MATH 6

Review UNIT

END-OF-YEAR REVIEW

REVIEW PACKETS • MINI-QUIZZES

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MATH 6 REVIEW PACKETS (with Quizzes)

VERSION 2: Includes Positive and Negative Integer Operations

Packet 1 (Number Sense & Operations)	Packet 2 (Expressions)
• Prime Factorization, GCF, and LCM • Operations with Rational Numbers (Fractions and Decimals) • Fraction and Decimal Operations Applications • Converting Between Fractions & Decimals • Representing and Comparing Integers • Absolute Value • Operations with Integers • Integer Operations Applications • Coordinate Plane	• Powers, Exponents, and Perfect Squares • Order of Operations • Evaluating Expressions • Translating Expressions • Combining Like Terms • Distributive Property • Simplifying Algebraic Expressions Completely (Distribute and Combine) • Factoring Algebraic Expressions • Properties
Packet 3 (Equations & Inequalities)	Packet 4 (Proportional Relationships & Percents)
• Solving One-Step Equations • Translating One-Step Equations • One-Step Equations with Rational Numbers • Applications with One-Step Equations • Writing & Graphing Inequalities • Solving One-Step Inequalities • Applications with One-Step Inequalities	• Writing Ratios, Simplifying Ratios • Equivalent Ratios • Ratio Tables & Graphs • Rates and Unit Rates; Comparing Rates • Proportional Relationships • Converting Fractions, Decimals, & Percents • Comparing Fractions, Decimals, & Percents • Percent of a Number • Comparing Negative Rational Numbers
Packet 5 (Measurement & Geometry)	Packet 6 (Data & Statistics)
• Congruent Segments, Angles, & Polygons • Perimeter of Rectangles & Squares • Area of Rectangles, Squares, Parallelograms, Triangles, and Trapezoids • Area on figures on the coordinate plane • Area of Composite Figures • Circumference and Area of Circles • Surface Area of Prisms and Pyramids • Volume of Rectangular Prisms	• Center of Data: Mean, Median, Mode • Range • Outliers • Determining the Best Center • Mean Absolute Deviation • Stem-and-Leaf Plots • Dot Plots • Box-and-Whisker Plots • Histograms • Circle Graphs

A 12-16 QUESTION QUIZ FOLLOWS EACH PACKET.

Topic A: Prime Factorization, GCF, and LCM			
Determine whether the number is prime or composite.			
1. 233	**2.** 864	**3.** 597	**4.** 1,109

Write the prime factorization of each number.

5. 75	**6.** 56
7. 810	**8.** 1,872

Find the greatest common factor (GCF) of each set of numbers.

9. 64 and 48	**10.** 72 and 156	**11.** 45 and 108

Find the least common multiple (LCM) of each set of numbers.

12. 18 and 30	**13.** 24 and 40	**14.** 12 and 28

Indicate whether you would use a GCF or LCM to solve the problem. Then solve.

15. Kiara has 80 lollipops and 32 Snicker bars. She is filling individual bags for Halloween and would like each bag to contain the same combination of lollipops and Snicker bars. How many bags can she fill if she wishes to have no candy leftover? How many lollipops and Snicker bars are in each bag?

16. Corey is stacking 10-inch boxes while Dale is stacking 12-inch boxes. They plan to stop when their stacks are the exact same height. At what height will this be?

Topic B: Operations with Fractions and Decimals

Evaluate. Write each answer as a fraction or mixed number in simplest form.

1. $\frac{1}{4} + 4\frac{5}{6}$	**2.** $5\frac{1}{8} - 2\frac{1}{6}$	**3.** $1\frac{3}{4} + 5\frac{7}{10}$
4. $3\frac{1}{7} \cdot 2\frac{5}{6}$	**5.** $4\frac{1}{6} \div 1\frac{1}{4}$	**6.** $3\frac{2}{5} \div 4$

Evaluate.

7. $24.95 + 176.089$	**8.** $98.1 - 14.726$	**9.** $3.59(17)$

10. 80.95(0.04)	**11.** 7.8(15.12)	**12.** 73.2 ÷ 8
13. $\dfrac{61.95}{15}$	**14.** $\dfrac{91.8}{3.4}$	**15.** 2.12 ÷ 2.65

Topic C: Applications with Fraction and Decimal Operations	
1. A trail that wraps around a lake is $1\frac{7}{8}$ miles long. Mara completed one lap around the lake. If she ran $\frac{4}{5}$ of the distance and walked the rest. How far did she run?	**2.** A piece of wire is $30\frac{2}{3}$ inches long. How many pieces of wire can be cut from this if each piece must be $1\frac{7}{9}$ inches long?
3. Nick bought $1\frac{5}{6}$ pounds of green apples and $1\frac{1}{4}$ pounds of red apples. How many total pounds of apples did he buy?	**4.** A taxi service charges $1.20 per mile. If Serena paid $16.38 for a ride to the airport, how many miles was the trip?

5. Jana's six children bought her a gift for her birthday and split the total cost evenly. If the gift cost $155.40, how much did each person pay?	**6.** If salami is on sale for $9.68 per pound, find the total cost for 1.5 pounds.

Topic D: Fractions vs. Decimals

Write each decimal as a fraction or mixed number in simplest form.

1. 2.8	**2.** 12.95	**3.** 7.125

Write each fraction or mixed number as a decimal.

4. $3\dfrac{7}{25}$	**5.** $\dfrac{27}{40}$	**6.** $1\dfrac{5}{12}$

Topic E: Integers and Integer Operations

1. Write an integer to model each situation.	**2.** Name the opposite of each integer.
a) a $60 profit _____ **b)** a 7-yard loss _____ **c)** a 125-foot descent _____	**a)** 19 _____ **b)** 43 _____ **c)** -7 _____ **d)** -26 _____

Give each absolute value.

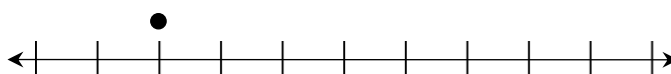|			
3. $\lvert 40 \rvert$	**4.** $\lvert -17 \rvert$	**5.** $\lvert 21 \rvert$	**6.** $\lvert -9 \rvert$

7. Order from least to greatest:

-13, 4, -9, -17, 0, -5

8. Order from greatest to least:

-46, -52, -57, -41, -60

Graph each integer at the dot on the number line. Then, number the rest of the line.

9. 3
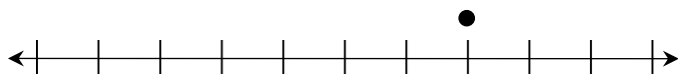
10. -16

Find each sum or difference.

11. $-9+(-5)$

12. $27+(-19)$

13. $-7+31$

14. $8+(-11)$

15. $6+(-6)$

16. $-51+16$

17. $7-12$

18. $-6-17$

19. $14-(-12)$

20. $-13-13$

21. $-8-(-3)$

22. $-4-(-15)$

Find each product or quotient.

23. $7 \cdot (-4)$

24. $-9 \cdot (-8)$

25. $-2 \cdot 16$

26. $17(4)$

27. $-5(13)$

28. $-6 \cdot (-8)$

29. $-40 \div (-8)$

30. $\dfrac{27}{-3}$

31. $\dfrac{-56}{4}$

**32.** $56 \div 8$

33. $\dfrac{14}{0}$

34. $0 \div (-8)$

Topic F: Applications with Integer Operations

1. The stock market ended the day on Monday at 179 points. If the market closes the following day 414 points below Monday, find the closing number on Tuesday.	**2.** Over the course of 4 plays, a football team lost 5 yards, gained 2 yards, lost 8 yards, then gained 14 yards. Find the team's total change in yards on the 4 plays.
3. A car depreciated by $9000 in one year. Find the average change in value each month.	**4.** Sarah is hiking in a valley at an elevation of -68 feet. If she continues to decend at a rate of 8 feet per minute, find her elevation after 15 minutes.
5. A submarine is located 875 feet below sea level. If a helicopter is located 6,200 feet directly above the submarine, find the altitude of the helicopter.	**6.** A hot-air balloon is descending at a rate of 185 feet per minute. Find the change in position of the hot-air balloon after 6 minutes.

Topic G: The Coordinate Plane

Identify the ordered pair and location (quadrant or axis) for each point on the graph.
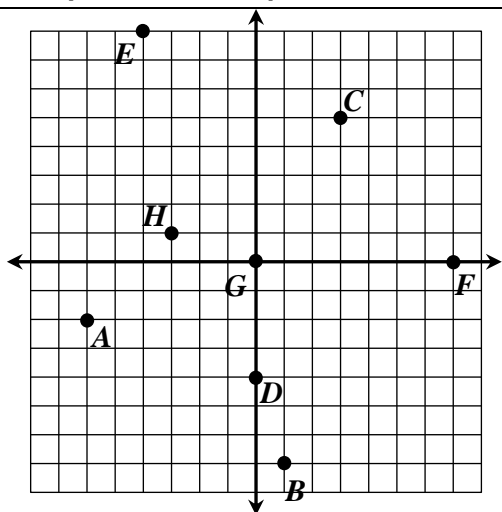
Point	Ordered Pair	Location
A		
B		
C		
D		
E		
F		
G		
H		

Math 6 Review
QUIZ 1

Name: _____

Date: _____ Per: _____

1. Which list of numbers contains only prime numbers?

- A. {31, 63, 97}
- B. {23, 89, 109}
- C. {57, 79, 113}
- D. {49, 97, 129}

2. The partial prime factorization of the number 1,008 is given below. Complete the factorization by writing the missing numbers in the boxes.

$$\boxed{}^{2} \cdot 2^{\boxed{}} \cdot \boxed{}$$

3. Which statement is true about the greatest common factor (GCF) and least common multiple (LCM) of the numbers 12 and 20?

- A. The GCF is 32 more than the LCM.
- B. The LCM is 32 more than the GCF.
- C. The GCF is 56 more than the LCM.
- D. The LCM is 56 more than the GCF.

4. Kingston has two pieces of fabric. One is 56 inches wide and the other is 96 inches wide. He wants to cut both pieces of fabric into strips of equal width that are as wide as possible. How wide should he cut the strips?

- A. 2 inches
- B. 4 inches
- C. 8 inches
- D. 12 inches

5. Alex is $2\frac{2}{9}$ years older than his sister Jenna. How old is Jenna if Alex is $5\frac{5}{6}$ years old?

- A. $3\frac{11}{18}$ years
- B. $3\frac{7}{18}$ years
- C. $8\frac{1}{18}$ years
- D. $8\frac{5}{18}$ years

6. There are $20\frac{2}{3}$ cups of dog food in a storage bin. If Kayla's dog eats $2\frac{1}{2}$ cups of food each day, how many full days will the food last?

- A. 7 days
- B. 8 days
- C. 9 days
- D. 10 days

7. Evaluate the expression below.

$$11.28(1.875)$$

- A. 19.45
- B. 19.85
- C. 20.95
- D. 21.15

8. Evaluate the expression below.

$$\frac{132}{4.8}$$

- A. 27.5
- B. 28.5
- C. 30.8
- D. 32.5

9. The total cost for 1.4 pounds of strawberries was $3.71. Find the cost per pound.

    A. $2.35

    B. $2.45

    C. $2.55

    D. $2.65

13. Given the five integers below, which two integers would have the smallest product?

$$-7, \ 4, \ -2, \ 9$$

    A.   -7 and 9

    B.   4 and -2

    C.   -2 and -7

    D.   9 and -2

10. Mara wrote down an integer. The opposite of Mara's integer is between 20 and 30. Which statement about Mara's integer must be true?

    A.   It is less than -35.

    B.   It has an absolute value of 10.

    C.   It is less than -10.

    D.   It is greater than -10.

14. A shark swimming 250 feet below the surface of the water rises 78 feet to eat a fish, then swims down 95 feet. Which value represents the location of the shark relative to the surface of the water?

    A.   -77 feet

    B.   -233 feet

    C.   -267 feet

    D.   -423 feet

11. Which list shows temperatures in order from coldest to warmest?

    A.   {-15° F, 12° F, -8 ° F, 0 °F}

    B.   {0° F, -8° F, 12 °F, -15 °F}

    C.   {-8° F, -15° F, 0° F, 12° F}

    D.   {-15° F, -8° F, 0 ° F, 12 °F}

15. Which point can be represented by the ordered pair (-1, 3)?

    A.   *A*

    B.   *B*

    C.   *C*

    D.   *D*
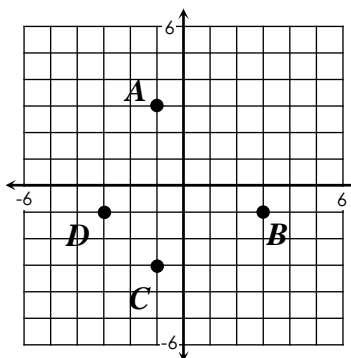
12. Which expressions are equivalent to -4? Check all that apply.

    ☐ $-8 + (-4)$ ☐ $3 + (-7)$

    ☐ $36 \div (-9)$ ☐ $-1 - 3$

    ☐ $-2 - (-2)$ ☐ $-2(-2)$

16. Which of the following must be true for the ordered pair (a, b) to be in the second quadrant?

    A. $a > 0$ and $b > 0$

    B. $a < 0$ and $b < 0$

    C. $a > 0$ and $b < 0$

    D. $a < 0$ and $b > 0$

Topic A: Powers, Exponents, and Perfect Squares

Write each product in exponential form.

1. $13 \cdot 13 \cdot 13 \cdot 13 \cdot 13 \cdot 13 \cdot 13 \cdot 13$	**2.** $(-8) \cdot (-8) \cdot (-8) \cdot (-8) \cdot (-8)$
3. $(-2) \cdot 7 \cdot 15 \cdot (-2) \cdot 7 \cdot (-2) \cdot (-2) \cdot 7$	**4.** $x \cdot x \cdot y \cdot x \cdot y \cdot x \cdot x \cdot x \cdot y \cdot y \cdot y \cdot x$

Write each number as a power of 10.

5. 10,000	**6.** 100,000,000,000

Evaluate.

7. 4^4	**8.** 19^2	**9.** 7^3
10. $(-14)^2$	**11.** $(-3)^5$	**12.** $(-5)^2 \cdot (-2)^3$

Indicate whether the number is a perfect square. If yes, rewrite as a number squared.

13. 36	**14.** 196	**15.** 180	**16.** 289

Topic B: Order of Operations

Simplify each expression.

1. $6(-4) + 2(9)$	**2.** $20 - 3 \cdot 4^2$	**3.** $\dfrac{8 - 5^2 + 29}{-1 - 2}$

4. $8 \cdot (5 - 2^3) - 28 \div (-4)$	**5.** $\dfrac{3^4 - 4^2}{-11 + 6}$	**6.** $1\dfrac{11}{12} - \dfrac{5}{6} \cdot \dfrac{9}{10}$

Topic C: Evaluating Expressions

Evaluate each expression using the given variable replacements.

1. $4p - 17$ (if p = -3)	**2.** $8c - 3d$ (if c = 2, d = -4)	**3.** $y^2 - 9y$ (if y = -7)
4. $\dfrac{4}{5}a - \dfrac{3}{8}b$ (if $a = \dfrac{5}{8}$, $b = \dfrac{2}{9}$)	**5.** $\dfrac{7y + x}{x - 1}$ (if x = -2, y = -4)	**6.** $mn - n^3 \div 2m$ (if m = 8, n = 4)

Topic D: Translating Expressions

Translate into an algebraic expression using a variable.

1. "16 subtracted from a number"	**2.** "the product of a number and -9"
3. "twice a number, increased by 7"	**4.** "the sum of one-third of a number and 4"

5. "the quotient of 48 and a number"	6. "8 less than the product of a number and 3"
7. Naomi ran a race 7 seconds faster than her friend Jenny. If Jenny ran the race in s seconds, write an expression for Naomi's time.	8. Antonio bought x pounds of apples and y pounds of bananas. If apples cost \$1.30 per pound and bananas cost \$0.50 per pound, write an expression for the total cost.

Topic E: Simplifying & Factoring Expressions				
Identify the variable terms, coefficients, and constants of each expression.				
Expression	**Variable Terms**	**Coefficients**		**Constant Terms**
1. $20 - 3k + 7k - 9 - k$				
2. $-11 - 4a + 3b - 5 + a - 12b$				

Simplify each expression by combining like terms.

3. $11x - 9 + 3x$	4. $-7 - 3r + 5r - 12 + r$	5. $-9c + 14d - 2d + 4c$

Simplify each expression using the distributive property.

6. $3(8 + 11)$	7. $-7(8 - 2)$	8. $9(k + 3)$
9. $3(2r - 7s)$	10. $-5(2v + 1)$	11. $\dfrac{5}{4}(28c + 8)$

Simplify each expression completely.

12. $20 + 4(2m - 1)$	13. $-3(1 - 4k) + 11k$
14. $\dfrac{1}{3}(6x - 30) - x + 2$	15. $-2(a - b) + 5(3a - b)$

Factor each expression using a GCF.

16. $70 + 28$	**17.** $16 - 104$	**18.** $6 + 42$
19. $4x + 24$	**20.** $18w - 81$	**21.** $48a + 20b$

Write three expressions that are equivalent to the given expression.

22. $12n + 54$	**23.** $-4(2p + 5q)$
• _____ • _____ • _____	• _____ • _____ • _____

Topic F: Properties

Name the property that justifies each statement.   (Property names are given below.)

1. $4 \cdot (-9 \cdot 2) = (4 \cdot -9) \cdot 2$	**2.** $24c + 9 = 3(8c + 3)$
3. $18 + (-18) = 0$	**4.** $13 + (-4) = (-4) + 13$
5. $\dfrac{5}{6} + 0 = \dfrac{5}{6}$	**6.** $(2a + b) + 5c = 2a + (b + 5c)$
7. $0 = (c - d) \cdot 0$	**8.** $(-8r) \cdot 1 = -8r$
9. $18 + (2 \cdot 4b) = 18 + (4b \cdot 2)$	**10.** $\dfrac{2}{9} \cdot \dfrac{9}{2} = 1$
11. $7(v - 1) = 7v - 7$	**12.** $-3k + 3k = 0$

- Commutative Property of Addition
- Commutative Property of Multiplication
- Associative Property of Addition
- Associative Property of Multiplication
- Distributive Property

- Identity Property of Addition
- Identity Property of Multiplication
- Inverse Property of Addition
- Inverse Property of Multiplication
- Multiplication Property of Zero

Math 6 Review

QUIZ 2

Name: _____

Date: _____ Per: _____

1. Which of the following expressions is equivalent to $3^7 \cdot 8^2$?

A. $(3 \cdot 7) \cdot (8 \cdot 2)$

B. $7 \cdot 7 \cdot 7 \cdot 8 \cdot 8$

C. $3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 8 \cdot 8$

D. $3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 16$

2. Of the list of values below, what is the sum of the largest value and smallest value?

$$3^5, \ 12^2, \ 6^3, \ 4^4$$

A. 400

B. 385

C. 360

D. 325

3. Write a number in the box that makes the statement true.

$$10^{\boxed{}} = 1{,}000{,}000{,}000$$

4. What is the greatest perfect square between 250 and 300?

A. 256

B. 275

C. 289

D. 296

5. What operation should be performed first in order to simplify the expression below?

$$60 - 5(12 \div 4)^2$$

A. subtract 5 from 60

B. multiply 5 and 12

C. divide 12 by 4

D. square 4

6. Find the value of the expression below.

$$\frac{4 + 2^3 \cdot 8}{-3 - 1}$$

A. -26

B. -17

C. -13

D. -34

7. Find the value of the expression below if a = -5 and b = 8.

$$a^2 - ab + 2b$$

A. 12

B. 31

C. 36

D. 81

8. Find the value of the expression below if x = 2.

$$\frac{7}{6} - \frac{8}{9} \div x$$

A. $\dfrac{5}{36}$

B. $\dfrac{11}{36}$

C. $\dfrac{13}{18}$

D. $\dfrac{7}{18}$

9. Which expression represents 7 less than the quotient of a number n and 3?

    A. $7 - 3n$ **C.** $3(n - 7)$

    B. $7 - \dfrac{n}{3}$ **D.** $\dfrac{n}{3} - 7$

---

13. Write the expression below in factored form by writing the values in the boxes.

$$78 - 30 = \boxed{}\left(\boxed{} - \boxed{}\right)$$

---

10. Which statement about the expression below is true when it is written in simplest form?

$$8k - 4 - 6 + 3k$$

    A.   11 is a constant

    B.   -10 is a constant

    C.   -2 is a coefficient

    D.   5 is a coefficient

---

14. Which of the following is equivalent to the factored form of the expression below?

$$16m + 40$$

    A. $8 \cdot 2m + 8 \cdot 5$

    B. $4 \cdot 4m + 10 \cdot 4$

    C. $8(2m + 5)$

    D. $4(4m + 10)$

---

11. Simplify the expression below. Write your answer in the box.

$$-7(2y + 5)$$

---

15. Which statement can be justified by the commutative property of multiplication?

    A. $14(8 + 5) = 14 \cdot 8 + 14 \cdot 5$

    B. $(2 \cdot 7) + 8 = 8 + (2 \cdot 7)$

    C. $6(4x + y) = (4x + y)6$

    D. $(2p \cdot 3q) \cdot 7r = 2p \cdot (3q \cdot 7r)$

---

12. Which of the following represents the expression below in simplest form?

$$7(c - 2d) - 4d + 3c$$

    A. $10c - 18d$

    B. $10c - 9d$

    C. $4c - 18d$

    D. $4c - 9d$

---

16. Which property is illustrated by the statement below?

$$\left(\frac{2}{3} \cdot \frac{3}{2}\right) + 0 = \left(\frac{2}{3} \cdot \frac{3}{2}\right)$$

    A.   Inverse Property of Multiplication

    B.   Multiplicative Property of Zero

    C.   Inverse Property of Addition

    D.   Identity Property of Addition

Topic A: Solving One-Step Equations

Solve each equation. Check all solutions.

