,251.3 miles
C. 62,269.3 miles
D. 57,345.8 miles

10. Two equations are shown below. Which of the statements best explains the relationship between the equations?

$$y = 3x$$
$$y = x + 3$$

A. In y = x + 3, the value of y is 3 more than the value of y = 3x.
B. In y = 3x, the value of y is 3 times the value of y in the equation y = x + 3
C. In y = 3x, the value of y is three times the value of x, and in y = x + 3 the value of y is three less the value of x.
D. In y = 3x, the value of y is three times the value of x, and in y = x + 3, the value of y is three more than the value of x.

EXPRESSIONS
QUICK CHECK

Name _____

Date _____ Pd_____

1. Which expression is equivalent to $4(2x + 3)$?

A. $4 + 2x + 4 + 3$ B. $8x + 12$ C. $8x + 3$ D. $4 + 2x + 12$

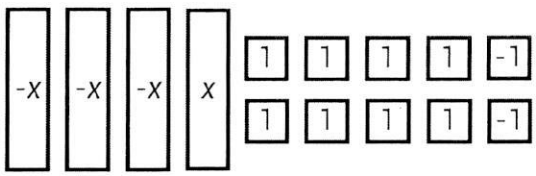
2. Amanda wrote the numeric expression shown below.

$$8 - 3(5^2 - 14) + 4^2$$

Which value is equivalent to the expression?

A. -33 B. 11 C. -41 D. -9

3. Which expression is equivalent to the model shown below?



A. $-3x + 6$ B. $4x + 8$ C. $-2x + 6$ D. $2x + 8$

4. A pitcher of iced tea holds 128 ounces. A large orange cooler holds 1,792 ounces of iced tea. How many pitchers of iced tea will it take to fill the large orange cooler?

A. 12 B. 24 C. 14 D. 18

5. Which two expressions are equivalent?

A. $4(2 + x)$
$4 \cdot 2 + 2 \cdot x$

B. $4 + 2 + x$
$(4 + 2) + x$

C. $4 \cdot x + 2$
$4 \cdot (x + 2)$

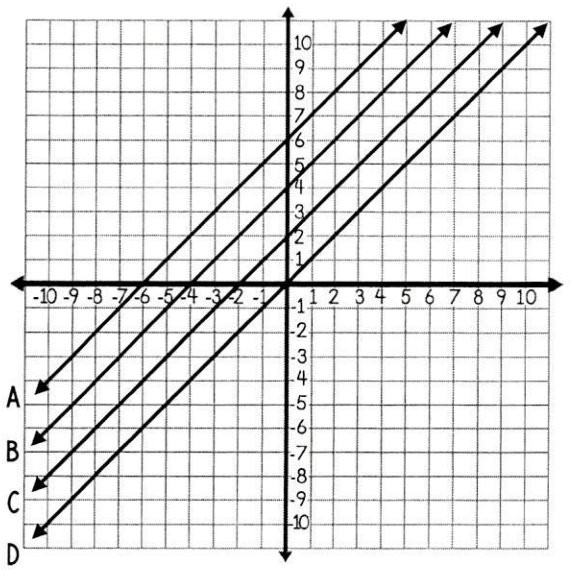
D. $4 \div (2 - x)$
$4 - 2 \div x$

6. Which of the following best represents a term in the expression below?

$$6x + 5^3 - 7y + 20$$

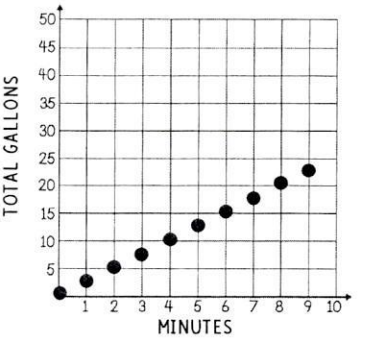
A. 7
B. 6
C. 5^3
D. y

7. Which line contains the ordered pair (-2, 4)?



A. line A
B. line B
C. line C
D. line D

8. Which of the following tables best represents the ratio of minutes it takes to fill a bathtub to the total number of gallons?



A.

MINUTES	GALLONS
2	5
5	15
8	20
12	25

B.

GALLONS	MINUTES
2.5	1
5	2
7.5	3
9	4

C.

GALLONS	MINUTES
5	2
10	5
15	3
20	4

D.