1. $x + 7 = 23$	**2.** $-42 = 6p$	**3.** $y - 5 = -8$
4. $\dfrac{a}{-4} = -6$	**5.** $7 = m - (-9)$	**6.** $-8c = -72$
7. $r + (-4) = 11$	**8.** $\dfrac{k}{1.4} = 28$	**9.** $32.1 = 4.7 + v$
10. $x + \dfrac{1}{6} = \dfrac{13}{15}$	**11.** $1\dfrac{7}{9} = \dfrac{5}{6}m$	**12.** $c \div \dfrac{5}{12} = 2\dfrac{7}{10}$

Translate each sentence into an equation. Do not solve.

13. "The sum of 9 and a number is -4"	**14.** "The quotient of a number and 7 is -12."
15. "The product of a number and -3 is -42."	**16.** "8 less than a number is 34."

Topic B: One-Step Equation Word Problems			
Use a variable to write a one-step equation to solve the problem. Then solve.			
1. A large bag of lollipops were equally distributed into 28 smaller bags. If each bag contains 6 lollipops, how many total lollipops are there?		**2.** Julia is buying a watch for $105. If she is using a gift card that has a remaining balance of $28.43, how much will she have remaining to pay?	
Equation	**Solution**	**Equation**	**Solution**
3. Devin's paycheck was $179 less this week than his paycheck last week. If he made $348 this week, how much did he make last week?		**4.** Cheryl has been teaching for 18 years. If this is two-thirds the number of years that Tom has been teaching, how long has Tom been teaching?	
Equation	**Solution**	**Equation**	**Solution**

Topic C: Representing Inequalities	
Write an inequality to represent the graph.	
1.	**2.**
3.	**4.**
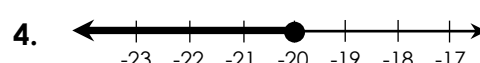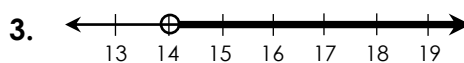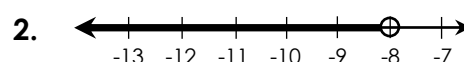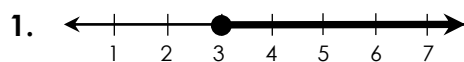
Write each sentence as an inequality, then graph.
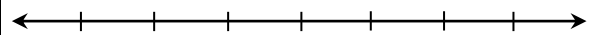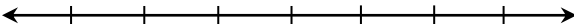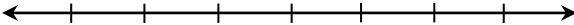
Verbal Description	**Inequality**	
5. "A number is less than 12."		
6. "A number is at least -5."		
7. "A number is a maximum of 9."		
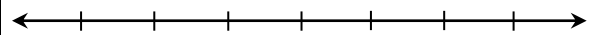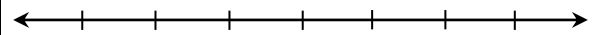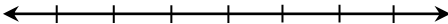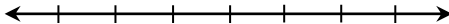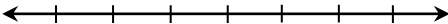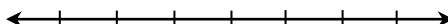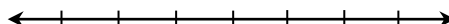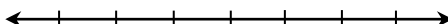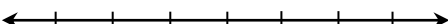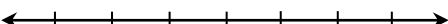
8. "-2 is more than a number"		
9. "The number of points scored in each game was no less than 16."		

Topic D: Solving One-Step Inequalities

Solve and graph the solution to each inequality.

1. $w - 4 \geq 5$	**2.** $7c > -28$	**3.** $\dfrac{a}{-3} \geq -5$
4. $-8 > m + 3$	**5.** $\dfrac{k}{4} \leq -2$	**6.** $-7p < 14$
7. $y - (-6) \geq 13$	**8.** $1.8r < 45$	**9.** $z - 1\dfrac{2}{3} \geq \dfrac{5}{6}$

Determine whether the given value is a solution to the inequality.

10. $x \leq -9$; $x = -13$	**11.** $n > -8$; $n = -25$	**12.** $c \geq \dfrac{3}{4}$; $c = \dfrac{17}{20}$

13. $k + 9 < 4$; $k = -5$	14. $7.5 \geq z - 3.89$; $z = 11.088$	15. $\dfrac{r}{-5} \leq -9$; $r = 10$

Write each sentence as an inequality. Do not solve.

16. "The difference of a number and 7 is greater than 20."	17. "15 more than a number is at most -4."
18. "-42 is less than or equal to the product of a -6 and a number."	19. "A number divided by 5 has a minimum value of 14."

Topic E: One-Step Inequality Word Problems

Use a variable to write a one-step inequality to solve the problem. Then solve.

1. Jack has lost a minimum of 25 pounds in the past six months. If his current weight is 248, what was his starting weight?		2. The cost of a case of water is $3.20. If you can spend at most $20, how many cases can you buy?	
Inequality	**Solution**	**Inequality**	**Solution**

3. Lana would like to spend at least $15 on each of her 9 grandchildren for Christmas. How much money will she need?		4. Trevor and Cara played in a bowling tournament. Their goal was a combined score of 425. If they did not meet their goal and Trevor scored 232, what was Cara's score?	
Inequality	**Solution**	**Inequality**	**Solution**

Math 6 Review
QUIZ 3

Name: _____

Date: _____ Per: _____

---

1. Solve the equation below. Write your solution in the box.

$$m + 11 = -4$$

$$\mathbf{\textit{m} =} \boxed{}$$

---

2. What is the solution to the following equation?

$$48 = \frac{y}{8}$$

A. $y = 6$

B. $y = 40$

C. $y = 56$

D. $y = 384$

---

3. What is the solution to the equation below?

$$k - \frac{3}{4} = 1\frac{9}{10}$$

A. $1\frac{3}{20}$

C. $2\frac{13}{20}$

B. $1\frac{7}{20}$

D. $2\frac{17}{20}$

---

4. Which equation has a solution of w = 5?

A. $w + (-1) = 6$

B. $w + 3 = 2$

C. $\dfrac{w}{2} = 10$

D. $1.8w = 9$

---

5. The maximum height that Caitlin climbed on a mountain was h feet. Once she reached this point, she descended 150 feet to eat lunch at a height of 1300 feet. Check the equation in the Column 1 and the solution in Column 2 that represents h.

Column 1	Column 2
☐ $h - 150 = 1300$	☐ $h = 1150$
☐ $h + 150 = 1300$	☐ $h = 1450$

---

6. After 6 people boarded a bus, the bus had 48 people. Which equation can be used to find n, the number of people on the bus before the 6 people boarded?

A. $\dfrac{n}{6} = 48$
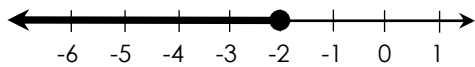
B. $n - 6 = 48$

C. $6n = 48$

D. $n + 6 = 48$

---

7. It costs $1.60 per pound to mail a package. Find the weight of a package that cost $11.52 to mail.

A. 6.4 pounds

B. 7.2 pounds

C. 9.8 pounds

D. 12.6 pounds

8. Which graphs represents all numbers that are a minimum of 6?

A. number line from 2 to 9, open circle at 6, shaded left

B. number line from 2 to 9, open circle at 6, shaded right

C. number line from 2 to 9, closed circle at 6, shaded left

D. number line from 2 to 9, closed circle at 6, shaded right

9. Which inequality could represent the set of numbers, n, shown on the graph below?

number line from -6 to 1, closed circle at -2, shaded left
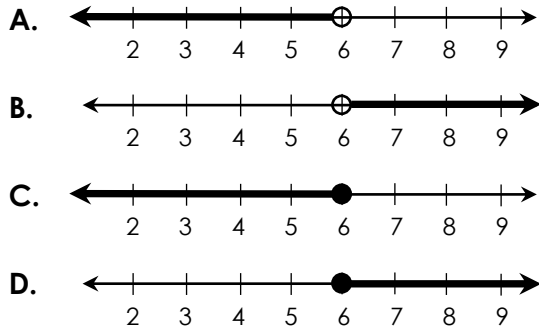
A. $-2 \geq n$

B. $-2 \leq n$

C. $-2 > n$

D. $-2 < n$

10. Given $p > -7$, in which list is each number a possible value of p?

A. {-7, -2, 0}

B. {-4, -1, 3}

C. {-17, -11, -9}

D. {-20, -13, -7}

11. Which number line represents the solution to $-2x > -6$?

A. number line 4 to 18, open circle at 12, shaded left

B. number line 4 to 18, open circle at 12, shaded right

C. number line -6 to 8, open circle at 3, shaded left

D. number line -6 to 8, open circle at 3, shaded right
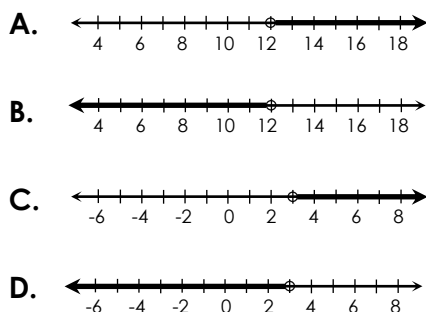
12. Which represents the solution to the inequality below?

$$a - (-8) \geq 2$$

A. $a \geq -10$

B. $a \geq 10$

C. $a \geq -4$

D. $a \geq -6$

13. The high temperature yesterday was more than 10° degrees below normal. If the normal high temperature for that day is 65°, which inequality represents t, yesterday's high temperature?

A. $t \leq 55°$

B. $t \geq 55°$

C. $t < 55°$

D. $t > 55°$

14. Greg burns 8 calories per minute running. If he wants to burn more than 100 calories running at the same rate, which inequality represents the possible values for m, the number of minutes Greg will need to run?

A. $m > 12.5$

B. $m < 12.5$

C. $m > 0.8$

D. $m < 0.8$

15. Mia has $700 in her checking account. She wants to use part of this money to purchase a new laptop. If she wants to have at least $250 in her account after purchasing the laptop, which inequality represents s, the amount of money she can spend?

A. $s \leq \$950$

B. $s \leq \$450$

C. $s \geq \$950$

D. $s \geq \$450$

Topic A: Writing Ratios, Simplifying Ratios, Equivalent Ratios

Alexa's math grades are given in the table below. Write each ratio in simplest form in three ways.

A	⫽⫽⫽ ⫽⫽⫽ ⫽⫽
B	⫽⫽⫽ ⫽⫽⫽
C	⫽⫽⫽⫽

1. A's to B's

2. B's to total grades

3. C's to B's

List two equivalent ratios for each ratio.

4. 8:3

5. $\dfrac{18}{45}$

Fill in a box with a value that makes the ratios equivalent.

6. $7:3$ and $\boxed{}:12$

7. $\dfrac{45}{36}$ and $\dfrac{15}{\boxed{}}$

8. $\dfrac{24}{\boxed{}}$ and $\dfrac{8}{18}$

Determine whether the ratios are equivalent.

9. $\dfrac{42}{56}$ and $\dfrac{6}{8}$

10. 4 to 9; 16 to 36

10. $\dfrac{5}{12}$ and $\dfrac{15}{48}$

12. To create a certain color, Mari mixes 3 drops of blue food coloring for every 5 drops of red food coloring. If she uses 18 drops of blue food coloring, how many drops of red does she need?

13. There are 56 girls and 32 boys in band. The ratio of girls to boys that play clarinet in the band is the same as the ratio of girls to boys in the entire band. If there are 7 girls that play clarinet, how many boys play clarinet?

Topic B: Ratio Tables and Graphs

Complete each ratio table.

1.

White Roses	Red Roses
5	8
	16
25	

2.

Sugar (tsp)	Calories
1	
5	80
12	

3.

Tickets	Cost ($)
1	
2	15
6	

4. Jeremy is a car salesman. Last year, he sold two trucks for every three cars he sold. Create a ratio table and graph to show this relationship.

Trucks				
Cars				
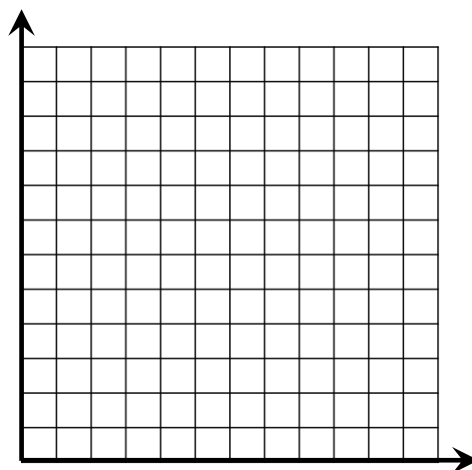
Topic C: Unit Rates; Comparing Rates

Write each rate as a unit rate.

1. 172 miles in 4 hours

2. 15 grams of fat in 6 cookies

3. 336 points in 16 games

4. If it took 27 minutes to fill a 432-gallon hot tub, find the number of gallons per minute.

5. The table below gives the amount of time, in minutes, it took three people to run a certain distance. Who ran the least minutes per mile?

	Miles	Minutes
Molly	8	52
Nathan	5	36
Darnell	12	72

Determine if Option A or Option B is the better deal. Justify your answer using unit prices.

6.

❑ **Option A:** $11 for 5 books   Unit Price: _____

❑ **Option B:** $30 for 12 books   Unit Price: _____

7.

❑ **Option A:** 28 ounces of orange juice for $3.92   Unit Price: _____

❑ **Option B:** 40 ounces of orange juice for $4.80   Unit Price: _____

Topic D: Proportional Relationships

Determine whether the quantities shown in each table or graph represent a proportional relationship. If yes, give the constant of proportionality, k.

1.

Time (h)	Earnings ($)
2	28
3	42
5	70
9	126

2.

Time (s)	Distance (ft)
5	16
10	32
15	48
20	64

3.

Boys	Girls
2	8
5	20
12	42
16	52
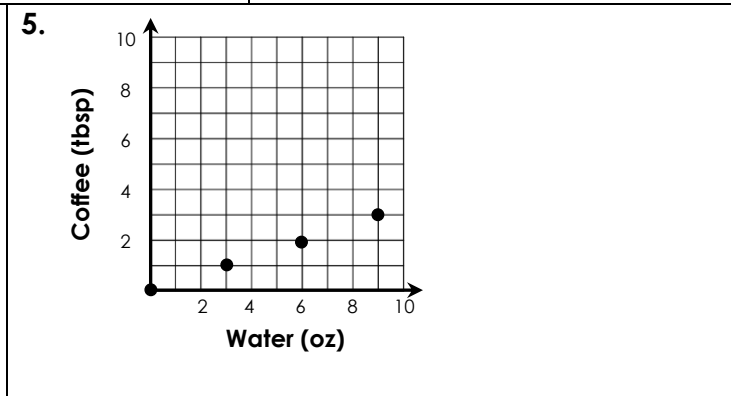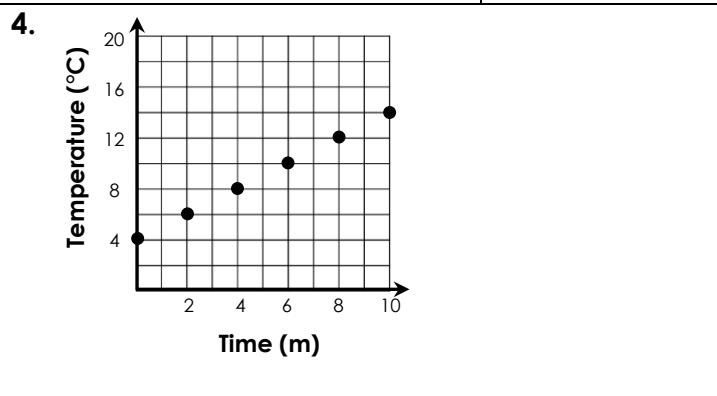
4.

5.

Topic E: Converting Fractions, Decimals, and Percents

Complete the chart below.

	FRACTION	DECIMAL	PERCENT
1.	$\dfrac{7}{25}$		
2.	$\dfrac{9}{5}$		
3.	$\dfrac{1}{8}$		
4.	$\dfrac{5}{12}$		
5.		0.325	
6.		2.1	
7.		0.78	
8.			87.5%

	FRACTION	DECIMAL	PERCENT
9.			135%
10.			4%

Topic F: Comparing Fractions, Decimals, and Percents

Compare by placing a <, >, or = symbol in the circle.

1. 120% $\bigcirc$ 0.975

2. $\dfrac{13}{20}$ $\bigcirc$ 8%

3. $\dfrac{3}{25}$ $\bigcirc$ $\dfrac{1}{8}$

4. 130% $\bigcirc$ $1\dfrac{1}{3}$

5. $\dfrac{17}{20}$ $\bigcirc$ $\dfrac{5}{6}$

6. 9% $\bigcirc$ $\dfrac{7}{40}$

7. Order from <u>least to greatest</u>:

$$\dfrac{2}{5},\ 30\%,\ 1.2,\ \dfrac{3}{8}$$

8. Order from <u>greatest to least</u>:

$$\dfrac{2}{3},\ 8\%,\ \dfrac{7}{10},\ 0.65$$

Topic G: Percent of a Number

Find the percent of each number.

1. 70% of 60

2. 35% of 140

3. 4% of 275

4. 56% of 95	**5.** 180% of 15	**6.** 325% of 40
7. Chelsea answers customer service calls for a company for $14.50 per hour. The company is offering her a new position that pays 120% more per hour than her previous position. If she accepts, what will be her new pay?	**8.** There are 180 days in a school year. If your teacher says you have completed 65% of the school year, how many days do you have left of school?	

Topic H: Negative Rational Numbers (Fractions and Decimals Only)

Give each absolute value.

1. $\left|\dfrac{2}{9}\right|$	**2.** $\left|-3.45\right|$	**3.** $\left|-1\dfrac{6}{7}\right|$	**4.** $\left|0.194\right|$

Compare by placing a <, >, or = symbol in the circle.

5. $-\dfrac{5}{8}\ \bigcirc\ -\dfrac{11}{16}$	**6.** $-1\dfrac{5}{6}\ \bigcirc\ -1\dfrac{3}{4}$	**7.** $-7.918\ \bigcirc\ -7.04$

8. Order from <u>least to greatest</u>: $-0.098,\ -\dfrac{1}{4},\ -0.12$	**9.** Order from <u>greatest to least</u>: $-1\dfrac{7}{20},\ -1.8,\ -1\dfrac{1}{2}$

Math 6 Review

QUIZ 4

Name: _____

Date: _____ Per: _____

1. Which ratio represents the number of vowels to total letters in the word JACKSONVILLE?

   A. 1 to 4

   B. 1 to 3

   C. 1 to 2

   D. 2 to 3

2. Write a number in the box below to create equivalent ratios.

$$7 : \boxed{} \text{ and } 56:32$$

3. The ratio of cats to dogs at a pet shelter is 4 to 3. If there are 36 dogs, how many cats are there?

   A. 27

   B. 36

   C. 48

   D. 52

4. A 32-ounce container of apple juice contains 80 grams of sugar. If this information is organized into the ratio table below, what are the values of x and y?

Apple Juice (oz)	1	y	32
Sugar (g)	x	10	80

  A. $x = 2$, $y = 4$ **C.** $x = 2.5$, $y = 4$

  B. $x = 2$, $y = 8$ **D.** $x = 2.5$, $y = 8$

5. Printer A took 8 minutes to print a 92-page document. Printer B took 5 minutes to print a 60-page document. Which statement is true?

   A. Printer A prints more pages per minute

   B. Printer B prints more pages per minute.

   C. Printer A and Printer B print the same number of pages per minute.

6. The prices of four bottles of shampoo are shown below. Which bottle costs the least per ounce?

	Size (oz)	Price
A	10	$7
B	15	$9
C	16	$12
D	25	$18

  A. Bottle A   **C.** Bottle C

  B. Bottle B   **D.** Bottle D

7. In which table is the relationship between labor hours and cost proportional?

A.

Labor Hours	1	3	5
Cost ($)	75	225	375

B.

Labor Hours	1	2	3
Cost ($)	60	60	60

C.

Labor Hours	1	4	8
Cost ($)	50	240	560

D.

Labor Hours	1	2	3
Cost ($)	80	150	240

8. The math club is selling boxes of cookies for a fundraiser. The graph below shows their profit on each box sold. What is their profit per box?

Profit ($) vs Boxes of Cookies

- **A.** $0.80
- **B.** $1.10
- **C.** $1.25
- **D.** $1.50

9. Ruby spent 28% of her paycheck paying bills. What fraction of her paycheck is left?

- **A.** $\dfrac{13}{50}$
- **B.** $\dfrac{37}{50}$
- **C.** $\dfrac{7}{25}$
- **D.** $\dfrac{18}{25}$

10. Of the 320 sixth grade students, 192 buy their lunch each day. What percent buy their lunch?

- **A.** 40%
- **B.** 60%
- **C.** 65%
- **D.** 70%

11. Four students are reading the same book. The table below gives the portion of the book that each has read so far. Which student has read the most?

Ryan	Zena	Evelyn	Grady
$\dfrac{13}{20}$	8%	0.7	$\dfrac{5}{8}$

- **A.** Ryan
- **B.** Zena
- **C.** Evelyn
- **D.** Grady

12. What is 4% of 80? Write your answer in the box.

13. Ben's cell phone bill is typically $150. This month, it was 120% his typical bill. What is Ben's cell phone bill this month?

- **A.** $30
- **B.** $80
- **C.** $180
- **D.** $200

14. A waiter earned a 16% tip on a $45 dinner bill. How much was the waiter's tip?

- **A.** $7.20
- **B.** $7.50
- **C.** $7.80
- **D.** $8.20

15. Which list gives the numbers in order from least value to greatest value?

- **A.** $\left\{-2\dfrac{1}{4}, -2.085, -2\dfrac{9}{10}, -2.716\right\}$
- **B.** $\left\{-2.716, -2\dfrac{9}{10}, -2.085, -2\dfrac{1}{4}\right\}$
- **C.** $\left\{-2.085, -2\dfrac{1}{4}, -2.716, -2\dfrac{9}{10}\right\}$
- **D.** $\left\{-2\dfrac{9}{10}, -2.716, -2\dfrac{1}{4}, -2.085\right\}$

Topic A: Congruent Segments, Angles, & Polygons

1. If the figures below are congruent, list all congruent sides and angles and place markings on the figures to show the relationships.

	Sides	**Angles**
P E Q D F R		

Determine whether the figures are congruent.

2.	**3.**	**4.**
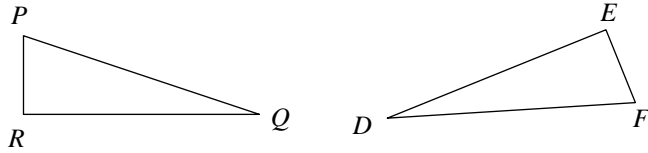
5. The figures below are congruent. Use the figures below to answer each question.

B 6 ft C
$81°$ $157°$ 14 ft
8 ft
$32°$
A 18 ft D

Q
R
S
T
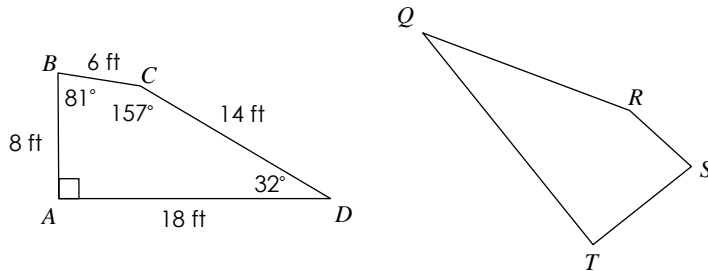
a) What side corresponds to $\overline{CD}$?

b) What is the length of $\overline{ST}$?

c) What angle corresponds to $\angle B$?

d) What is the measure of $\angle R$?

Topic B: Perimeter and Area of Rectangles, Parallelograms, Triangles, & Trapezoids

Find the perimeter of each figure.

1.

9.2 mi

2.

$2\frac{3}{8}$ in

$5\frac{3}{4}$ in

Find the area of each figure.

3.

5.9 m

3.7 m

4.

12.4 ft

5.2 ft | 4.4 ft

12.4 ft

5.

7 yd

14 yd

9.3 yd

6.

11 in, 13 in, 9.6 in, 14 in

7.

23 cm, 10 cm, 8 cm, 18 cm

8.

13 m, 18 m, 34 m

9. Abby is covering a corner shelf in her kitchen with shelving liner. The dimensions of the shelf are given below. What is the minimum amount of liner she will need?

23 in, 16 in, 28 in

10. Gino is painting a wall in his living room. The dimensions of the wall are given below. Find the area of the wall that he will cover.

15.6 ft, 16 ft, 9 ft, 14 ft

Topic C: Polygons on the Coordinate Plane

Graph the figure with the given vertices, then find its perimeter and area.

1. *J*(-5, 1), *K*(2, 1), *L*(2, -6), *M*(-5, -6)
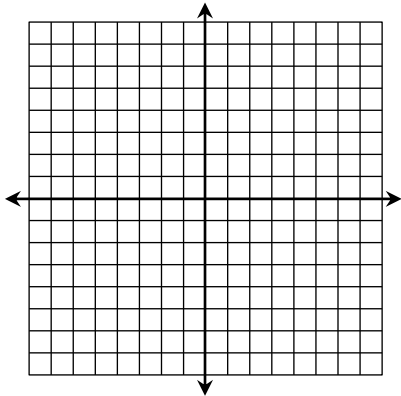
2. *E*(-1, 7), *F*(3, 7), *G*(3, -2), *H*(-1, -2)
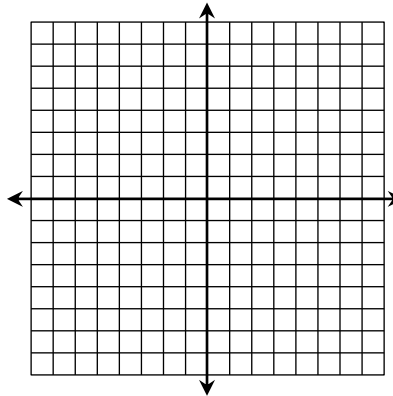
Graph the figure with the given vertices, then find its area.

3. *R*(-5, 4), *S*(8, 1), *T*(-5, -4)
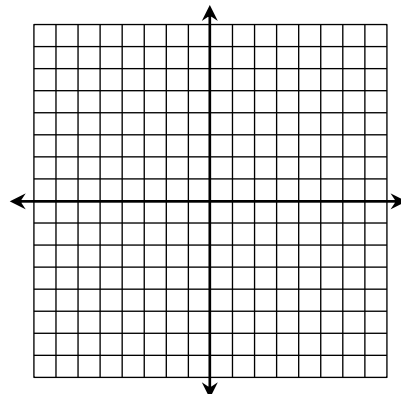
4. *A*(-7, 3), *B*(0, 3), *C*(3, -7), *D*(-4, -7)
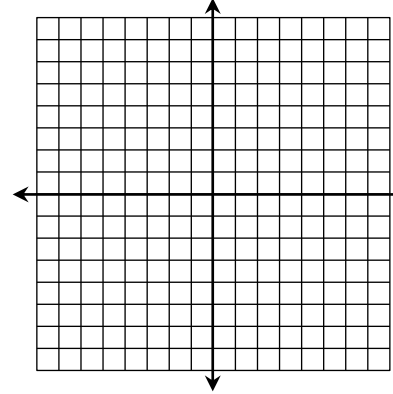
Topic D: Area of Composite Figures
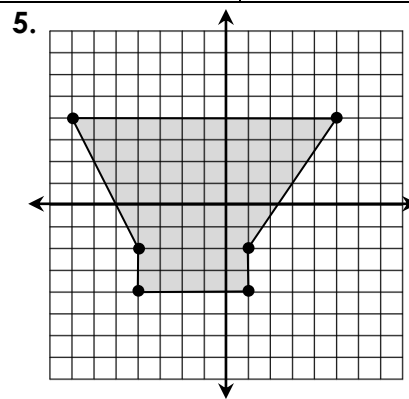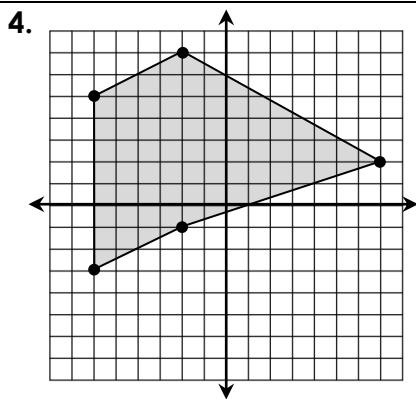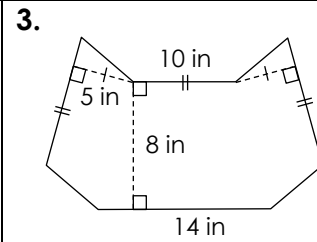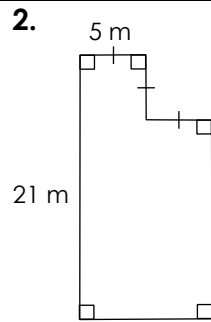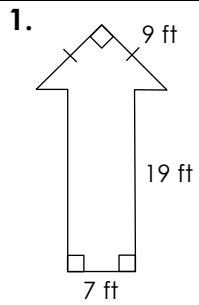
Find the area of each figure.

1.
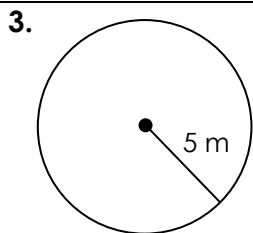
9 ft

19 ft

7 ft

2.

5 m

21 m

3.

10 in

5 in

8 in

14 in

4.

5.

Topic E: Circumference & Area of Circles

Find the circumference of each circle. Use 3.14 for pi.

1.

16 cm

2.

3.7 in

Find the area of each circle. Use 3.14 for pi.

3.

5 m

4.

17 ft
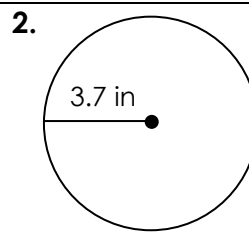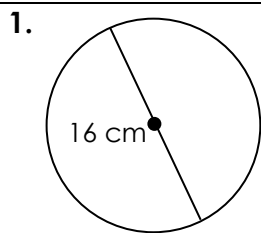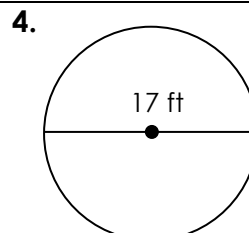
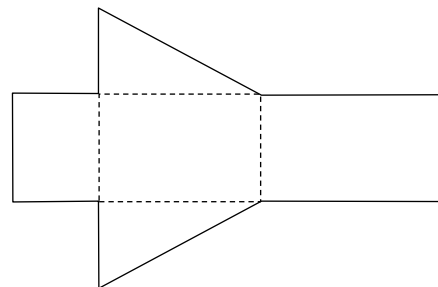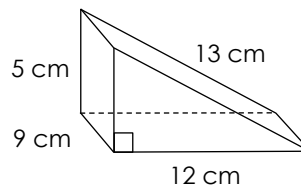| 5. Barry has a circular table with an 7-foot diameter. If he would like to cover the table with newspaper for an art project, what is the minimum amount of paper he will need?	6. Rachel has a circular pen for her chickens with a radius of 15 feet. If she needs to replace the fencing, how much fencing will she need?

Topic F: Surface Area of Prisms & Pyramids
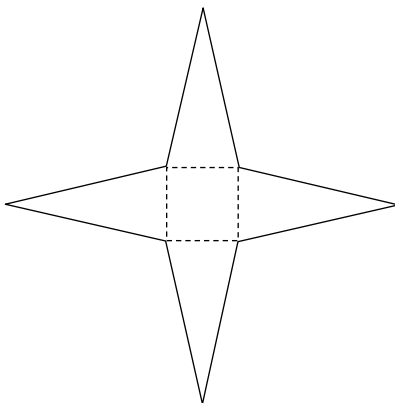
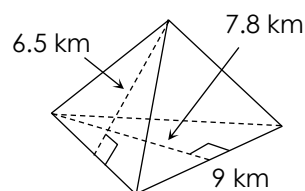**Find the surface area of each figure using the given net.**

1.

7 in   1.8 in   12 in

2.

5 cm   13 cm   9 cm   12 cm

3.

10.6 yd   7 yd   7 yd

4. Assume an equilateral base.

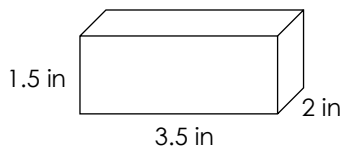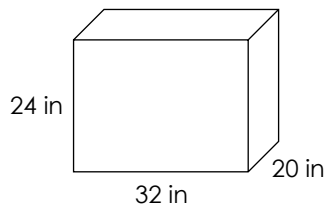6.5 km   7.8 km   9 km

5. A bar of soap is in the shape of a rectangular prism with the dimensions given below. The manufacturing company needs to know the minimum amount of material needed to construct a box for the soap.
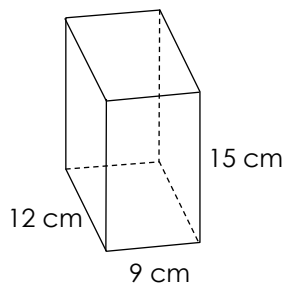
1.5 in
2 in
3.5 in

6. Kevin is planning to build a jumping box to use with his daily workouts. The dimensions of the box he wants to build are given below. What is the minimum amount of plywood he will need?

24 in
20 in
32 in

Topic G: Volume of Rectangular Prisms

Find the volume of each rectangular prism.

1.

15 cm
12 cm
9 cm

2.

2.7 m
6 m
8.2 m

3.

$2\frac{3}{4}$ ft
$1\frac{1}{2}$ ft
$2\frac{1}{3}$ ft

4. An inground pool is in the shape of a rectangular prism. The pool is 18 feet long by 12 feet wide with a depth of 5 feet. What is the maximum amount of water the pool can hold?

5. The bed of a dump truck in the shape of a rectangular prism is completely filled (but not overfilled) with 567 cubic feet of dirt. If the bed is 18 feet long by 7 feet wide, how deep is the bed?

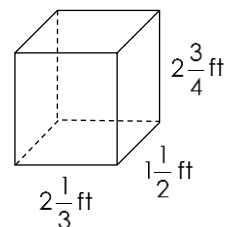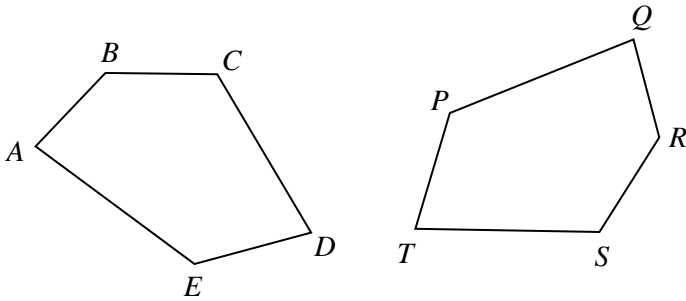# Math 6 Review
QUIZ 5

Name: _____

Date: _____ Per: _____

1. If the two figures below are congruent, complete the statement below.

$$\overline{AB} \cong \boxed{}$$

2. Lance is enclosing a rectangular garden with fencing. If the perimeter of the garden is 30 meters, check the two measurements that could represent the dimensions of the garden.

☐ 3 meters   ☐ 6 meters

☐ 4 meters   ☐ 8 meters

☐ 5 meters   ☐ 11 meters

3. Find the area of the figure below.

A. 108 ft²   C. 121.5 ft²

B. 114.5 ft²   D. 132 ft²

4. Find the area of the figure below.
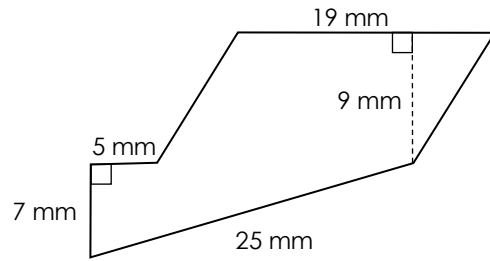
A. 232.5 mm²

B. 242 mm²

C. 255 mm²

D. 258.5 mm²

5. Find the area of the figure below.

*☐ = 1 square mile
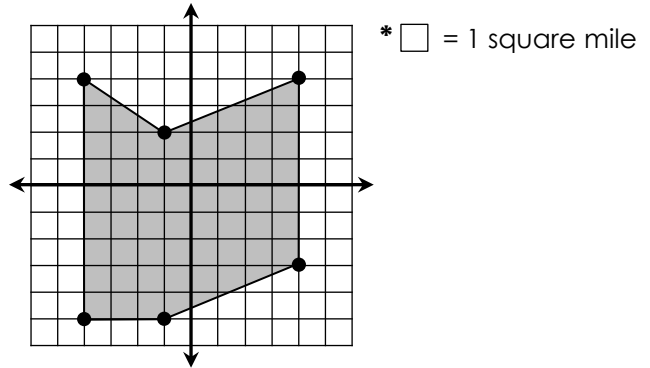
A. 55 mi²

B. 59 mi²

C. 62 mi²

D. 67 mi²

6. Using the graph below, find the area of a triangle formed by the points (-2, 0), (6, 8), and (6, -5).

A. 56 square units   C. 39 square units

B. 48 square units   D. 52 square units

7. The minute-hand on a large clock is 18 inches long. Which is closest to the distance the tip of the hand will travel in one rotation?

A. 56.52 inches

B. 74.68 inches

C. 113.04 inches

D. 128.36 inches

8. A circular rug has a diameter of 7 feet. Which is closest to the amount of fabric used to make the rug?

A. 38.5 ft²

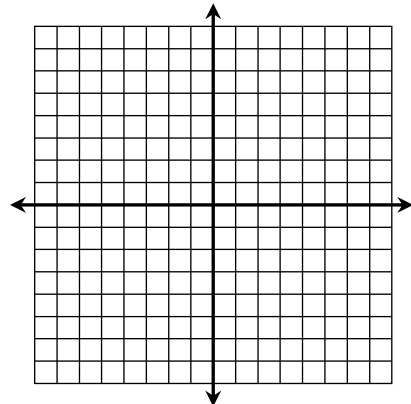B. 51.2 ft²

C. 104.1 ft²

D. 153.9 ft²

9. A rectangular prism and its net are shown below. What is the total surface area of the prism?

3.5 in

21 in

9 in
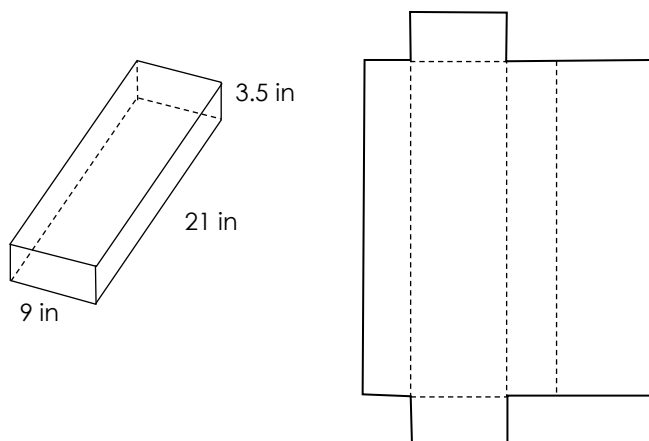
A. 554 in²

B. 570 in²

C. 583 in²

D. 588 in²

10. The net of a square pyramid along with its dimensions are shown below. What is the total surface area of the pyramid?

8.5 cm

7.5 cm

8 cm
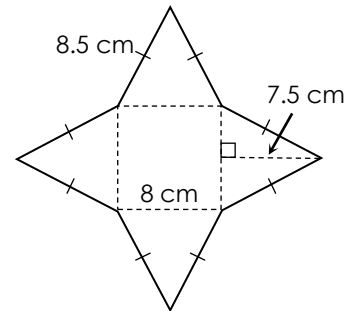
A. 480 cm²

B. 216 cm²

C. 200 cm²

D. 184 cm²

11. What is the volume of the rectangular prism below? Write your answer in the box.

21 m

12.5 m

7.2 m

12. A flower box in the shape of a rectangular prism along with its dimensions are given below. What is the maximum amount of soil the box can hold without overfilling it?

$\frac{7}{8}$ ft

$2\frac{1}{4}$ ft

$1\frac{1}{3}$ ft

A. $2\frac{1}{2}$ ft³   C. $2\frac{3}{4}$ ft³

B. $2\frac{5}{8}$ ft³   D. $2\frac{7}{12}$ ft³

Topic A: Measures of Center & Range

Find the mean, median, mode(s), and range for each of the following data sets.

1. The high temperature for the past nine days: **{57, 61, 57, 58, 58, 57, 61, 54, 68}**	Mean: Median: Mode(s): Range:
2. The prices, in dollars, of six laptops: **{520, 750, 700, 540, 460, 390}**	Mean: Median: Mode(s): Range:

3. Marissa's grades on nine tests are given below. Identify the outlier, then find the measures with and without the outlier. **{92, 88, 88, 92, 100, 88, 37, 98, 82}**	**Identify the Outlier:**	
	With Outlier	**Without Outlier**
	Mean:	Mean:
	Median:	Median:
	Mode(s):	Mode(s):
	Range:	Range:

Determine which measure of center is most appropriate. Explain your reasoning.

4. Weights, in pounds, of 15 dogs: **{55, 62, 48, 59, 74, 165, 70, 56, 82, 64, 71, 60, 53, 78, 63}**

   Best Center: _____ Why? _____

5. Ages of 12 players on a basketball team: **{11, 10, 11, 11, 8, 11, 12, 11, 9, 10, 11, 12}**

   Best Center: _____ Why? _____

6. The speed of the last 10 pitches thrown by a pitcher: **{90, 92, 85, 88, 94, 86, 93, 90, 88, 95}**

   Best Center: _____ Why? _____

7. All digital cameras in an electronics store are on sale for 20% off for the weekend. How does this affect the mean, median, mode, and range of prices of the cameras?	8. A football team has scored a different number of points in each of their first five games. If they score more points in the sixth game than any prior game, how will this affect the mean, median, mode, and range number of points per game scored?