MINUTES	GALLONS
2	5
5	12.5
7	17.5
11	27.5

9. The expression below is evaluated when x = 9, y = 3, and z = 2. What is the value of the expression?

$$8x - z^2 + 2y$$

A. 38
B. 16
C. 72
D. 74

10. Determine the value of the expression below.

$$9 + 3(10 \div 2) + 5^2$$

EQUATIONS AND INEQUALITIES
QUICK CHECK

Name _____

Date _____ Pd_____

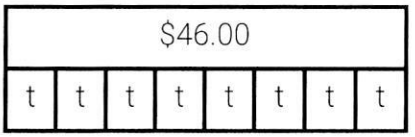
1. Leticia wants to earn at least $52 this month. She makes $8 per hour walking dogs in her neighborhood. Which inequality can Leticia use to find x, the number of hours she should walk dogs to meet her goal?

A. $8 + x < 52$ B. $8x \leq 52$ C. $8x \geq 52$ D. $8 + x > 52$

2. If $x = 5$, then which inequality is true?

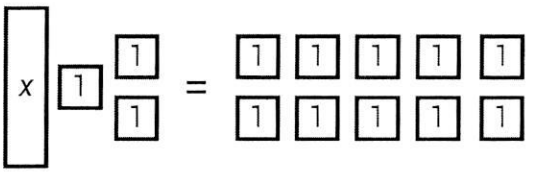
A. $2x \geq 12$ B. $x - 2 < 7$ C. $2x > 12$ D. $x - 7 > 2$

3. The entrance fee to the children's museum was a total of $46.00 for eight tickets. The model below shows the relationship. What was the entrance fee for one ticket?



A. $5.75 B. $5.25 C. $6.25 D. $7.00

4. An equation is modeled below using algebra tiles. Which value of x makes the equation true?



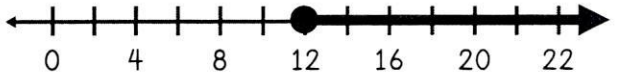
A. $x = 7$ B. $x = 13$ C. $x = -7$ D. $x = -13$

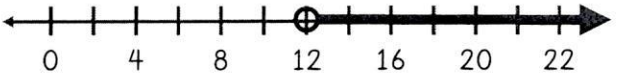
5. Mr. Dorado has completed 75% of his morning run. Which of the following sets does **not** represent 75%?

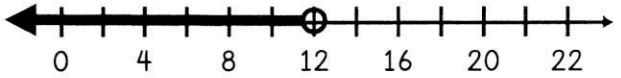
A. $\frac{3}{4}$, 0.75 B. 0.75, $\frac{15}{20}$ C. 7.5, $\frac{9}{12}$ D. $\frac{75}{100}$, $\frac{9}{12}$

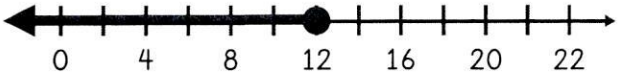
6. An elevator has a maximum weight capacity of 300 pounds. Each pallet of boxes weighs 25 pounds. Which of the following number lines best represents the solution to the inequality?

$$25x \leq 300$$

A. 

B. 

C. 

D. 

7. Jillian tracks her progress on her spelling tests over a period of four weeks. Which list shows her scores from greatest to least?

WEEK 1	WEEK 2	WEEK 3	WEEK 4
$\frac{25}{30}$	$\frac{11}{15}$	82%	0.78

A. Weeks 1, 3, 2, 4

B. Weeks 3, 1, 2, 4

C. Weeks 3, 1, 4, 2

D. Weeks 1, 3, 4, 2

8. Which situation best represents the equation below?

$$x - 15 = 60$$

A. Sandy collects sea shells. She had 60 shells, but then she gave away 15 shells. How many shells does Sandy have in her collection?

B. Mr. Yung is 15 years younger than his brother. His brother is 60 years old. How old is Mr. Yung?

C. The school band is selling raffle tickets. They have already sold 15 tickets and have 60 remaining. How many raffle tickets did the school band begin with?

D. Daniella measures a 15 inch length of rope and attaches it to another length of rope. Together the two ropes are 60 inches in length. How long was the piece of rope that Daniella attached?