Topic B: Dot Plots & Stem-and-Leaf Plots

The ages of the players on a hockey team are shown below.

Ages (Years)
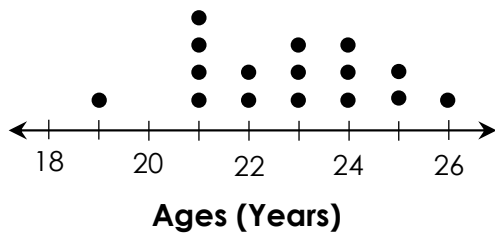
1. Compare the median and mode ages.

2. How many players are no more than 24 years old?

The time it took a group of students to complete a test is shown below.

Minutes

Stem	Leaf
2	5 8
3	0 4 7 9
4	1 3 3 5 7
5	6

Key: 2 | 5 = 25 minutes

3. Find the mean.

4. How many students took more than 30 minutes to complete the test?

Topic C: Mean Absolute Deviation

Find the mean absolute deviation of each set of data.

| 1. The heights, in inches, of six people: {62, 65, 68, 77, 71, 59}	2. The average heart rates, in beats per minute, of five people in a cycling class: {145, 168, 156, 134, 162}

3. Two classes, Class A and Class B, took the same test. Both classes had the same mean score on the test. However, the mean absolute deviation of Class A was 10 and Class B was 2. What does this information reveal about the individual scores in each class?

Topic D: Box-and-Whisker Plots

Draw the box-and-whisker plot, then give the five-number summary, range, and interquartile range (IQR).

1. The height, in inches, of nine trees at a tree farm:
{56, 68, 45, 65, 63, 49, 75, 51, 72}

Minimum: _____

Lower Quartile: _____
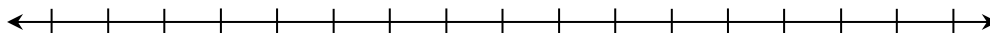
Median: _____

Upper Quartile: _____

Maximum: _____

Range: _____

IQR: _____

2. Points scored by a football team in each of their sixteen games:
{17, 21, 25, 23, 20, 27, 16, 24, 17, 14, 21, 28, 23, 30, 14, 27}

Minimum: _____

Lower Quartile: _____
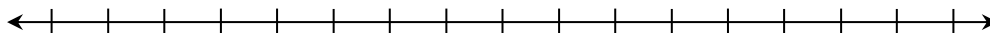
Median: _____

Upper Quartile: _____

Maximum: _____

Range: _____

IQR: _____

Topic E: Histograms

1. Students were asked the numbers of letters in their last name. The results are shown below. Organize the data in a frequency table, then make a histogram to display the data.

**{5, 8, 9, 11, 9, 6, 7, 5, 5, 10, 8, 4, 6,
7, 11, 4, 3, 8, 8, 5, 10, 6, 5, 8, 12}**

Interval	Frequency

The histogram below shows the number of hours worked in a single week by each employee at a company.

Hours Worked in a Week
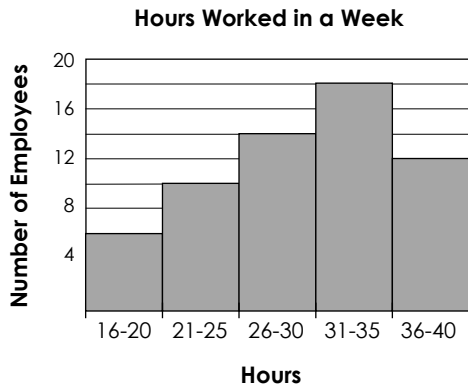
2. How many employees worked 30 hours at most?

3. What percent of the employees worked between 16 and 20 hours?

4. What percent of the employees worked a minimum of 26 hours?

Topic F: Circle Graphs

1. A group of students were asked how they get to and from school each day. The results are shown in the table below. Make a circle graph to display the data.

Transportation to/from School	Number of Students
Bus	87
Bike	18
Car	33
Walk	12

A new jacket comes in four colors. The circle graph below represents the last 200 jacket orders.

Jacket Orders

15%

9%

48%

28%

Green   Blue

Purple   Red
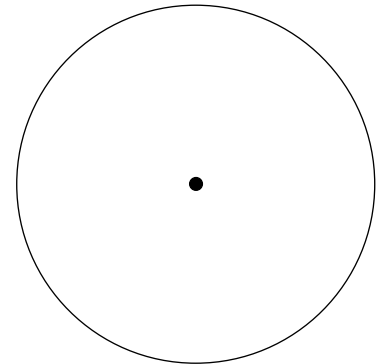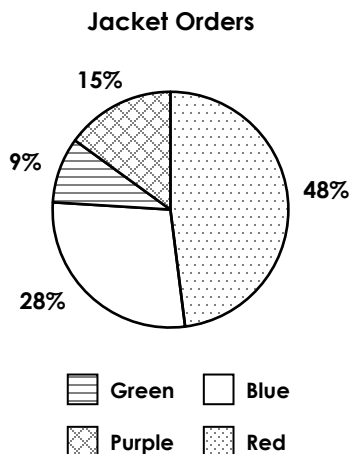
2. How many of the orders were for a green jacket?

3. How many of the orders were for a purple or a red jacket?

Math 6 Review
QUIZ 6

Name: _____

Date: _____ Per: _____

1. If 26 is added to the list of numbers below, which measures will not change? Check all that apply.

{7, 11, 15, 15, 22}

☐ Mean ☐ Mode

☐ Median ☐ Range

2. The data below represent the number of students in 8 classes. Which measure is the greatest?

{25, 23, 32, 19, 28, 29, 23, 21}

A. mean
B. median
C. mode
D. range

Use for questions 3 and 4: Employees at a company were invited to participate in a 3-month-long weight loss challenge. The stem-and-leaf plot below shows the number of pounds each participant lost.

Stem	Leaf
0	5 9
1	0 2 2 5 5 6 8 9
2	0 0 1 3 7
3	1 4

Key: 3 │ 4 = 34 pounds

3. What is the median number of pounds lost?

A. 15
B. 16
C. 17
D. 18

4. What is the range? Write your answer in the box.

5. The list below represents the heights, in inches, of nine books lined up on a shelf. Which action will cause the median height to increase but the range of heights to remain the same?

{6, 7, 7, 8, 8, 10, 12, 14, 16}

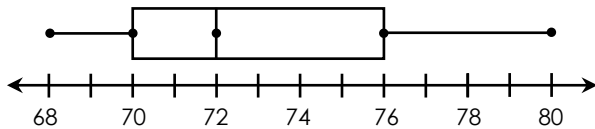A. removing the shortest book
B. removing the tallest book
C. adding another book that is 6 inches tall
D. adding another book that is 16 inches tall

6. Jaxson is a customer service specialist for a cable company. The data below represents the length, in minutes, of his last six service calls. What is the mean absolute deviation for this set of data?
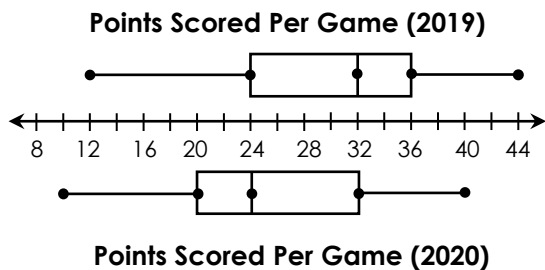
{12, 53, 25, 37, 20, 45}

A. 13
B. 14
C. 15
D. 16

7. The box-and-whisker plot below represents the golf scores by a group of golfers. Which list could represent the individual scores?
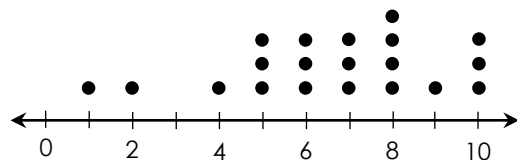

- **A.** {68, 70, 70, 72, 74, 74, 78, 80}
- **B.** {68, 70, 72, 72, 72, 74, 76, 80}
- **C.** {68, 69, 71, 72, 72, 74, 76, 80}
- **D.** {68, 69, 71, 71, 73, 74, 78, 80}

8. The box-and-whisker plot below shows the number of points scored by a football team in each game in their 2019 season compared to their 2020 season. Which measure is the same for both seasons?

Points Scored Per Game (2019)

Points Scored Per Game (2020)

- **A.** median
- **B.** lower quartile
- **C.** range
- **D.** interquartile range

9. The dot plot below shows the number of books read by a group of 20 students over the summer. Which statement is true?

Number of Books Read

- **A.** median = 6, interquartile range = 3
- **B.** median = 6, interquartile range = 4
- **C.** median = 7, interquartile range = 3
- **D.** median = 7, interquartile range = 4

10. Mr. Abrams gave a test to his math students. The histogram below represents the distribution of scores. What percent of his students had a score that was at most 80?

Test Scores

- **A.** 30%
- **C.** 40%
- **B.** 35%
- **D.** 45%

Use for questions 11 and 12: Beth exercised for 350 minutes last week. The circle graph below represents the amount of minutes she spent running, swimming, cycling, and lifting weights.

11. How many minutes did she spend cycling?

- **A.** 92
- **B.** 98
- **C.** 104
- **D.** 112

12. In which two activities did she spend exactly 189 minutes?

- **A.** swimming and running
- **B.** cycling and running
- **C.** swimming and cycling
- **D.** lifting weights and running

Topic A: Prime Factorization, GCF, and LCM

Determine whether the number is prime or composite.

1. 233	**2.** 864	**3.** 597	**4.** 1,109
Prime	Composite	Composite	Prime

Write the prime factorization of each number.

5. 75

$25 \cdot 3$

$5 \cdot 5 \cdot 3$

$\boxed{3 \cdot 5^2}$

6. 56

$7 \cdot 8$

$7 \cdot 2 \cdot 4$

$7 \cdot 2 \cdot 2 \cdot 2$

$\boxed{2^3 \cdot 7}$

7. 810

$81 \cdot 10$

$9 \cdot 9 \cdot 2 \cdot 5$

$3 \cdot 3 \cdot 3 \cdot 3 \cdot 2 \cdot 5$

$\boxed{2 \cdot 3^4 \cdot 5}$

8. 1,872

$4 \cdot 468$

$2 \cdot 2 \cdot 4 \cdot 117$

$2 \cdot 2 \cdot 2 \cdot 2 \cdot 9 \cdot 13$

$2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 13$

$\boxed{2^4 \cdot 3^2 \cdot 13}$

Find the greatest common factor (GCF) of each set of numbers.

9. 64 and 48

64: $8 \cdot 8$ 48: $16 \cdot 3$
$2 \cdot 4 \cdot 2 \cdot 4$ $4 \cdot 4 \cdot 3$
$(2 \cdot 2 \cdot 2 \cdot 2) 2 \cdot 2$ $(2 \cdot 2 \cdot 2 \cdot 2) 3$

$2^4 = \boxed{16}$

10. 72 and 156

72: $8 \cdot 9$ 156: $3 \cdot 52$
$2 \cdot 4 \cdot 3 \cdot 3$ $3 \cdot 4 \cdot 13$
$2 (2 \cdot 2 \cdot 3) 3$ $(3 \cdot 2 \cdot 2) 13$

$2^2 \cdot 3 = \boxed{12}$

11. 45 and 108

45: $5 \cdot 9$ 108: $9 \cdot 12$
$5 (3 \cdot 3)$ $3 \cdot 3 \cdot 3 \cdot 4$
    $(3 \cdot 3) 3 \cdot 2 \cdot 2$

$3^2 = \boxed{9}$

Find the least common multiple (LCM) of each set of numbers.

12. 18 and 30

18: $3 \cdot 6$ 30: $3 \cdot 10$
$(3 \cdot 3) 2$ $3 \cdot (2) (5)$

$2 \cdot 3^2 \cdot 5 = \boxed{90}$

13. 24 and 40

24: $6 \cdot 4$ 40: $4 \cdot 10$
$(3) (2 \cdot 2 \cdot 2)$ $2 \cdot 2 \cdot 2 (5)$

$2^3 \cdot 3 \cdot 5 = \boxed{120}$

14. 12 and 28

12: $3 \cdot 4$ 28: $4 \cdot 7$
$(3) (2 \cdot 2)$ $2 \cdot 2 \cdot (7)$

$2^2 \cdot 3 \cdot 7 = \boxed{84}$

Indicate whether you would use a GCF or LCM to solve the problem. Then solve.

15. Kiara has 80 lollipops and 32 Snicker bars. She is filling individual bags for Halloween and would like each bag to contain the same combination of lollipops and Snicker bars. How many bags can she fill if she wishes to have no candy leftover? How many lollipops and Snicker bars are in each bag?

80: $8 \cdot 10$ 32: $4 \cdot 8$
$4 \cdot 2 \cdot 2 \cdot 5$ $2 \cdot 2 \cdot 2 \cdot 4$
$(2 \cdot 2 \cdot 2 \cdot 2) 5$ $(2 \cdot 2 \cdot 2 \cdot 2) 2$

GCF: $2^4 = 16$

$\boxed{\text{16 bags; 5 lollipops and 2 Snicker bars.}}$

16. Corey is stacking 10-inch boxes while Dale is stacking 12-inch boxes. They plan to stop when their stacks are the exact same height. At what height will this be?

10:
2 ⑤

12:
4·3
(2·2) ③

LCM: $2^2 \cdot 3 \cdot 5 = 60$

60 inches

Topic B: Operations with Fractions and Decimals

Evaluate. Write each answer as a fraction or mixed number in simplest form.

1. $\dfrac{1}{4} + 4\dfrac{5}{6} = \dfrac{1}{4} + \dfrac{29}{6}$

$= \dfrac{3}{12} + \dfrac{58}{12}$

$= \dfrac{61}{12}$

$= \boxed{5\dfrac{1}{12}}$

2. $5\dfrac{1}{8} - 2\dfrac{1}{6} = \dfrac{41}{8} - \dfrac{13}{6}$

$= \dfrac{123}{24} - \dfrac{52}{24}$

$= \dfrac{71}{24}$

$= \boxed{2\dfrac{23}{24}}$

3. $1\dfrac{3}{4} + 5\dfrac{7}{10} = \dfrac{7}{4} + \dfrac{57}{10}$

$= \dfrac{35}{20} + \dfrac{114}{20}$

$= \dfrac{149}{20}$

$= \boxed{7\dfrac{9}{20}}$

4. $3\dfrac{1}{7} \cdot 2\dfrac{5}{6}$

$= \dfrac{22}{7} \cdot \dfrac{17}{6}$

$= \dfrac{187}{21}$

$= \boxed{8\dfrac{19}{21}}$

5. $4\dfrac{1}{6} \div 1\dfrac{1}{4} = \dfrac{25}{6} \div \dfrac{5}{4}$

$= \dfrac{25}{6} \cdot \dfrac{4}{5}$

$= \dfrac{10}{3}$

$= \boxed{3\dfrac{1}{3}}$

6. $3\dfrac{2}{5} \div 4 = \dfrac{17}{5} \div 4$

$= \dfrac{17}{5} \cdot \dfrac{1}{4}$

$= \boxed{\dfrac{17}{20}}$

Evaluate.

7. $24.95 + 176.089$

```
 1 1 1
176.089
+ 24.950
---------
201.039
```

$\boxed{201.039}$

8. $98.1 - 14.726$

```
   7 10 9 10
 98.1 0 0
- 14.726
---------
 83.374
```

$\boxed{83.374}$

9. $3.59(17)$

```
   3.59
 ×   17
-------
  2513
  3590
-------
 61.03
```

$\boxed{61.03}$

10. 80.95(0.04)

$$\begin{array}{r} 80.95 \\ \times\ 0.04 \\ \hline 3.2380 \end{array}$$

$\boxed{3.238}$

11. 7.8(15.12)

$$\begin{array}{r} 15.12 \\ \times\ 7.8 \\ \hline 12096 \\ 105840 \\ \hline 117.936 \end{array}$$

$\boxed{117.936}$

12. 73.2 ÷ 8

$$\begin{array}{r} 9.15 \\ 8\overline{)73.20} \\ -72 \\ \hline 12 \\ -8 \\ \hline 40 \\ -40 \\ \hline 0 \end{array}$$

$\boxed{9.15}$

13. $\dfrac{61.95}{15}$

$$\begin{array}{r} 4.13 \\ 15\overline{)61.95} \\ -60 \\ \hline 19 \\ -15 \\ \hline 45 \\ -45 \\ \hline 0 \end{array}$$

$\boxed{4.13}$

14. $\dfrac{91.8}{3.4}$

$$\begin{array}{r} 27 \\ 34\overline{)918} \\ -68 \\ \hline 238 \\ -238 \\ \hline 0 \end{array}$$

$\boxed{27}$

15. 2.12 ÷ 2.65

$$\begin{array}{r} .8 \\ 265\overline{)212.0} \\ -2120 \\ \hline 0 \end{array}$$

$\boxed{0.8}$

Topic C: Applications with Fraction and Decimal Operations

1. A trail that wraps around a lake is $1\frac{7}{8}$ miles long. Mara completed one lap around the lake. If she ran $\frac{4}{5}$ of the distance and walked the rest. How far did she run?

$$1\frac{7}{8}\left(\frac{4}{5}\right) = \frac{3\ \cancel{15}}{2\ \cancel{8}} \cdot \frac{\cancel{4}^{\,1}}{\cancel{5}_{1}} = \frac{3}{2}$$

$\boxed{1\frac{1}{2}\ mi}$

2. A piece of wire is $30\frac{2}{3}$ inches long. How many pieces of wire can be cut from this if each piece must be $1\frac{7}{9}$ inches long?

$$30\frac{2}{3} \div 1\frac{7}{9} = \frac{\overset{23}{\cancel{92}}}{\cancel{3}} \cdot \frac{\overset{3}{\cancel{9}}}{\cancel{16}_{4}}$$

$$= \frac{69}{4} = 17\frac{1}{4}$$

$\boxed{17\ pieces}$

3. Nick bought $1\frac{5}{6}$ pounds of green apples and $1\frac{1}{4}$ pounds of red apples. How many total pounds of apples did he buy?

$$1\frac{5}{6} + 1\frac{1}{4} = \frac{11}{6} + \frac{5}{4}$$

$$= \frac{22}{12} + \frac{15}{12}$$

$$= \frac{37}{12} = \boxed{3\frac{1}{12}\ pounds}$$

4. A taxi service charges $1.20 per mile. If Serena paid $16.38 for a ride to the airport, how many miles was the trip?

$$\frac{16.38}{1.20} = \begin{array}{r} 13.65 \\ 120\overline{)1638.00} \\ -120 \\ \hline 438 \\ -360 \\ \hline 780 \\ -720 \\ \hline 600 \\ -600 \\ \hline 0 \end{array}$$

$\boxed{13.65\ miles}$

5. Jana's six children bought her a gift for her birthday and split the total cost evenly. If the gift cost $155.40, how much did each person pay?

$$\frac{155.40}{6}$$

$$\begin{array}{r} 25.90 \\ 6\overline{)155.40} \\ -12 \\ \hline 35 \\ -30 \\ \hline 54 \\ -54 \\ \hline 00 \\ -0 \\ \hline 0 \end{array}$$

$\boxed{\$25.90}$

6. If salami is on sale for $9.68 per pound, find the total cost for 1.5 pounds.

$$\begin{array}{r} 9.68 \\ \times\ 1.5 \\ \hline 4840 \\ +\ 9680 \\ \hline 14.520 \end{array}$$

$\boxed{\$14.52}$

Topic D: Fractions vs. Decimals

Write each decimal as a fraction or mixed number in simplest form.

1. 2.8

$$2\frac{8}{10} = \boxed{2\frac{4}{5}}$$

2. 12.95

$$12\frac{95}{100} = \boxed{12\frac{19}{20}}$$

3. 7.125

$$7\frac{125}{1000} = \boxed{7\frac{1}{8}}$$

Write each fraction or mixed number as a decimal.

4. $3\frac{7}{25}$

$$\begin{array}{r} 0.28 \\ 25\overline{)7.00} \\ -50 \\ \hline 200 \\ -200 \\ \hline 0 \end{array}$$

$\boxed{3.28}$

5. $\frac{27}{40}$

$$\begin{array}{r} 0.675 \\ 40\overline{)27.000} \\ -240 \\ \hline 300 \\ -280 \\ \hline 200 \\ -200 \\ \hline 0 \end{array}$$

$\boxed{0.675}$

6. $1\frac{5}{12}$

$$\begin{array}{r} 0.4166 \\ 12\overline{)5.0000} \\ -48 \\ \hline 20 \\ -12 \\ \hline 80 \\ -72 \\ \hline 80 \\ -72 \\ \hline 8 \end{array}$$

$\boxed{1.41\overline{6}}$

Topic E: Integers and Integer Operations

1. Write an integer to model each situation.

a) a $60 profit _60_

b) a 7-yard loss _-7_

c) a 125-foot descent _-125_

2. Name the opposite of each integer.

a) 19 _-19_

b) 43 _-43_

c) -7 _7_

d) -26 _26_

Give each absolute value.