9. Edgar pays $67.86 for 7.8 pounds of fertilizer. What is the price per pound of fertilizer?

A. $6.98

B. $5.65

C. $8.70

D. $10.26

10. What is the value of x in this equation?

$$8x = 104$$

THE COORDINATE PLANE
QUICK CHECK

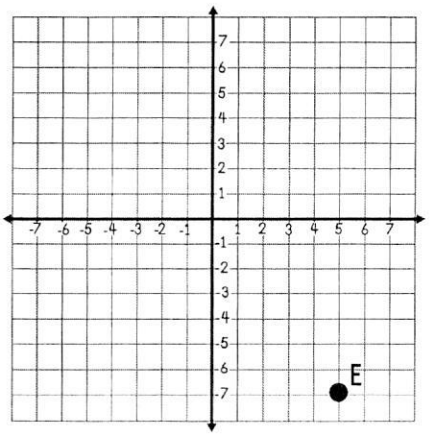
Name _____

Date _____ Pd_____

1. The ordered pair (-7, 9) can be found in which quadrant?

A. Quadrant I B. Quadrant II C. Quadrant III D. Quadrant IV

2. Point E is reflected across the y-axis. Which ordered pair best represents E'?



A. (5, -7)

B. (-7, 5)

C. (-5, -7)

D. (5, 7)

3. Jeremy plots the points (4, 3) and (4, -6) on the coordinate plane. Which of the following statements best describes the points he plotted?

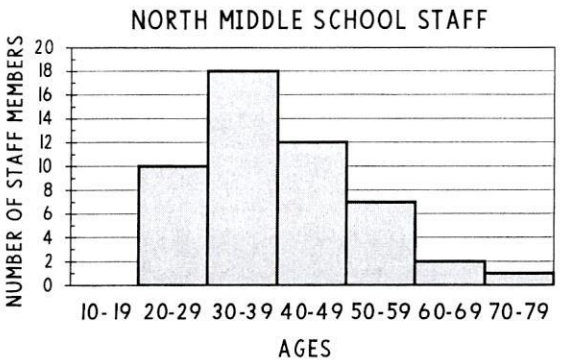
A. The points form a vertical line segment that measures 9 units.

B. The points form a horizontal line segment that measures 7 units.

C. The points form a vertical line segment that measures 7 units.

D. The points form a horizontal line segment that measures 9 units.

4. A survey of North Middle School staff included staff members ages. The ages were complied and displayed in a histogram. Which of the following statements best describes the data?



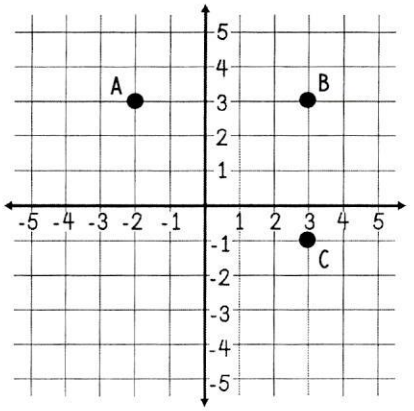
A. There were 12 staff members between the ages of 20-29.

B. The number of staff members under the age of 40 is equal to the number of staff members 40 and older.

C. Sixty staff members were included in the survey.

D. A total of 10 staff members are 50 years or older.

5. The points on the coordinate plane are three vertices of rectangle ABCD. What is the ordered pair of D?



A. (-2, 1) B. (-1, 2) C. (1, -2) D. (-2, -1)

6. The shaded area below represents the pieces of tile installed in a hallway. What percent of the hallway has **not** been installed with tile?

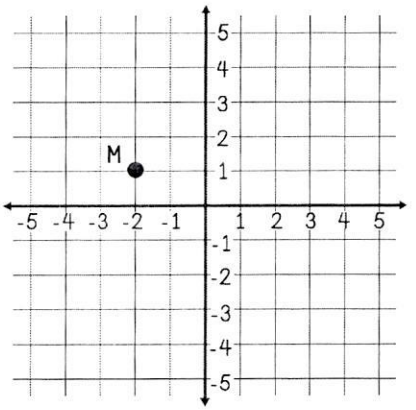
A. 65% B. 35% C. 66.6% D. 33.3%

7. The table below includes information about the vertices of a triangle. Which of the following best represents the missing information?

VERTEX	REFLECTED ACROSS X-AXIS	REFLECTED ACROSS Y-AXIS
(0, 0)	(0, 0)	(0, 0)
(4, 5)	(4, -5)	(-4, 5)
(3, -2)	?	(-3, -2)

A. (3, 2) B. (3, -2) C. (-3, 2) D. (-3, -2)

8. Marsha's house is located on the coordinate plane below. Tasha's house is located 6 units from Marsha's house. Which of the following could represent the location of Tasha's house?



A. (-2, 5) B. (4, 2) C. (2, 5) D. (-2, -5)

9. On Monday, the low temperature was -3°F, and on Tuesday the low temperature was -5°F. The low temperatures were compared with the inequality shown.

$$-3°F > -5°F$$

Which statement correctly explains the inequality?

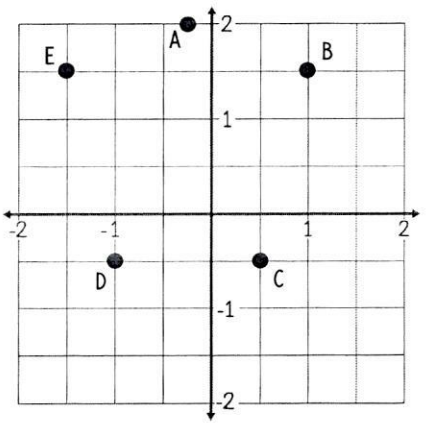
A. -3°F is colder than -5°F.

B. -3°F is warmer than -5°F.

C. Both A and B are correct.

D. Neither A nor B is correct.

10. Points A, B, C, D, and E form a pentagon. Which of the following ordered pairs can be located inside the pentagon?



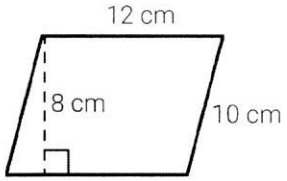
A. (-1, -1) B. (1, -1) C. (1, 2) D. (-0.5, 1)

GEOMETRY AND MEASUREMENT
QUICK CHECK

Name _____

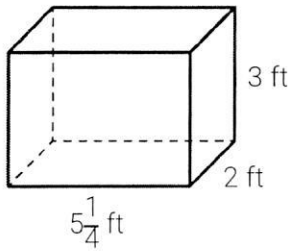
Date _____ Pd_____

1. A parallelogram is shown below. Which equation best represents the formula for the area of the parallelogram?



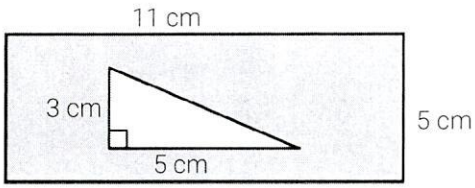
A. $A = \frac{1}{2}(8 + 12) \cdot 10$ B. $A = \frac{1}{2}(10 + 12) \cdot 8$ C. $A = 12 \cdot 8$ D. $A = 12 \cdot 10$

2. What is the volume of the rectangular prism below?



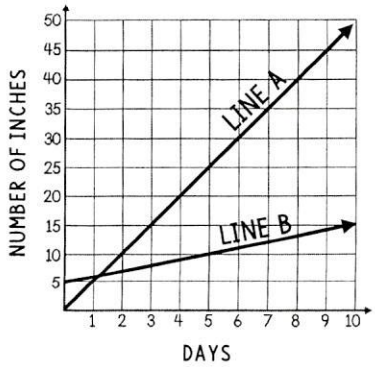
A. $30\frac{1}{4}$ ft^3 B. $31\frac{1}{2}$ ft^3 C. $27\frac{1}{2}$ ft^3 D. 115 ft^3

3. A triangle is inscribed in a rectangle, as shown below. What is the area of the shaded region?



A. 40 cm^2 B. 47.5 cm^2 C. 62.5 cm^2 D. 22.75 cm^2

4. Line A represents the equation y = 5x. Line B represents the equation y = x + 5. Which statement best describes the relationship between line A and line B?



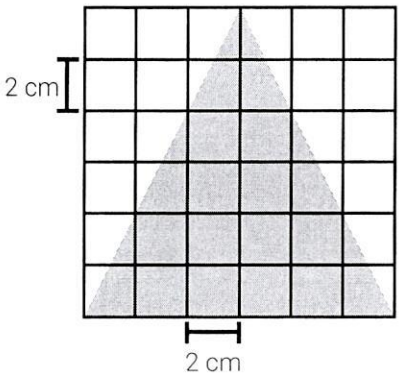
A. Line A will always be greater than line B.