3. |40| 40

4. |−17| 17

5. |21| 21
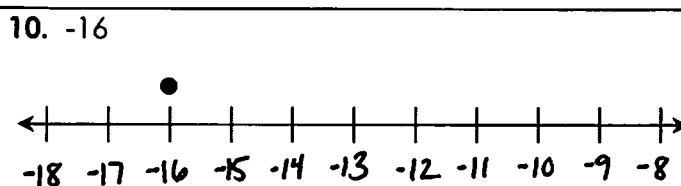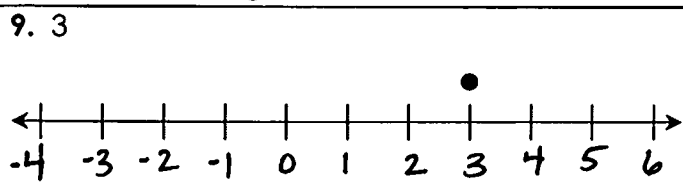
6. |−9| 9

7. Order from least to greatest: **-13, 4, -9, -17, 0, -5**	8. Order from greatest to least: **-46, -52, -57, -41, -60**
-17, -13, -9, -5, 0, 4	-41, -46, -52, -57, -60

Graph each integer at the dot on the number line. Then, number the rest of the line.

9. 3	10. -16
-4 -3 -2 -1 0 1 2 3 4 5 6	-18 -17 -16 -15 -14 -13 -12 -11 -10 -9 -8

Find each sum or difference.

11. $-9+(-5)$ -14	12. $27+(-19)$ 8	13. $-7+31$ 24
14. $8+(-11)$ -3	15. $6+(-6)$ 0	16. $-51+16$ -35
17. $7-12$ -5	18. $-6-17$ - 23	19. $14-(-12)$ 26
20. $-13-13$ - 26	21. $-8-(-3)$ -5	22. $-4-(-15)$ 11

Find each product or quotient.

23. $7\cdot(-4)$ - 28	24. $-9\cdot(-8)$ 72	25. $-2\cdot16$ -32
26. $17(4)$ 68	27. $-5(13)$ -65	28. $-6\cdot(-8)$ 48
29. $-40\div(-8)$ 5	30. $\dfrac{27}{-3}$ -9	31. $\dfrac{-56}{4}$ -14
32. $56\div8$ 7	33. $\dfrac{14}{0}$ undefined	34. $0\div(-8)$ 0

Topic F: Applications with Integer Operations

1. The stock market ended the day on Monday at 179 points. If the market closes the following day 414 points below Monday, find the closing number on Tuesday.

$179 + (-414) = 179 - 414$

$= \boxed{-235}$

2. Over the course of 4 plays, a football team lost 5 yards, gained 2 yards, lost 8 yards, then **g**ained 14 yards. Find the team's total change in yards on the 4 plays.

$-5 + 2 + (-8) + 14$

$-3 + (-8) + 14$

$-11 + 14 = \boxed{3 \text{ yd gain}}$

3. A car depreciated by $9000 in one year. Find the average change in value each month.

$\dfrac{-9000}{12}$

$\boxed{\$ -750/\text{month}}$

$$
\begin{array}{r}
750 \\
12\overline{)9000} \\
-84 \\
\hline
60 \\
-60 \\
\hline
00 \\
-0 \\
\hline
0
\end{array}
$$

4. Sarah is hiking in a valley at an elevation of -68 feet. If she continues to decend at a rate of 8 feet per minute, find her elevation after 15 minutes.

$-68 + (-8)(15)$

$-68 + (-120)$

$= \boxed{-188 \text{ ft}}$

5. A submarine is located 875 feet below sea level. If a helicopter is located 6,200 feet directly above the submarine, find the altitude of the helicopter.

$-875 + 6200$

$= \boxed{5325 \text{ ft}}$

6. A hot-air balloon is descending at a rate of 185 feet per minute. Find the change in position of the hot-air balloon after 6 minutes.
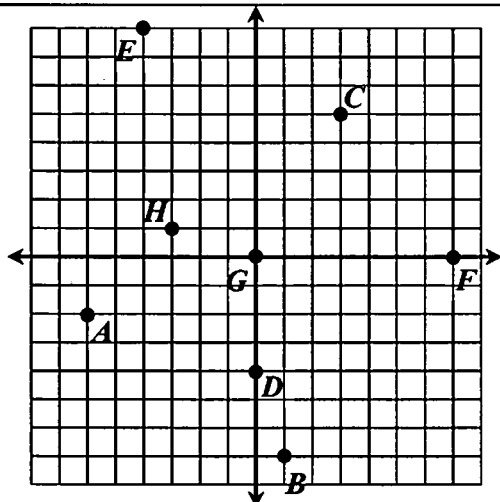
$-185(6)$

$$
\begin{array}{r}
185 \\
\times 6 \\
\hline
1110
\end{array}
$$

$\boxed{-1110 \text{ feet}}$

Topic G: The Coordinate Plane

Identify the ordered pair and location (quadrant or axis) for each point on the graph.

Point	Ordered Pair	Location
A	(-6, -2)	Quad III
B	(1, -7)	Quad IV
C	(3, 5)	Quad I
D	(0, -4)	y-axis
E	(4, 8)	Quad II
F	(7, 0)	x-axis
G	(0, 0)	origin
H	(-3, 1)	Quad II

Math 6 Review
QUIZ 1

Name: _____

Date: _____ Per: _____

1. Which list of numbers contains only prime numbers?

A. {31, 63, 97}

B. {23, 89, 109} *(circled)*

C. {57, 79, 113}

D. {49, 97, 129}

2. The partial prime factorization of the number 1,008 is given below. Complete the factorization by writing the missing numbers in the boxes.

$$\boxed{3}^2 \cdot 2^{\boxed{4}} \cdot \boxed{7}$$

3. Which statement is true about the greatest common factor (GCF) and least common multiple (LCM) of the numbers 12 and 20?

GCF = 4   LCM = 60

A. The GCF is 32 more than the LCM.

B. The LCM is 32 more than the GCF.

C. The GCF is 56 more than the LCM.

D. The LCM is 56 more than the GCF. *(circled)*

4. Kingston has two pieces of fabric. One is 56 inches wide and the other is 96 inches wide. He wants to cut both pieces of fabric into strips of equal width that are as wide as possible. How wide should he cut the strips?

$56 = 2 \cdot 2 \cdot 2 \cdot 7$

$96 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3$

$GCF = 2 \cdot 2 \cdot 2 = 8$

A. 2 inches

B. 4 inches

C. 8 inches *(circled)*

D. 12 inches

5. Alex is $2\frac{2}{9}$ years older than his sister Jenna. How old is Jenna if Alex is $5\frac{5}{6}$ years old?

$$5\frac{5}{6} - 2\frac{2}{9}$$

$$\frac{35}{6} - \frac{20}{9} = \frac{105}{18} - \frac{40}{18} = \frac{65}{18}$$

A. $3\frac{11}{18}$ years *(circled)*

B. $3\frac{7}{18}$ years

C. $8\frac{1}{18}$ years

D. $8\frac{5}{18}$ years

6. There are $20\frac{2}{3}$ cups of dog food in a storage bin. If Kayla's dog eats $2\frac{1}{2}$ cups of food each day, how many full days will the food last?

$$\frac{62}{3} \div \frac{5}{2} = \frac{62}{3} \cdot \frac{2}{5} = \frac{124}{15}$$

A. 7 days

B. 8 days *(circled)*

C. 9 days

D. 10 days

7. Evaluate the expression below.

$$11.28(1.875)$$

$$\begin{array}{r} 11.28 \\ \times 1.875 \\ \hline 5460 \\ 78960 \\ 902400 \\ 1128000 \\ \hline 21.15000 \end{array}$$

A. 19.45

B. 19.85

C. 20.95

D. 21.15 *(circled)*

8. Evaluate the expression below.

$$\frac{132}{4.8}$$

$$\begin{array}{r} 27.5 \\ 48\overline{)1320.0} \\ -96 \\ \hline 360 \\ -336 \\ \hline 240 \\ -240 \\ \hline 0 \end{array}$$

A. 27.5 *(circled)*

B. 28.5

C. 30.8

D. 32.5

9. The total cost for 1.4 pounds of strawberries was $3.71. Find the cost per pound.

$$\frac{3.71}{1.4}$$

$$14\overline{\smash{\big)}37.10}$$ = 2.65
−28
91
−84
70
−70
0

   A. $2.35
   B. $2.45
   C. $2.55
  (D.) $2.65

13. Given the five integers below, which two integers would have the smallest product?

-7, 4, -2, 9

  (A.) -7 and 9
   B.   4 and -2
   C.   -2 and -7
   D.   9 and -2

10. Mara wrote down an integer. The opposite of Mara's integer is between 20 and 30. Which statement about Mara's integer must be true?

   A.   It is less than -35.
   B.   It has an absolute value of 10.
  (C.) It is less than -10.
   D.   It is greater than -10.

14. A shark swimming 250 feet below the surface of the water rises 78 feet to eat a fish, then swims down 95 feet. Which value represents the location of the shark relative to the surface of the water?
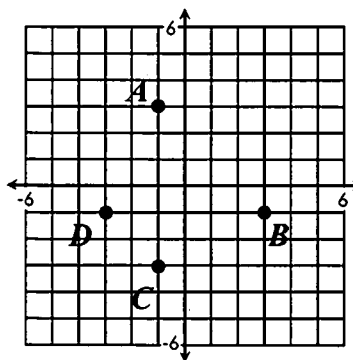
$$-250 + 78 + (-95)$$
$$-172 + (-95)$$
$$-267$$

   A.   -77 feet
   B.   -233 feet
  (C.) -267 feet
   D.   -423 feet

11. Which list shows temperatures in order from coldest to warmest?

   A.   {-15° F, 12° F, -8 ° F, 0 °F}
   B.   {0° F, -8° F, 12 °F, -15 °F}
   C.   {-8° F, -15° F, 0° F, 12° F}
   D.   {-15° F, -8° F, 0 ° F, 12 °F}

15. Which point can be represented by the ordered pair (-1, 3)?

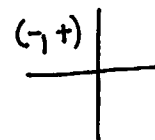 (A.) A
   B.   B
   C.   C
   D.   D

12. Which expressions are equivalent to -4? Check all that apply.

-12   ☐ $-8 + (-4)$ ☑ $3 + (-7)$ -4

-4   ☑ $36 \div (-9)$ ☑ $-1 - 3$ -4

0   ☐ $-2 - (-2)$ ☐ $-2(-2)$ 4

16. Which of the following must be true for the ordered pair (a, b) to be in the second quadrant?

$(-, +)$

   A. $a > 0$ and $b > 0$
   B. $a < 0$ and $b < 0$
   C. $a > 0$ and $b < 0$
  (D.) $a < 0$ and $b > 0$

Topic A: Powers, Exponents, and Perfect Squares

Write each product in exponential form.

1. $13 \cdot 13 \cdot 13 \cdot 13 \cdot 13 \cdot 13 \cdot 13 \cdot 13$ 13^8

2. $(-8) \cdot (-8) \cdot (-8) \cdot (-8) \cdot (-8)$ $(-8)^5$

3. $(-2) \cdot 7 \cdot 15 \cdot (-2) \cdot 7 \cdot (-2) \cdot (-2) \cdot 7$ $(-2)^4 \cdot 7^3 \cdot 15$

4. $x \cdot x \cdot y \cdot x \cdot y \cdot x \cdot x \cdot x \cdot y \cdot y \cdot y \cdot x$ $x^7 y^5$

Write each number as a power of 10.

5. $10,000$ 10^4

6. $100,000,000,000$ 10^{11}

Evaluate.

7. 4^4
$4 \cdot 4 \cdot 4 \cdot 4$
$16 \cdot 16$
$\boxed{256}$

8. 19^2
$19 \cdot 19$
$\boxed{361}$

9. 7^3
$7 \cdot 7 \cdot 7$
$49 \cdot 7$
$\boxed{343}$

10. $(-14)^2$
$(-14)(-14)$
$\boxed{196}$

11. $(-3)^5$
$(-3)(-3)(-3)(-3)(-3)$
$9 \cdot 9 \cdot (-3)$
$81(-3) = \boxed{-243}$

12. $(-5)^2 \cdot (-2)^3$
$(-5)(-5)(-2)(-2)(-2)$
$25 \cdot 4 \cdot (-2)$
$100(-2) = \boxed{-200}$

Indicate whether the number if a perfect square. If yes, rewrite as a number squared.

13. 36
Yes; 6^2

14. 196
Yes; 14^2

15. 180
No

16. 289
Yes; 17^2

Topic B: Order of Operations

Simplify each expression.

1. $6(-4) + 2(9)$
$-24 + 18$
$\boxed{-6}$

2. $20 - 3 \cdot 4^2$
$20 - 3 \cdot 16$
$20 - 48$
$\boxed{-28}$

3. $\dfrac{8 - 5^2 + 29}{-1 - 2}$

$\dfrac{8 - 25 + 29}{-1 - 2}$

$\dfrac{-17 + 29}{-3} = \dfrac{12}{-3} = \boxed{-4}$

4. $8 \cdot (5 - 2^3) - 28 \div (-4)$

$8 \cdot (5 - 8) - 28 \div (-4)$

$8 \cdot (-3) - 28 \div (-4)$

$-24 - (-7)$

$-24 + 7$

$\boxed{-17}$

5. $\dfrac{3^4 - 4^2}{-11 + 6}$

$\dfrac{81 - 16}{-5}$

$\dfrac{65}{-5} = \boxed{-13}$

6. $1\dfrac{11}{12} - \dfrac{5}{6} \cdot \dfrac{9}{10}$

$\dfrac{23}{12} - \dfrac{\cancel{5}^{1}}{\cancel{6}_{2}} \cdot \dfrac{\cancel{9}^{3}}{\cancel{10}_{2}}$

$\dfrac{23}{12} - \dfrac{3}{4} \cdot \dfrac{3}{3}$

$\dfrac{23}{12} - \dfrac{9}{12} = \dfrac{14}{12} = \dfrac{7}{6}$

$\boxed{= 1\dfrac{1}{6}}$

Evaluate each expression using the given variable replacements.

1. $4p - 17$ (if $p = -3$)

$4(-3) - 17$

$-12 - 17$

$\boxed{-29}$

2. $8c - 3d$ (if $c = 2, d = -4$)

$8(2) - 3(-4)$

$16 - (-12)$

$16 + 12$

$\boxed{28}$

3. $y^2 - 9y$ (if $y = -7$)

$(-7)^2 - 9(-7)$

$49 - (-63)$

$49 + 63$

$\boxed{112}$

4. $\dfrac{4}{5}a - \dfrac{3}{8}b$ (if $a = \dfrac{5}{8}, b = \dfrac{2}{9}$)

$\dfrac{\cancel{4}^{1}}{\cancel{5}_{1}}\left(\dfrac{\cancel{5}^{1}}{\cancel{8}_{2}}\right) - \dfrac{\cancel{3}^{1}}{\cancel{8}_{4}}\left(\dfrac{\cancel{2}^{1}}{\cancel{9}_{3}}\right)$

$\dfrac{1}{2} - \dfrac{1}{12} = \dfrac{6}{12} - \dfrac{1}{12}$

$= \boxed{\dfrac{5}{12}}$

5. $\dfrac{7y + x}{x - 1}$ (if $x = -2, y = -4$)

$\dfrac{7(-4) + (-2)}{-2 - 1}$

$\dfrac{-28 + (-2)}{-3} = \dfrac{-30}{-3}$

$\boxed{= 10}$

6. $mn - n^3 \div 2m$ (if $m = 8, n = 4$)

$8(4) - 4^3 \div 2(8)$

$8(4) - 64 \div 2(8)$

$32 - 64 \div 2(8)$

$32 - 32(8)$

$32 - 256 = \boxed{-224}$

Translate into an algebraic expression using a variable.

1. "16 subtracted from a number"

$n - 16$

2. "the product of a number and -9"

$-9n$

3. "twice a number, increased by 7"

$2n + 7$

4. "the sum of one-third of a number and 4"

$\dfrac{1}{3}n + 4$

5. "the quotient of 48 and a number"	6. "8 less than the product of a number and 3"
$\dfrac{48}{n}$	$3n-8$
7. Naomi ran a race 7 seconds faster than her friend Jenny. If Jenny ran the race in s seconds, write an expression for Naomi's time. $s-7$	8. Antonio bought x pounds of apples and y pounds of bananas. If apples cost \$1.30 per pound and bananas cost \$0.50 per pound, write an expression for the total cost. $1.30x + 0.50y$

Topic E: Simplifying & Factoring Expressions

Identify the variable terms, coefficients, and constants of each expression.

Expression	Variable Terms	Coefficients	Constant Terms
1. $20-3k+7k-9-k$	$-3k, 7k, -k$	$-3, 7, -1$	$20, -9$
2. $-11-4a+3b-5+a-12b$	$-4a, 3b, a, -12b$	$-4, 3, 1, -12$	$-11, -5$

Simplify each expression by combining like terms.

3. $11x-9+3x$	4. $-7-3r+5r-12+r$	5. $-9c+14d-2d+4c$
$14x-9$	$3r-19$	$-5c+12d$

Simplify each expression using the distributive property.

6. $3(8+11)$	7. $-7(8-2)$	8. $9(k+3)$
$24+33 = \boxed{57}$	$-56+14 = \boxed{-42}$	$\boxed{9k+27}$

9. $3(2r-7s)$	10. $-5(2v+1)$	11. $\dfrac{5}{4}(28c+8)$
$\boxed{6r-21s}$	$\boxed{-10v-5}$	$\boxed{35c+10}$

Simplify each expression completely.

12. $20+4(2m-1)$	13. $-3(1-4k)+11k$
$20+8m-4$ $\boxed{8m+16}$	$-3+12k+11k$ $\boxed{23k-3}$
14. $\dfrac{1}{3}(6x-30)-x+2$	15. $-2(a-b)+5(3a-b)$
$2x-10-x+2 = \boxed{x-8}$	$-2a+2b+15a-5b$ $\boxed{13a-3b}$

Factor each expression using a GCF.

16. $70 + 28$	**17.** $16 - 104$	**18.** $6 + 42$
$14(5+2)$	$8(2-13)$	$6(1+7)$

19. $4x + 24$	**20.** $18w - 81$	**21.** $48a + 20b$
$4(x+6)$	$18(w-5)$	$4(12a + 5b)$

Write three expressions that are equivalent to the given expression.

22. $12n + 54$	**23.** $-4(2p + 5q)$
• $6(2n+9)$	• $-8p - 20q$
• $3(4n+18)$	• $-2(4p+10q)$
• $9n + 3n + 60 - 6$	• $-10(p+2q) + 2p$

Name the property that justifies each statement. (Property names are given below.)