B. Line A and line B start at the same point.

C. Line A increases more rapidly than line B.

D. Line B increases more rapidly than line A.

5. A puzzle is shown below. Which of the following is the closest to the area of the shaded portions of the puzzle?



A. 18 cm^2

B. 36 cm^2

C. 72 cm^2

D. 144 cm^2

6. Which of the following statements best represents the expression below?

$$-|-5|$$

A. The opposite of negative five is 5.

B. The absolute value of negative 5 is 5.

C. The opposite of the absolute value of negative 5 is negative 5.

D. The absolute value of 5 is negative 5.

7. A clothing trunk measures 2.5 feet wide by 1.5 feet high by 4 feet long. What is the volume of the clothing trunk?

A. 1,500 ft^3

B. 15 ft^3

C. 60 ft^3

D. 150 ft^3

8. Jeremy is packaging a stew into to-go containers. There are $8\frac{3}{4}$ cups of stew that need to be put into 5 to-go containers equally. How many cups of stew will be in each container?

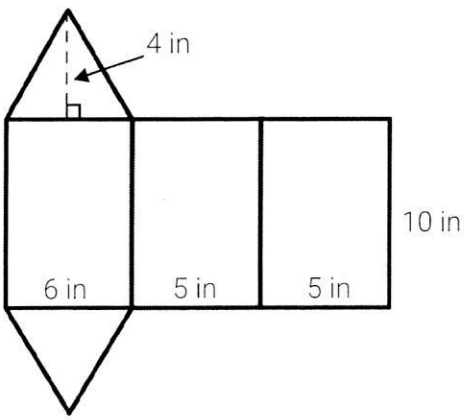
A. $1\frac{1}{4}$

B. $1\frac{3}{4}$

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

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

9. The net below represents a triangular prism. What is the total surface area of the triangular prism?



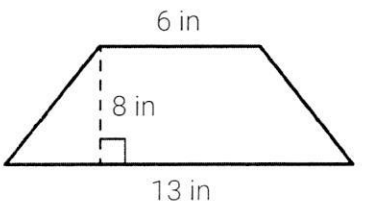
A. 204 in^2

B. 184 in^2

C. 240 in^2

D. 276 in^2

10. What is the area of the trapezoid below in square inches?



DATA AND STATISTICS
QUICK CHECK

Name _____

Date _____ Pd_____

1. The number of points in the first five games of the football season are listed below. What is the mean number of points scored?

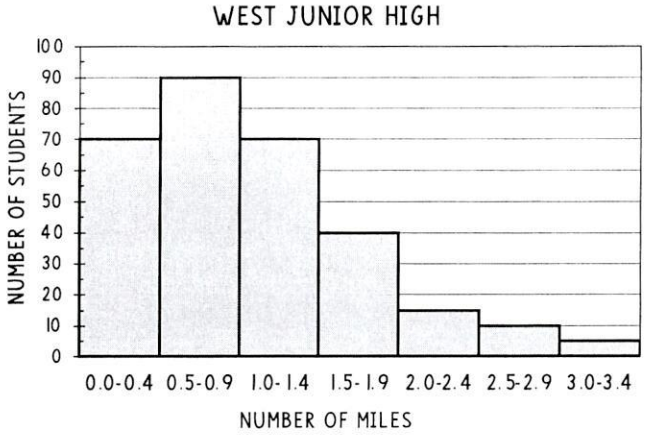
GAME 1	GAME 2	GAME 3	GAME 4	GAME 5
38	29	16	42	33

A. 33 B. 31.6 C. 26 D. 19

2. Which of the following is likely to have the greatest variability?

A. The cost of a piece of candy from a vending machine
B. The height of all the students at West Middle School
C. The age of all the students in the sixth grade
D. The number of days in a month

3. A survey of sixth-grade students measured how many miles they traveled to school. The distance was complied and displayed in a histogram. Which of the following statements best describes the data?



A. The data is skewed left, as most students live close to the school.
B. The data is symmetrical, as most students live far from the school.
C. The data is skewed right, as most students live close to the school.
D. The data is symmetrical, as most students live close to the school.

4. A flock of sheep has 182 white sheep and 98 spotted sheep. Which proportion can be used to determine *p*, the percent of the flock that has spots?

A. $\frac{p}{100} = \frac{98}{182}$ B. $\frac{p}{100} = \frac{182}{280}$ C. $\frac{280}{182} = \frac{98}{p}$ D. $\frac{98}{280} = \frac{p}{100}$

5. Which of the following does **not** represent a statistical question?

A. How tall are the students in my class?

B. How many hours per week do you practice sports?

C. How many laps can the students on the track team run?

D. How much do the students on the football team weigh?

6. Which of the sets of expressions is equivalent?

A. $3(2x + 5)$ and $6x + 5$

B. $2(3x + 5)$ and $6x + 15$

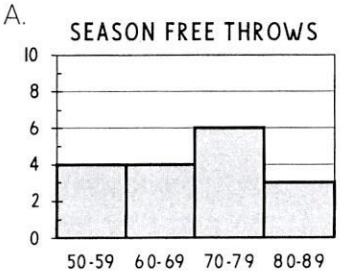
C. $3(2x + 5)$ and $6x + 10$

D. $2(3x + 5)$ and $6x + 10$

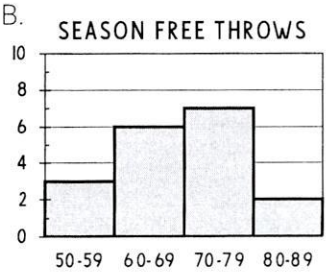
7. The number of free throws made by the members of a basketball team are shown. Which best represents the data?

54, 56, 59, 60, 61, 62, 68, 68, 72, 72, 72, 73, 75, 76, 79, 80, 80

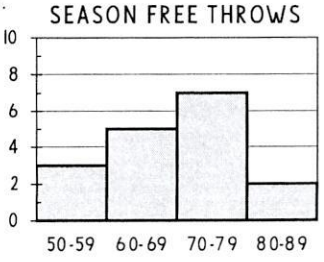
A.



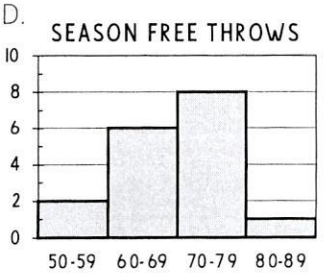
B.



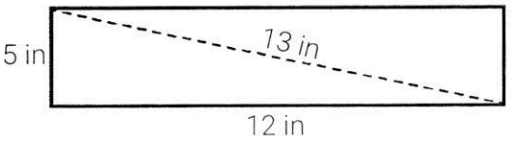
C.



D.



8. The rectangle below is cut along the dotted line to form two triangles. Which value best represents the area of one of the triangles?



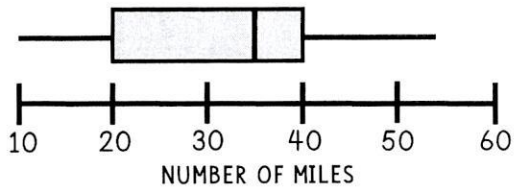
A. 78 in^2

B. 90 in^2

C. 60 in^2

D. 30 in^2

9. Employees were asked how many miles they traveled to work each day. The data is shown below in the box plot. Which of the statements best supports the data?



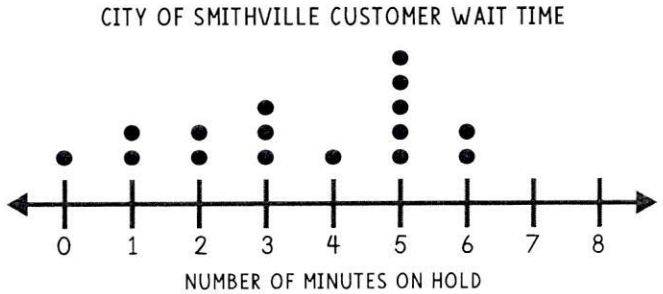
A. Median = 30, IQR = 20

B. Median = 35, IQR = 20

C. Median = 40, IQR = 45

D. Median = 35, IQR = 45

10. The City of Smithville recorded how many minutes a customer waits to talk to a representative on the phone. What is the mean number of minutes a customer waits?



A. 3.5 B. 4 C. 4.5 D. 5