1. $4 \cdot (-9 \cdot 2) = (4 \cdot -9) \cdot 2$	**2.** $24c + 9 = 3(8c + 3)$
Associative Property of Multiplication	Distributive Property
3. $18 + (-18) = 0$	**4.** $13 + (-4) = (-4) + 13$
Inverse Property of Addition	Commutative Property of Addition
5. $\frac{5}{6} + 0 = \frac{5}{6}$	**6.** $(2a + b) + 5c = 2a + (b + 5c)$
Identity Property of Addition	Associative Property of Addition
7. $0 = (c - d) \cdot 0$	**8.** $(-8r) \cdot 1 = -8r$
Multiplication Property of Zero	Identity Property of Multiplication
9. $18 + (2 \cdot 4b) = 18 + (4b \cdot 2)$	**10.** $\frac{2}{9} \cdot \frac{9}{2} = 1$
Commutative Property of Multiplication	Inverse Property of Multiplication
11. $7(v - 1) = 7v - 7$	**12.** $-3k + 3k = 0$
Distributive Property	Inverse Property of Addition

- Commutative Property of Addition
- Commutative Property of Multiplication
- Associative Property of Addition
- Associative Property of Multiplication
- Distributive Property

- Identity Property of Addition
- Identity Property of Multiplication
- Inverse Property of Addition
- Inverse Property of Multiplication
- Multiplication Property of Zero

Math 6 Review
QUIZ 2

Name: _____

Date: _____ **Per:** _____

---

1. Which of the following expressions is equivalent to $3^7 \cdot 8^2$?

A. $(3 \cdot 7) \cdot (8 \cdot 2)$

B. $7 \cdot 7 \cdot 7 \cdot 8 \cdot 8$

C. $3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 8 \cdot 8$ *(circled)*

D. $3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 16$

---

2. Of the list of values below, what is the sum of the largest value and smallest value?

$$3^5, 12^2, 6^3, 4^4$$

$$243, 144, 216, 256$$

A. 400 *(circled)*

B. 385

C. 360

D. 325

---

3. Write a number in the box that makes the statement true.

$$10^{\boxed{9}} = 1,000,000,000$$

---

4. What is the greatest perfect square between 250 and 300?

A. 256

B. 275

C. 289 *(circled)*

D. 296

---

5. What operation should be performed first in order to simplify the expression below?

$$60 - 5(12 \div 4)^2$$

A. subtract 5 from 60

B. multiply 5 and 12

C. divide 12 by 4 *(circled)*

D. square 4

---

6. Find the value of the expression below.

$$\frac{4 + 2^3 \cdot 8}{-3 - 1}$$

$$\frac{4 + 8 \cdot 8}{-3 - 1}$$

A. -26

B. -17 *(circled)*

C. -13

D. -34

$$\frac{4 + 64}{-4}$$

$$\frac{68}{-4} = -17$$

---

7. Find the value of the expression below if $a = -5$ and $b = 8$.

$$a^2 - ab + 2b$$

$$(-5)^2 - (-5)(8) + 2(8)$$

$$25 - (-40) + 16$$

A. 12

B. 31

C. 36

D. 81 *(circled)*

$$65 + 16$$

$$81$$

---

8. Find the value of the expression below if $x = 2$.

$$\frac{7}{6} - \frac{8}{9} \div x$$

$$\frac{7}{6} - \frac{8}{9} \cdot \frac{1}{2}$$

$$\frac{7}{6} - \frac{4}{9} = \frac{21}{18} - \frac{8}{18} = \frac{13}{18}$$

A. $\frac{5}{36}$

B. $\frac{11}{36}$

C. $\frac{13}{18}$ *(circled)*

D. $\frac{7}{18}$

9. Which expression represents 7 less than the quotient of a number n and 3?

A. $7 - 3n$

C. $3(n-7)$

B. $7 - \dfrac{n}{3}$

D. $\dfrac{n}{3} - 7$ *(circled)*

13. Write the expression below in factored form by writing the values in the boxes.

$$78 - 30 = \boxed{6}\left(\boxed{13} - \boxed{5}\right)$$

10. Which statement about the expression below is true when it is written in simplest form?

$$8k - 4 - 6 + 3k$$

$$11k - 10$$

A. 11 is a constant

B. -10 is a constant *(circled)*

C. -2 is a coefficient

D. 5 is a coefficient

14. Which of the following is equivalent to the factored form of the expression below?

$$16m + 40$$

A. $8 \cdot 2m + 8 \cdot 5$

B. $4 \cdot 4m + 10 \cdot 4$

C. $8(2m + 5)$ *(circled)*

D. $4(4m + 10)$

11. Simplify the expression below. Write your answer in the box.

$$-7(2y + 5)$$

$$\boxed{-14y - 35}$$

15. Which statement can be justified by the commutative property of multiplication?

A. $14(8 + 5) = 14 \cdot 8 + 14 \cdot 5$

B. $(2 \cdot 7) + 8 = 8 + (2 \cdot 7)$

C. $6(4x + y) = (4x + y)6$ *(circled)*

D. $(2p \cdot 3q) \cdot 7r = 2p \cdot (3q \cdot 7r)$

12. Which of the following represents the expression below in simplest form?

$$7(c - 2d) - 4d + 3c$$

$$7c - 14d - 4d + 3c$$

$$10c - 18d$$

A. $10c - 18d$ *(circled)*

B. $10c - 9d$

C. $4c - 18d$

D. $4c - 9d$

16. Which property is illustrated by the statement below?

$$\left(\frac{2}{3} \cdot \frac{3}{2}\right) + 0 = \left(\frac{2}{3} \cdot \frac{3}{2}\right)$$

A. Inverse Property of Multiplication

B. Multiplicative Property of Zero

C. Inverse Property of Addition

D. Identity Property of Addition *(circled)*

| Name: _____ | Math 6 Review: Packet #3 |

Topic A: Solving One-Step Equations

Solve each equation. Check all solutions.

1. $x + 7 = 23$

$\underline{-7 \quad -7}$

$\boxed{X = 16}$

$16 + 7 = 23$
$23 = 23 ✓$

2. $\dfrac{-42}{6} = \dfrac{6p}{6}$

$\boxed{-7 = p}$

$-42 = 6(-7)$
$-42 = -42 ✓$

3. $y - 5 = -8$

$\underline{+5 \quad +5}$

$\boxed{y = -3}$

$-3 - 5 = -8$
$-8 = -8 ✓$

4. $^{(-4)}\dfrac{a}{-4} = -6 \cdot (-4)$

$\boxed{a = 24}$

$\dfrac{24}{-4} = -6$
$-6 = -6 ✓$

5. $7 = m - (-9)$

$7 = m + 9$
$\underline{-9 \qquad -9}$

$\boxed{-2 = m}$

$7 = -2 - (-9)$
$7 = -2 + 9$
$7 = 7 ✓$

6. $\dfrac{-8c}{-8} = \dfrac{-72}{-8}$

$\boxed{C = 9}$

$-8(9) = -72$
$-72 = -72 ✓$

7. $r + (-4) = 11$

$r - 4 = 11$
$\underline{+4 \quad +4}$

$\boxed{r = 15}$

$15 + (-4) = 11$
$11 = 11 ✓$

8. $^{1.4 \cdot}\dfrac{k}{1.4} = 28 \cdot 1.4$

$\boxed{K = 39.2}$

$\dfrac{39.2}{1.4} = 28$

$28 = 28 ✓$

9. $32.1 = 4.7 + v$

$\underline{-4.7 \quad -4.7}$

$\boxed{27.4 = v}$

$32.1 = 4.7 + 27.4$
$32.1 = 32.1 ✓$

10. $x + \dfrac{1}{6} = \dfrac{13}{15}$

$\dfrac{2}{10} + \dfrac{1}{6} = \dfrac{13}{15}$

$X + \dfrac{5}{30} = \dfrac{26}{30}$

$ \underline{-\dfrac{5}{30} \quad -\dfrac{5}{30}}$

$X = \dfrac{21}{30}$

$\dfrac{13}{15} = \dfrac{13}{15}$

$\boxed{X = \dfrac{7}{10}}$

11. $1\dfrac{7}{9} = \dfrac{5}{6}m$

$\dfrac{6}{5} \cdot \dfrac{16}{9} = \dfrac{5}{6}m \cdot \dfrac{6}{5}$

$\dfrac{32}{15} = m$

$\boxed{2\dfrac{2}{15} = m}$

$1\dfrac{7}{9} = \dfrac{5}{6}\left(2\dfrac{2}{15}\right)$

$1\dfrac{7}{9} = 1\dfrac{7}{9} ✓$

12. $c \div \dfrac{5}{12} = 2\dfrac{7}{10}$

$\dfrac{5}{12} \cdot c \div \dfrac{5}{12} = \dfrac{27}{10} \cdot \dfrac{5}{12}$

$c = \dfrac{9}{8}$

$\boxed{c = 1\dfrac{1}{8}}$

$1\dfrac{1}{8} \div \dfrac{5}{12} = 2\dfrac{7}{10}$

$2\dfrac{7}{10} = 2\dfrac{7}{10} ✓$

Translate each sentence into an equation. Do not solve.

13. "The sum of 9 and a number is -4"

$9 + n = -4$

14. "The quotient of a number and 7 is -12."

$\dfrac{n}{7} = -12$

15. "The product of a number and -3 is -42."

$-3n = -42$

16. "8 less than a number is 34."

$n - 8 = 34$

Topic B: One-Step Equation Word Problems

Use a variable to write a one-step equation to solve the problem. Then solve.

1. A large bag of lollipops were equally distributed into 28 smaller bags. If each bag contains 6 lollipops, how many total lollipops are there?

$X =$ lollipops

$$28 \cdot \frac{X}{28} = 6 \cdot 28$$

$$X = 168$$

Equation	Solution
$\frac{X}{28} = 6$	168 lollipops

2. Julia is buying a watch for $105. If she is using a gift card that has a remaining balance of $28.43, how much will she have remaining to pay?

$X =$ payment

$$X + 28.43 = 105$$
$$-28.43 \quad -28.43$$
$$X = 76.57$$

Equation	Solution
$X + 28.43 = 105$	$76.57

3. Devin's paycheck was $179 less this week than his paycheck last week. If he made $348 this week, how much did he make last week?

$X =$ last week's pay

$$X - 179 = 348$$
$$+179 \quad +179$$
$$X = 527$$

Equation	Solution
$X - 179 = 348$	$527

4. Cheryl has been teaching for 18 years. If this is two-thirds the number of years that Tom has been teaching, how long has Tom been teaching?

$X =$ Tom's teaching years

$$\frac{3}{2} \cdot \frac{2}{3} X = 18 \cdot \frac{3}{2}$$

$$X = 27$$

Equation	Solution
$\frac{2}{3} X = 18$	27 years
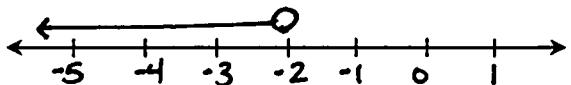
Topic C: Representing Inequalities
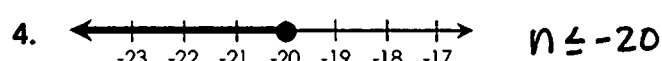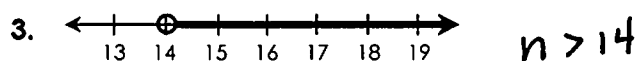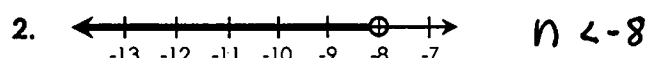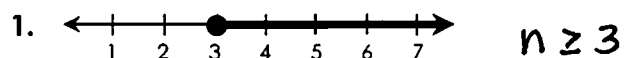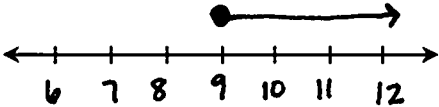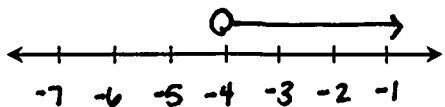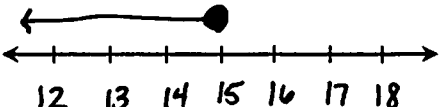
Write an inequality to represent the graph.

1. $n \geq 3$

2. $n < -8$

3. $n > 14$

4. $n \leq -20$

Write each sentence as an inequality, then graph.
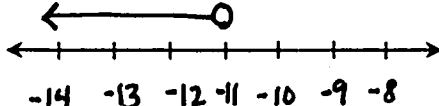
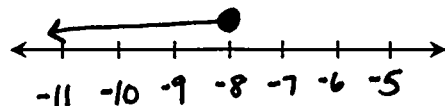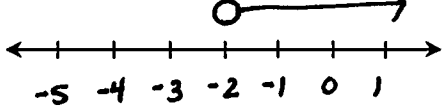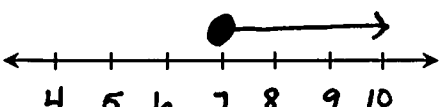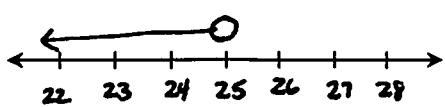| Verbal Description	Inequality	
5. "A number is less than 12."	$n < 12$	
6. "A number is at least -5."	$n \geq -5$	
7. "A number is a maximum of 9."	$n \leq 9$	

| 8. "-2 is more than a number" | $n < -2$ | |
| 9. "The number of points scored in each game was no less than 16." | $n \geq 16$ | |

Topic D: Solving One-Step Inequalities

Solve and graph the solution to each inequality.

1. $w - 4 \geq 5$

$\quad +4 \quad +4$

$\boxed{w \geq 9}$

2. $\dfrac{7c}{7} > \dfrac{-28}{7}$

$\boxed{c > -4}$

3. $-3 \cdot \dfrac{a}{-3} \geq -5 \cdot -3$

$\boxed{a \leq 15}$

4. $-8 > m + 3$

$\quad -3 \quad\quad -3$

$-11 > m \quad \boxed{m < -11}$

5. $4 \cdot \dfrac{k}{4} \leq -2 \cdot 4$

$\boxed{k \leq -8}$

6. $\dfrac{-7p}{-7} < \dfrac{14}{-7}$

$\boxed{p > -2}$

7. $y - (-6) \geq 13$

$y + 6 \geq 13$

$\quad -6 \quad -6$

$\boxed{y \geq 7}$

8. $\dfrac{1.8r}{1.8} < \dfrac{45}{1.8}$

$\boxed{r < 25}$

9. $z - 1\dfrac{2}{3} \geq \dfrac{5}{6}$

$z - \dfrac{3}{6} \geq \dfrac{5}{6}$

$\quad +\dfrac{3}{6} \quad +\dfrac{3}{5}$

$z \geq \dfrac{15}{6} \qquad z \geq \dfrac{5}{2} \quad \boxed{z \geq 2\tfrac{1}{2}}$

Determine whether the given value is a solution to the inequality.

10. $x \leq -9;\ x = -13$

$-13 \leq -9$

$\boxed{\text{yes}}$

11. $n > -8;\ n = -25$

$-25 > -8$

$\boxed{\text{no}}$

12. $c \geq \dfrac{3}{4};\ c = \dfrac{17}{20}$

$\dfrac{17}{20} \geq \dfrac{15}{20}$

$\boxed{\text{yes}}$

13. $k + 9 < 4$; $k = -5$	14. $7.5 \geq z - 3.89$; $z = 11.088$	15. $\frac{r}{-5} \leq -9$; $r = 10$
$-5 + 9 < 4$ $4 < 4$ $\boxed{no}$	$7.5 \geq 11.088 - 3.89$ $7.5 \geq 7.198$ $\boxed{yes}$	$\frac{10}{-5} \leq -9$ $-2 \leq -9$ $\boxed{no}$

Write each sentence as an inequality. Do not solve.

16. "The difference of a number and 7 is greater than 20." $n - 7 > 20$	17. "15 more than a number is at most -4." $n + 15 \leq -4$
18. "-42 is less than or equal to the product of a -6 and a number." $-42 \leq -6n$	19. "A number divided by 5 has a minimum value of 14." $\frac{n}{5} \geq 14$

Topic E: One-Step Inequality Word Problems

Use a variable to write a one-step inequality to solve the problem. Then solve.

1. Jack has lost a minimum of 25 pounds in the past six months. If his current weight is 248, what was his starting weight?	2. The cost of a case of water is $3.20. If you can spend at most $20, how many cases can you buy?

$p - 248 \geq 25$ $p =$ starting
   $+248$ $+248$ weight
——————
$p \geq 273$
	$c =$ cases of
	     water
	$\frac{3.20c}{3.20} \leq \frac{20}{3.20}$
	
	$c \leq 6.25$

Inequality	Solution	Inequality	Solution
$p - 248 \geq 25$	$p \geq 273$ pounds	$3.20c \leq 20$	$c \leq 6$ cases

3. Lana would like to spend at least $15 on each of her 9 grandchildren for Christmas. How much money will she need?	4. Trevor and Cara played in a bowling tournament. Their goal was a combined score of 425. If they did not meet their goal and Trevor scored 232, what was Cara's score?
$g =$ gift money $9 \cdot \frac{g}{9} \geq 15 \cdot 9$ $g \geq 135$	$c + 232 < 425$ -232 -232 —————— $c < 193$

Inequality	Solution	Inequality	Solution
$\frac{g}{9} \geq 15$	$g \geq \$135$	$c + 232 < 425$	$c < 193$

Math 6 Review
QUIZ 3

Name: _____

Date: _____ Per: _____

1. Solve the equation below. Write your solution in the box.

$$m + 11 = -4$$
$$\underline{-11 \quad -11}$$
$$m = -15$$

$$m = \boxed{-15}$$

2. What is the solution to the following equation?

$$8 \cdot 48 = \frac{y}{8} \cdot 8$$

$$384 = y$$

A. $y = 6$

B. $y = 40$

C. $y = 56$

(D.) $y = 384$

3. What is the solution to the equation below?

$$k - \frac{3}{4} = 1\frac{9}{10}$$
$$+3/4 \quad +3/4$$
$$k = \frac{19}{10} + \frac{3}{4}$$
$$k = \frac{38}{20} + \frac{15}{20}$$
$$k = \frac{53}{20}$$

A. $1\frac{3}{20}$

(C.) $2\frac{13}{20}$

B. $1\frac{7}{20}$

D. $2\frac{17}{20}$

4. Which equation has a solution of $w = 5$?

A. $w + (-1) = 6$

B. $w + 3 = 2$

C. $\frac{w}{2} = 10$

(D.) $1.8w = 9$

5. The maximum height that Caitlin climbed on a mountain was h feet. Once she reached this point, she descended 150 feet to eat lunch at a height of 1300 feet. Check the equation in the Column 1 and the solution in Column 2 that represents h.

Column 1	Column 2
☑ $h - 150 = 1300$	☐ $h = 1150$
☐ $h + 150 = 1300$	☑ $h = 1450$

6. After 6 people boarded a bus, the bus had 48 people. Which equation can be used to find n, the number of people on the bus before the 6 people boarded?
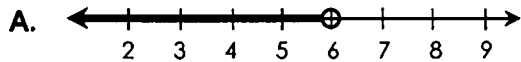
A. $\frac{n}{6} = 48$

B. $n - 6 = 48$

C. $6n = 48$

(D.) $n + 6 = 48$

7. It costs $1.60 per pound to mail a package. Find the weight of a package that cost $11.52 to mail.
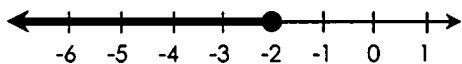
$$1.6p = 11.52$$

A. 6.4 pounds

(B.) 7.2 pounds

C. 9.8 pounds

D. 12.6 pounds

8. Which graphs represents all numbers that are a minimum of 6?

A. (number line 2–9, open circle at 6, shaded left)

B. (number line 2–9, open circle at 6, shaded right)

C. (number line 2–9, closed circle at 6, shaded left)

(D.) (number line 2–9, closed circle at 6, shaded right) — circled

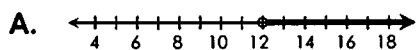**9. Which inequality could represent the set of numbers, n, shown on the graph below?**

(number line -6 to 1, closed circle at -2, shaded left)

(A.) $-2 \geq n$ — circled

B. $-2 \leq n$

C. $-2 > n$

D. $-2 < n$

10. Given $p > -7$, in which list is each number a possible value of p?

A. $\{-7, -2, 0\}$

(B.) $\{-4, -1, 3\}$ — circled

C. $\{-17, -11, -9\}$

D. $\{-20, -13, -7\}$

11. Which number line represents the solution to $-2x > -6$?

$X < 3$

A. (number line 4–18, open circle at 12, shaded right)

B. (number line 4–18, open circle at 12, shaded left)

C. (number line -6 to 8, open circle at 3, shaded right)

(D.) (number line -6 to 8, open circle at 3, shaded left) — circled
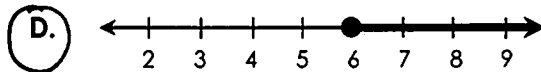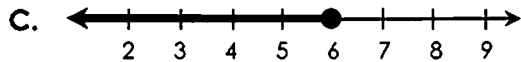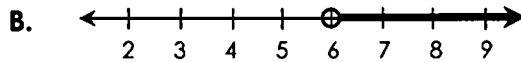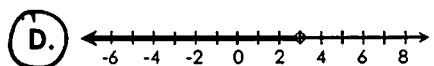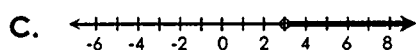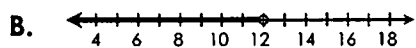
12. Which represents the solution to the inequality below?

$$a - (-8) \geq 2$$

$a + 8 \geq 2$
$-8 \quad -8$
_____
$a \geq -6$

A. $a \geq -10$

B. $a \geq 10$

C. $a \geq -4$

(D.) $a \geq -6$ — circled

13. The high temperature yesterday was more than 10° degrees below normal. If the normal temperature high temperature for that day is 65°, which inequality represents t, yesterday's high temperature?

A. $t \leq 55°$

B. $t \geq 55°$

(C.) $t < 55°$ — circled

D. $t > 55°$

14. Greg burns 8 calories per minute running. If he wants to burn more than 100 calories running at the same rate, which inequality represents the possible values for m, the number of minutes Greg will need to run?

$8m > 100$

(A.) $m > 12.5$ — circled

B. $m < 12.5$

C. $m > 0.8$

D. $m < 0.8$

15. Mia has $700 in her checking account. She wants to use part of this money to purchase a new laptop. If she wants to have at least $250 in her account after purchasing the laptop, which inequality represents s, the amount of money she can spend?

A. $s \leq \$950$

(B.) $s \leq \$450$ — circled

C. $s \geq \$950$

D. $s \geq \$450$

Topic A: Writing Ratios, Simplifying Ratios, Equivalent Ratios

Alexa's math grades are given in the table below. Write each ratio in simplest form in three ways.

A	卌 卌 Ⅱ
B	卌 Ⅲ
C	ⅢⅠ

1. A's to B's

$\frac{12}{8} = \frac{3}{2}$;

3 to 2 ; 3 : 2

2. B's to total grades

$\frac{8}{24} = \frac{1}{3}$;

1 to 3 ; 1 : 3

3. C's to B's

$\frac{4}{8} = \frac{1}{2}$;

1 to 2 ; 1 : 2

List two equivalent ratios for each ratio.

4. 8:3   24:9 , 80:30

5. $\frac{18}{45}$ $\frac{6}{15}$, $\frac{2}{5}$

Fill in a box with a value that makes the ratios equivalent.

6. 7 : 3 and $\boxed{28}$: 12

7. $\frac{45}{36}$ and $\frac{15}{\boxed{12}}$

8. $\frac{24}{\boxed{54}}$ and $\frac{8}{18}$

Determine whether the ratios are equivalent.

9. $\frac{42}{56}$ and $\frac{6}{8}$

↓   ↓

$\frac{3}{4}$ $\frac{3}{4}$ $\boxed{Yes}$

10. 4 to 9; 16 to 36

↓

4 to 9 $\boxed{Yes}$

10. $\frac{5}{12}$ and $\frac{15}{48}$

↓

$\frac{5}{16}$ $\boxed{No}$

12. To create a certain color, Mari mixes 3 drops of blue food coloring for every 5 drops of red food coloring. If she uses 18 drops of blue food coloring, how many drops of red does she need?

$\frac{3}{5} = \frac{18}{?}$ $\boxed{\text{30 drops of red}}$

13. There are 56 girls and 32 boys in band. The ratio of girls to boys that play clarinet in the band is the same as the ratio of girls to boys in the entire band. If there are 7 girls that play clarinet, how many boys play clarinet?

$\frac{56}{32} = \frac{7}{?}$ $\boxed{\text{4 boys}}$

Topic B: Ratio Tables and Graphs

Complete each ratio table.

1.

White Roses	Red Roses
5	8
10	16
25	40

2.

Sugar (tsp)	Calories
1	16
5	80
12	192

3.

Tickets	Cost ($)
1	7.50
2	15
6	45

4. Jeremy is a car salesman. Last year, he sold two trucks for every three cars he sold. Create a ratio table and graph to show this relationship.

Trucks	2	4	6	8
Cars	3	6	9	12
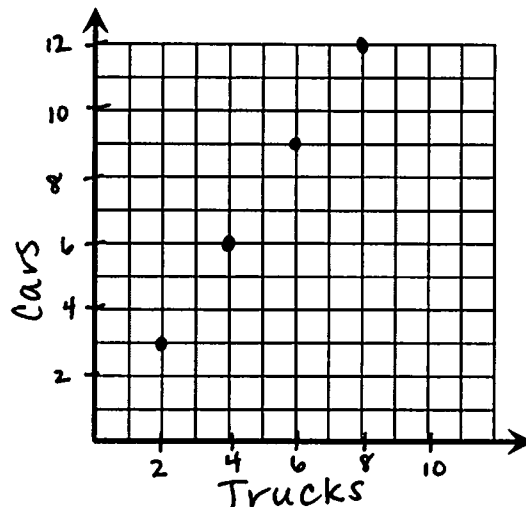
Write each rate as a unit rate.

1. 172 miles in 4 hours

$$\frac{172}{4} = 43 \text{ mi/hr}$$

2. 15 grams of fat in 6 cookies

$$\frac{15}{6} = 2.5 \text{ g/cookie}$$

3. 336 points in 16 games

$$\frac{336}{15} = 22.4 \text{ pt/game}$$

4. If it took 27 minutes to fill a 432-gallon hot tub, find the number of gallons per minute.

$$\frac{432}{27} = 16 \text{ gal/min}$$

5. The table below gives the amount of time, in minutes, it took three people to run a certain distance. Who ran the least minutes per mile?

	Miles	Minutes	
Molly	8	52	6.5 min/mi
Nathan	5	36	7.2 min/mi
Darnell	12	72	6 min/mi

Darnell

Determine if Option A or Option B is the better deal. Justify your answer using unit prices.

6.

☑ **Option A:** $11 for 5 books   Unit Price: $2.20 /book

☐ **Option B:** $30 for 12 books   Unit Price: $2.50 /book

7.

☐ **Option A:** 28 ounces of orange juice for $3.92   Unit Price: $0.14 /ounce

☑ **Option B:** 40 ounces of orange juice for $4.80   Unit Price: $0.12 /ounce

Topic D: Proportional Relationships

Determine whether the quantities shown in each table or graph represent a proportional relationship. If yes, give the constant of proportionality, _k_.

1.

Time (h)	Earnings ($)
2	28
3	42
5	70
9	126

Yes; K=14

2.

Time (s)	Distance (ft)
5	16
10	32
15	48
20	64

Yes; K=3.2

3.

Boys	Girls
2	8
5	20
12	42
16	52

No

4.
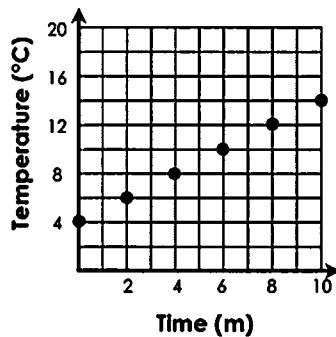
No

5.
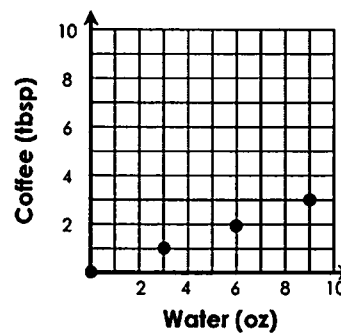
Yes; K=$\frac{1}{3}$

Topic E: Converting Fractions, Decimals, and Percents

Complete the chart below.

	FRACTION	DECIMAL	PERCENT
1.	$\frac{7}{25}$	0.28	28%
2.	$\frac{9}{5}$	1.8	180%
3.	$\frac{1}{8}$	0.125	12.5%
4.	$\frac{5}{12}$	0.41$\overline{6}$	41.$\overline{6}$%
5.	$\frac{13}{40}$	0.325	32.5%
6.	$\frac{21}{10}$	2.1	210%
7.	$\frac{39}{50}$	0.78	78%
8.	$\frac{7}{8}$	0.875	87.5%

	FRACTION	DECIMAL	PERCENT
9.	$\frac{27}{20}$	1.35	135%
10.	$\frac{1}{25}$	0.04	4%

Topic F: Comparing Fractions, Decimals, and Percents

Compare by placing a <, >, or = symbol in the circle.

1. 120% $>$ 0.975

1.2

2. $\frac{13}{20}$ $>$ 8%

0.65   0.08

3. $\frac{3}{25}$ $<$ $\frac{1}{8}$

0.12   0.125

4. 130% $<$ $1\frac{1}{3}$

1.3 $1.\overline{3}$

5. $\frac{17}{20}$ $>$ $\frac{5}{6}$

0.85 $0.8\overline{3}$

6. 9% $<$ $\frac{7}{40}$

0.09   0.175

7. Order from <u>least to greatest</u>:

$\frac{2}{5}$, 30%, 1.2, $\frac{3}{8}$

0.4 , 0.3 , 1.2 , 0.375

③   ①   ④   ②

30% , $\frac{3}{8}$, $\frac{2}{5}$, 1.2

8. Order from <u>greatest to least</u>:

$\frac{2}{3}$, 8%, $\frac{7}{10}$, 0.65

$0.\overline{6}$, 0.08 , 0.7 , 0.65

②   ④   ①   ③

$\frac{7}{10}$, $\frac{2}{3}$, 0.65 , 8%

Topic G: Percent of a Number

Find the percent of each number.

1. 70% of 60

60
×0.7
42.0

42

2. 35% of 140

140
×0.35
700
4200
49.00

49

3. 4% of 275

275
×0.04
11.00

11

4. 56% of 95

$$\begin{array}{r} 95 \\ \times\ .56 \\ \hline 570 \\ 4750 \\ \hline 53.20 \end{array}$$

$$\boxed{53.2}$$

5. 180% of 15

$$\begin{array}{r} 15 \\ \times\ 1.8 \\ \hline 120 \\ 150 \\ \hline 27.0 \end{array}$$

$$\boxed{27}$$

6. 325% of 40

$$\begin{array}{r} 3.25 \\ \times\ 40 \\ \hline 000 \\ 13000 \\ \hline 130.00 \end{array}$$

$$\boxed{130}$$

7. Chelsea answers customer service calls for a company for $14.50 per hour. The company is offering her a new position that pays 120% more per hour than her previous position. If she accepts, what will be her new pay?

$$\begin{array}{r} 14.50 \\ \times\ 1.2 \\ \hline 2900 \\ 14500 \\ \hline 17.400 \end{array}$$

$$\boxed{\$17.40}$$

8. There are 180 days in a school year. If your teacher says you have completed 65% of the school year, how many days do you have left of school?

$$\begin{array}{r} 180 \\ \times\ 0.65 \\ \hline 900 \\ 10800 \\ \hline 117.00 \end{array}$$

$$\begin{array}{r} 18\cancel{0}^{7\ 10} \\ -\ 117 \\ \hline 63 \end{array}$$

$$\boxed{63\ days}$$

Topic H: Negative Rational Numbers (Fractions and Decimals Only)

Give each absolute value.

1. $\left|\dfrac{2}{9}\right|$ $\quad \dfrac{2}{9}$

2. $|-3.45|$ $\quad 3.45$

3. $\left|-1\dfrac{6}{7}\right|$ $\quad 1\dfrac{6}{7}$

4. $|0.194|$ $\quad 0.194$

Compare by placing a <, >, or = symbol in the circle.

5. $-\dfrac{5}{8}\ \bigcirc{>}\ -\dfrac{11}{16}$

$-0.625 \qquad -0.6875$

6. $-1\dfrac{5}{6}\ \bigcirc{<}\ -1\dfrac{3}{4}$

$-1.8\overline{3} \qquad -1.75$

7. $-7.918\ \bigcirc{<}\ -7.04$

8. Order from <u>least to greatest</u>:

$$-0.098,\ -\dfrac{1}{4},\ -0.12$$
$$\ \ ③ \qquad\quad ① \qquad\ ②$$
$$-0.25$$

$$\boxed{-\dfrac{1}{4},\ -0.12,\ -0.098}$$

9. Order from <u>greatest to least</u>:

$$-1\dfrac{7}{20},\ -1.8,\ -1\dfrac{1}{2}$$
$$-1.35,\ -1.8,\ -1.5$$
$$\ ① \qquad\ \ ③ \qquad\ ②$$

$$\boxed{-1\dfrac{7}{20},\ -1\dfrac{1}{2},\ -1.8}$$

Math 6 Review
QUIZ 4

Name: _____

Date: _____ Per: _____

---

1. Which ratio represents the number of vowels to total letters in the word JACKSONVILLE?

A. 1 to 4
B. 1 to 3
C. 1 to 2
D. 2 to 3

V: 4
Total: 12

---

2. Write a number in the box below to create equivalent ratios.

7 : **4** and 56:32

---

3. The ratio of cats to dogs at a pet shelter is 4 to 3. If there are 36 dogs, how many cats are there?

$$\frac{4}{3} = \frac{?}{36}$$

A. 27
B. 36
C. 48
D. 52

---

4. A 32-ounce container of apple juice contains 80 grams of sugar. If this information is organized into the ratio table below, what are the values of x and y?

Apple Juice (oz)	1	y	32
Sugar (g)	x	10	80

A. $x = 2, y = 4$
B. $x = 2, y = 8$
C. $x = 2.5, y = 4$
D. $x = 2.5, y = 8$

---

5. Printer A took 8 minutes to print a 92-page document. Printer B took 5 minutes to print a 60-page document. Which statement is true?

A: $\frac{92}{8} = 11.5$ pg/min

B: $\frac{60}{5} = 12$ pg/min

A. Printer A prints more pages per minute
B. Printer B prints more pages per minute.
C. Printer A and Printer B print the same number of pages per minute.

---

6. The prices of four bottles of shampoo are shown below. Which bottle costs the least per ounce?

	Size (oz)	Price	
A	10	$7	$0.7/oz
B	15	$9	$0.6/oz
C	16	$12	$0.75/oz
D	25	$18	$0.72/oz

A. Bottle A
B. Bottle B
C. Bottle C
D. Bottle D

---

7. In which table is the relationship between labor hours and cost proportional?

A.

Labor Hours	1	3	5
Cost ($)	75	225	375

B.

Labor Hours	1	2	3
Cost ($)	60	60	60

C.

Labor Hours	1	4	8
Cost ($)	50	240	560

D.

Labor Hours	1	2	3
Cost ($)	80	150	240

8. The math club is selling boxes of cookies for a fundraiser. The graph below shows their profit on each box sold. What is their profit per box?

$\dfrac{\$5}{4\ boxes}$

Boxes of Cookies

- A. $0.80
- B. $1.10
- (C.) $1.25
- D. $1.50

9. Ruby spent 28% of her paycheck paying bills. What fraction of her paycheck is left?

$1 - 0.28 = 0.72$

- A. $\dfrac{13}{50}$
- C. $\dfrac{7}{25}$
- B. $\dfrac{37}{50}$
- (D) $\dfrac{18}{25}$

10. Of the 320 sixth grade students, 192 buy their lunch each day. What percent buy their lunch?

$\dfrac{192}{320} = 0.6$

- A. 40%
- (B.) 60%
- C. 65%
- D. 70%

11. Four students are reading the same book. The table below gives the portion of the book that each has read so far. Which student has read the most?

Ryan	Zena	Evelyn	Grady
$\dfrac{13}{20}$	8%	0.7	$\dfrac{5}{8}$

0.65   0.08   0.625

- A. Ryan
- B. Zena
- (C.) Evelyn
- D. Grady

12. What is 4% of 80? Write your answer in the box.

$$\begin{array}{r} 80 \\ \times\ .04 \\ \hline 3.20 \end{array}$$

3.2

13. Ben's cell phone bill is typically $150. This month, it was 120% his typical bill. What is Ben's cell phone bill this month?

$$\begin{array}{r} 150 \\ \times\ 1.2 \\ \hline 300 \\ 1500 \\ \hline 180.0 \end{array}$$

- A. $30
- B. $80
- (C.) $180
- D. $200

14. A waiter earned a 16% tip on a $45 dinner bill. How much was the waiter's tip?

$$\begin{array}{r} 45 \\ \times\ .16 \\ \hline 270 \\ 450 \\ \hline 7.20 \end{array}$$

- (A.) $7.20
- B. $7.50
- C. $7.80
- D. $8.20

15. Which list gives the numbers in order from least value to greatest value?

- A. $\left\{-2\dfrac{1}{4}, -2.085, -2\dfrac{9}{10}, -2.716\right\}$
- B. $\left\{-2.716, -2\dfrac{9}{10}, -2.085, -2\dfrac{1}{4}\right\}$
- C. $\left\{-2.085, -2\dfrac{1}{4}, -2.716, -2\dfrac{9}{10}\right\}$
- (D.) $\left\{-2\dfrac{9}{10}, -2.716, -2\dfrac{1}{4}, -2.085\right\}$

Topic A: Congruent Segments, Angles, & Polygons

1. If the figures below are congruent, list all congruent sides and angles and place markings on the figures to show the relationships.
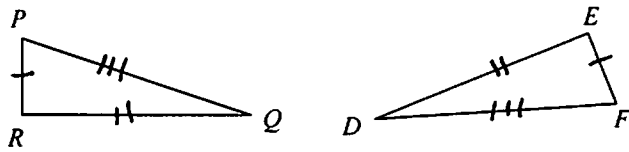
	Sides	Angles
	$\overline{PR} \cong \overline{FE}$	$\angle P \cong \angle F$
	$\overline{RQ} \cong \overline{ED}$	$\angle R \cong \angle E$
	$\overline{PQ} \cong \overline{FD}$	$\angle Q \cong \angle D$

Determine whether the figures are congruent.

2. NO

3. Yes

4. No

5. The figures below are congruent. Use the figures below to answer each part.

B 6 ft C
81° 157° 14 ft
8 ft
32°
A 18 ft D

Q, R, S, T
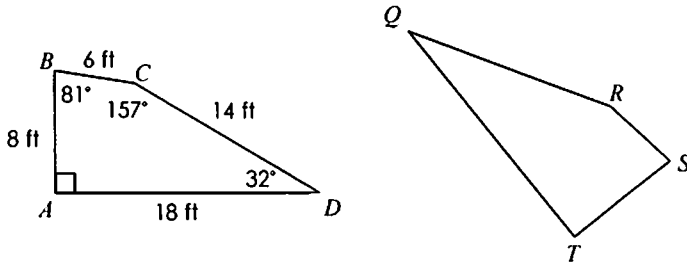
a) What side corresponds to $\overline{CD}$? $\overline{RQ}$

b) What is the length of $\overline{ST}$? 8 ft

c) What angle corresponds to $\angle B$? 81°

d) What is the measure of $\angle R$? 157°

Topic B: Perimeter and Area of Rectangles, Parallelograms, Triangles, & Trapezoids

Find the perimeter of each figure.

1.
9.2 mi

$P = 4(9.2)$
$= 36.8 \text{ mi}$

2.
$2\frac{3}{8}$ in
$5\frac{3}{4}$ in

$P = 2\left(2\frac{3}{8}\right) + 2\left(5\frac{3}{4}\right)$
$= 4\frac{3}{4} + 11\frac{1}{2}$
$= 16\frac{1}{4} \text{ in}$

Find the area of each figure.

3.
5.9 m
3.7 m

$A = 3.7(5.9)$
$= 21.83 \text{ m}^2$

4.
12.4 ft
5.2 ft 4.4 ft
12.4 ft

$A = 12.4(4.4)$
$= 54.56 \text{ ft}^2$

5.
7 yd 14 yd
9.3 yd

$A = 7(14)$
$= 98 \text{ yd}^2$

6.

11 in / 13 in

9.6 in

14 in

$A = \frac{1}{2}(14)(9.6)$

$= 67.2 in^2$

7.

23 cm

10 cm 8 cm

18 cm

$A = \frac{1}{2}(23)(8)$

$= 92 cm^2$

8.

13 m

18 m

34 m
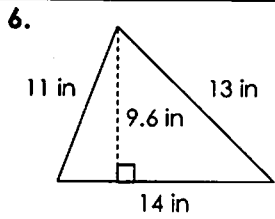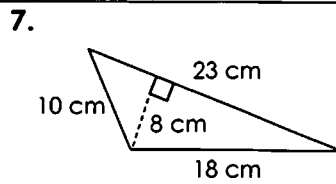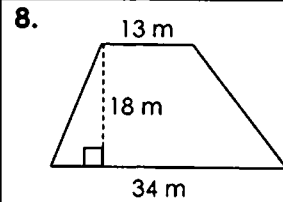
$A = \frac{1}{2}(18)(13+34)$

$= 9(47)$

$= 423 m^2$

9. Abby is covering a corner shelf in her kitchen with shelving liner. The dimensions of the shelf are given below. What is the minimum amount of liner she will need?

23 in 16 in

28 in
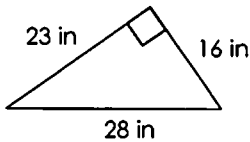
$A = \frac{1}{2}(16)(23)$

$= 184 in^2$

10. Gino is painting a wall in his living room. The dimensions of the wall are given below. Find the area of the wall that he will cover.

15.6 ft

9 ft   16 ft

14 ft
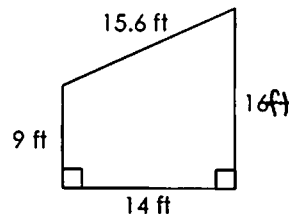
$A = \frac{1}{2}(14)(9+16)$

$= 7(25)$

$= 175 ft^2$

Topic C: Polygons on the Coordinate Plane

Graph the figure with the given vertices, then find its perimeter and area.

1. J(-5, 1), K(2, 1), L(2, -6), M(-5, -6)
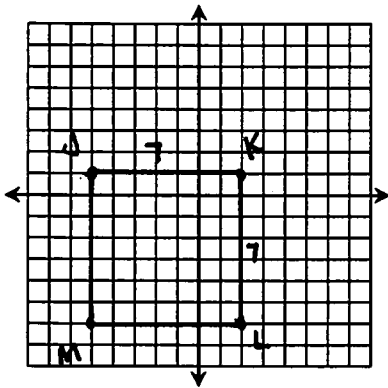
$P = 4(7)$

$= 28$

$A = 7^2$

$= 49$

2. E(-1, 7), F(3, 7), G(3, -2), H(-1, -2)
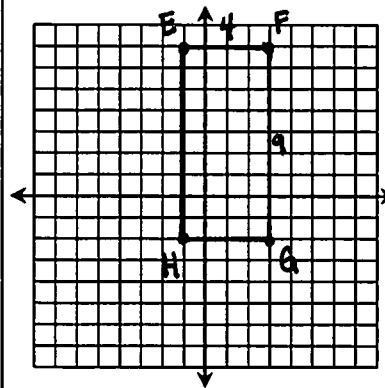
$P = 2(4) + 2(9)$

$= 8 + 18$

$= 26$

$A = 4(9)$

$= 36$

Graph the figure with the given vertices, then find its area.

3. R(-5, 4), S(8, 1), T(-5, -4)
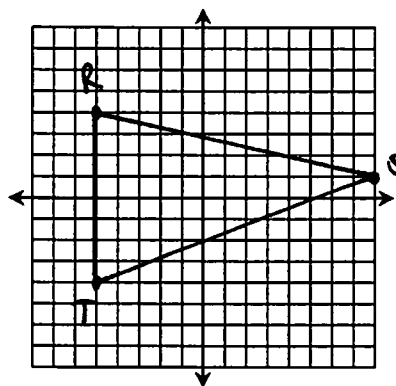
$A = \frac{1}{2}(8)(13)$

$= 52$

4. A(-7, 3), B(0, 3), C(3, -7), D(-4, -7)
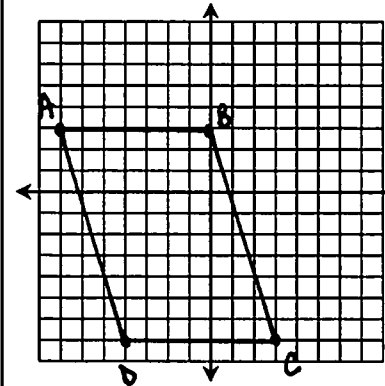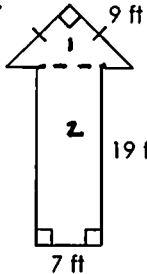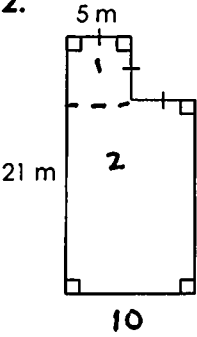
$A = 7(10)$
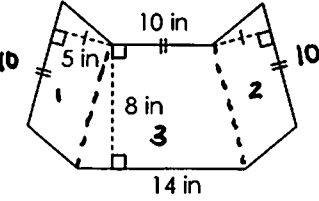
$= 70$

Topic D: Area of Composite Figures

Find the area of each figure.

1.

9 ft / 1 / 2 / 19 ft / 7 ft
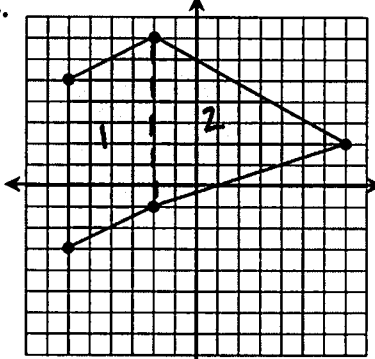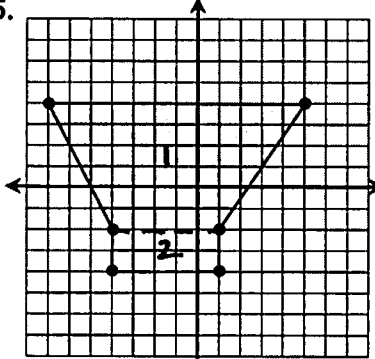
$A_1 = \frac{1}{2}(9)(9)$

$= \frac{1}{2}(81)$

$= 40.5$

$A_2 = 19(7)$

$= 133$

$A = 40.5 + 133$

$\boxed{= 173.5 \ ft^2}$

2.

5 m / 1 / 21 m / 2 / 16 / 10

$A_1 = 5^2 = 25$

$A_2 = 10(16)$

$= 160$

$A = 160 + 25$

$\boxed{= 185 \ m^2}$

3.

10 in / 10 / 5 in / 1 / 8 in / 3 / 2 / 10 / 14 in
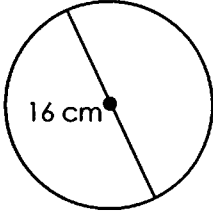
$A_1 = 5(10) = 50$

$A_2 = 5(10) = 50$

$A_3 = \frac{1}{2}(8)(10+14) = 96$

$A = 50 + 50 + 96 = \boxed{196 \ in^2}$

4.

1 / 2
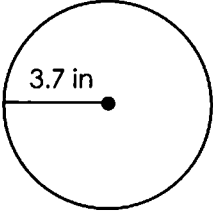
$A_1 = 8(4) = 32$

$A_2 = \frac{1}{2}(8)(9) = 36$

$A = 32 + 36$

$\boxed{= 68}$

5.

1 / 2

$A_1 = \frac{1}{2}(6)(5+12)$

$= 3(17) = 51$

$A_2 = 5(2) = 10$

$A = 51 + 10$

$\boxed{= 61}$
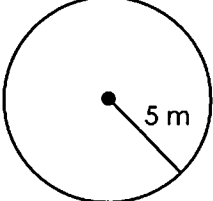
Topic E: Circumference & Area of Circles
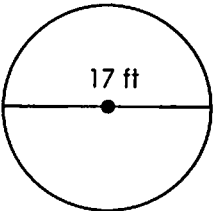
Find the circumference of each circle. Use 3.14 for pi.

1.

16 cm

$C = 2\pi 8$

$= 16(3.14)$

$\boxed{= 50.24 \ cm}$

$r = 8$

2.

3.7 in

$C = 2\pi 3.7$

$= 7.4(3.14)$

$\boxed{= 23.236 \ in}$

Find the area of each circle. Use 3.14 for pi.

3.

5 m

$A = \pi(5)^2$

$= 25(3.14)$

$\boxed{= 78.5 \ m^2}$

4.

17 ft

$A = \pi(8.5)^2$

$= 72.25(3.14)$

$\boxed{= 226.865 \ ft^2}$

$r = 8.5$

5. Barry has a circular table with an 7-foot diameter. If he would like to cover the table with newspaper for an art project, what is the minimum amount of paper he will need?

$r = 3.5$

$A = \pi (3.5)^2$
$= 12.25(3.14)$
$\boxed{= 38.465 \ ft^2}$

6. Rachel has a circular pen for her chickens with a radius of 15 feet. If she needs to replace the fencing, how much fencing will she need?

$C = 2\pi 15$
$= 30(3.14)$
$\boxed{= 94.2 \ ft}$

Topic F: Surface Area of Prisms & Pyramids

Find the surface area of each figure using the given net.

1.

7 in   1.8 in
12 in

12

$A = 84$ 7

$A = 21.6$ 1.8

$A = 12.6$ $A = 84$ $A = 12.6$ 7

$A = 21.6$
12
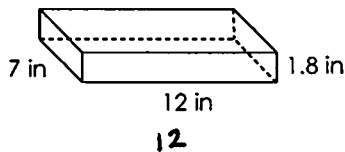
$SA = 84 + 21.6 +$
$84 + 12.6 +$
$12.6 + 21.6$

$\boxed{= 236.4 \ in^2}$

2.

5 cm   13 cm
9 cm   12 cm

$SA = 45 + 30 + 108$
$+ 30 + 117$
$\boxed{= 330 \ cm^2}$

13
5   $A = 30$
12
9   $A = 45$ $A = 108$ 13 $A = 117$
$A = 30$

3.

10.6 yd
7 yd   7 yd

$A = 49$ $A = 37.1$
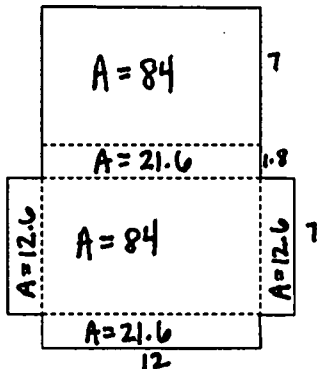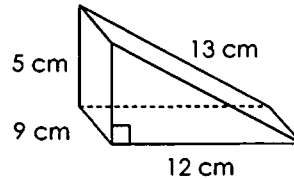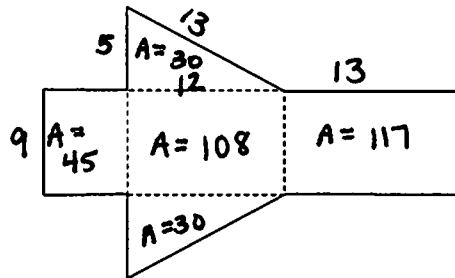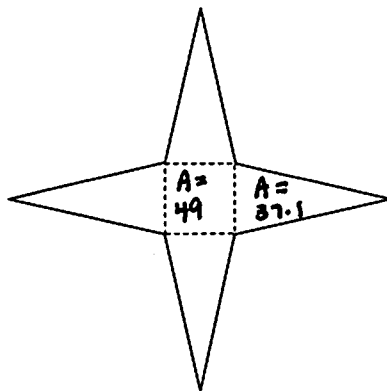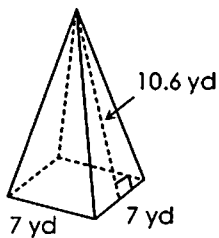
$SA = 49 + 4(37.1)$
$\boxed{= 197.4 \ yd^2}$

4. Assume an equilateral base.

6.5 km   7.8 km
9 km

$A = 29.25$
$A = 35.1$
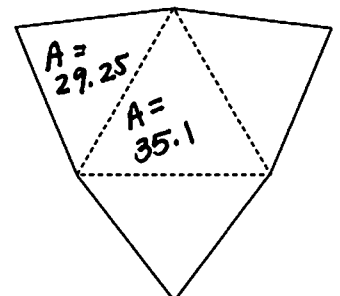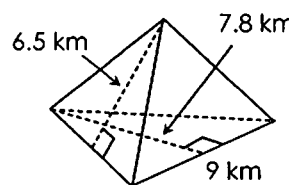
$SA = 35.1 + 3(29.25)$
$\boxed{= 122.85 \ km^2}$

5. A bar of soap is in the shape of a rectangular prism with the dimensions given below. The manufacturing company needs to know the minimum amount of material needed to construct a box for the soap.

3.5

A=7
A=3 A=5.25 A=3 1.5
A=7 2
A=5.25 1.5

1.5 in
2 in
3.5 in
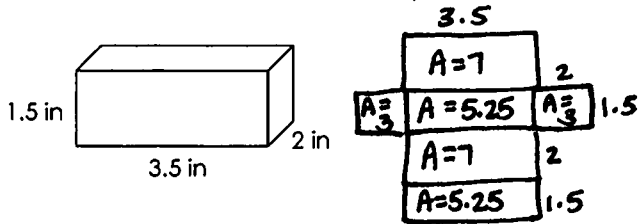
$SA = 2(3) + 2(7) + 2(5.25)$

$= 30.5 \text{ in}^2$

6. Kevin is planning to build a jumping box to use with his daily workouts. The dimensions of the box he wants to build are given below. What is the minimum amount of plywood he will need?

32

A= 768 24
A= 640 20
A= 768 24
A=480 A=640 A= 480
24

24 in
32 in
20 in
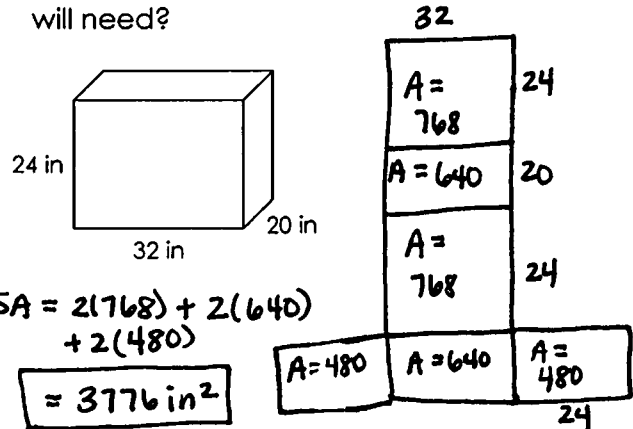
$SA = 2(768) + 2(640) + 2(480)$

$= 3776 \text{ in}^2$

Topic G: Volume of Rectangular Prisms
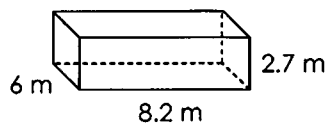
Find the volume of each rectangular prism.

1.

15 cm
12 cm
9 cm

$V = 12(9)(15)$

$= 1620 \text{ cm}^3$

2.

6 m
8.2 m
2.7 m

$V = 6(8.2)(2.7)$

$= 132.84 \text{ m}^3$

3.

$2\frac{3}{4}$ ft
$1\frac{1}{2}$ ft
$2\frac{1}{3}$ ft
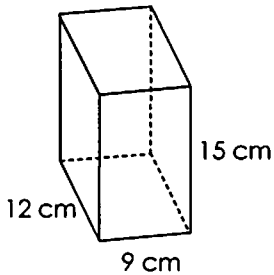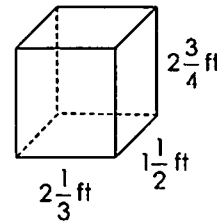
$V = \left(2\frac{1}{3}\right)\left(1\frac{1}{2}\right)\left(2\frac{3}{4}\right)$

$= \frac{7}{3}\left(\frac{3}{2}\right)\left(\frac{11}{4}\right)$

$= \frac{77}{8} = 9\frac{5}{8} \text{ ft}^3$

4. An inground pool is in the shape of a rectangular prism. The pool is 18 feet long by 12 feet wide with a depth of 5 feet. What is the maximum amount of water the pool can hold?

$V = 18(12)(5)$

$= 1080 \text{ ft}^3$

5. The bed of dump truck in the shape of a rectangular prism is completely filled (but not overfilled) with 567 cubic feet of dirt. If the bed is 18 feet long by 7 feet wide, how deep is the bed?

$V = \ell \cdot w \cdot h$
$567 = 18(7)(h)$
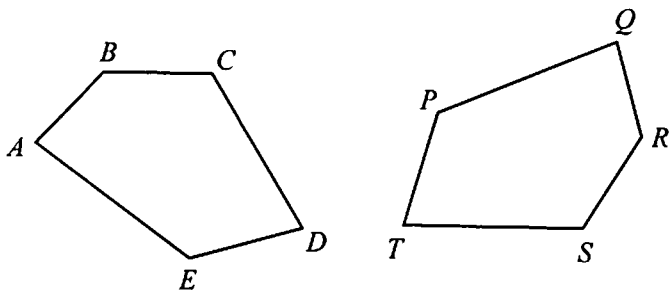$567 = 126 h$
$4.5 = h$

4.5 feet

Math 6 Review

QUIZ 5

Name: _____

Date: _____ Per: _____

1. If the two figures below are congruent, complete the statement below.
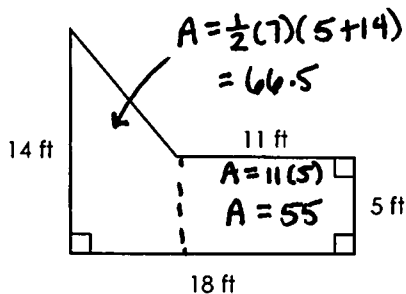
$$\overline{AB} \cong \boxed{\overline{QR}}$$

2. Lance is enclosing a rectangular garden with fencing. If the perimeter of the garden is 30 meters, check the two measurements that could represent the dimensions of the garden.
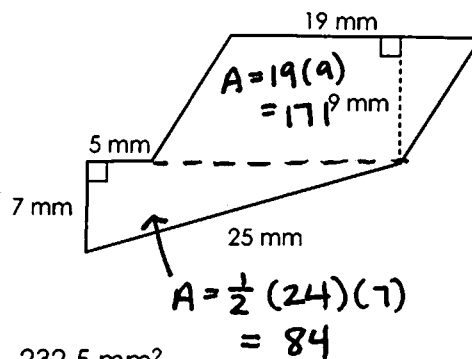
- ☐ 3 meters
- ☐ 6 meters
- ☑ 4 meters
- ☐ 8 meters
- ☐ 5 meters
- ☑ 11 meters

3. Find the area of the figure below.

$A = \frac{1}{2}(7)(5+14)$
$= 66.5$

14 ft

11 ft

$A = 11(5)$
$A = 55$

5 ft

18 ft

- **A.** 108 ft²
- **C.** 121.5 ft² *(circled)*
- **B.** 114.5 ft²
- **D.** 132 ft²

4. Find the area of the figure below.

19 mm

$A = 19(9)$
$= 171$

9 mm

5 mm

7 mm

25 mm

$A = \frac{1}{2}(24)(7)$
$= 84$

- **A.** 232.5 mm²
- **B.** 242 mm²
- **C.** 255 mm² *(circled)*
- **D.** 258.5 mm²

5. Find the area of the figure below.

* ☐ = 1 square mile

$A_1 = \frac{1}{2}(3)(7+9)$
$= 24$

$A_2 = 5(7)$
$= 35$

- **A.** 55 mi²
- **B.** 59 mi² *(circled)*
- **C.** 62 mi²
- **D.** 67 mi²

6. Using the graph below, find the area of a triangle formed by the points (-2, 0), (6, 8), and (6, -5).

$A = \frac{1}{2}(13)(8)$

- **A.** 56 square units
- **C.** 39 square units
- **B.** 48 square units
- **D.** 52 square units *(circled)*

7. The minute-hand on a large clock is 18 inches long. Which is closest to the distance the tip of the hand will travel in one rotation?

$$C = 2\pi \cdot 18$$
$$= 36(3.14)$$
$$= 113.04$$

A. 56.52 inches

B. 74.68 inches

C. 113.04 inches (circled)

D. 128.36 inches

8. A circular rug has a diameter of 7 feet. Which is closest to the amount of fabric used to make the rug?
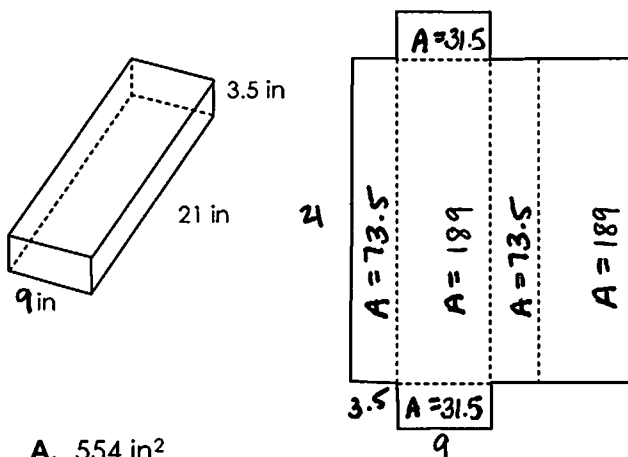
$r = 3.5$

$$A = \pi(3.5)^2$$
$$= 12.25\,(3.14)$$
$$= 38.465$$

A. 38.5 ft² (circled)

B. 51.2 ft²

C. 104.1 ft²

D. 153.9 ft²

9. A rectangular prism and its net are shown below. What is the total surface area of the prism?

3.5 in
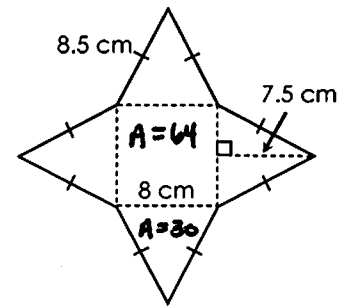
21 in

9 in

A =31.5

24

A = 73.5

A = 189

A = 73.5

A = 189

3.5 A =31.5

9

A. 554 in²

B. 570 in²

C. 583 in²

D. 588 in² (circled)

$$A = 2(73.5) + 2(189)$$
$$+ 2(31.5)$$
$$= 588$$

10. The net of a square pyramid along with its dimensions are shown below. What is the total surface area of the pyramid?
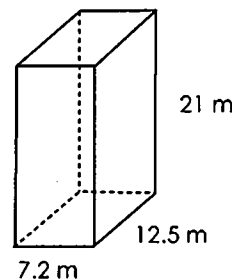
8.5 cm

7.5 cm

A = 64

8 cm

A = 30

A. 480 cm²

B. 216 cm²

C. 200 cm²

D. 184 cm² (circled)

$$A = 4(30) + 64$$
$$= 184$$

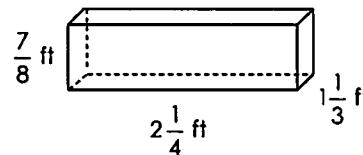**11.** What is the volume of the rectangular prism below? Write your answer in the box.

21 m

12.5 m

7.2 m

$$V = 7.2(12.5)(21)$$
$$= 1890$$

$$\boxed{1890\, m^3}$$

12. A flower box in the shape of a rectangular prism along with its dimensions are given below. What is the maximum amount of soil the box can hold without overfilling it?

$\frac{7}{8}$ ft

$2\frac{1}{4}$ ft

$1\frac{1}{3}$ ft

$$V = \frac{7}{8}\left(2\frac{1}{4}\right)\left(1\frac{1}{3}\right) = \frac{7}{8}\left(\frac{9}{4}\right)\left(\frac{4}{3}\right) = \frac{21}{8}$$

A. $2\frac{1}{2}$ ft³

B. $2\frac{5}{8}$ ft³ (circled)

C. $2\frac{3}{4}$ ft³

D. $2\frac{7}{12}$ ft³

Topic A: Measures of Center & Range

Find the mean, median, mode(s), and range for each of the following data sets.

1. The high temperature for the past nine days:
{57, 61, 57, 58, 58, 57, 61, 54, 68}

Mean: $\dfrac{531}{9} = 59$

54, 57, 57, 57, 58, 58, 61, 61, 68
↑

Mean:	59
Median:	58
Mode(s):	57
Range:	14

2. The prices, in dollars, of six laptops: {520, 750, 700, 540, 460, 390}

390, 460, 520, 540, 700, 750

Mean: $\dfrac{3360}{6}$

Median = 530

Mean:	560
Median:	530
Mode(s):	None
Range:	360

3. Marissa's grades on nine tests are given below. Identifier the outlier, then find the measures with and without the outlier.
{92, 88, 88, 92, 100, 88, 37, 98, 82}

37, 82, 88, 88, 88, 92, 92, 98, 100

Mean: $\dfrac{765}{9} = 85$

Mean: $\dfrac{728}{8} = 91$

Identify the Outlier:

	With Outlier	Without Outlier
Mean:	85	Mean: 91
Median:	88	Median: 90
Mode(s):	88	Mode(s): 88
Range:	63	Range: 18

Determine which measure of center is most appropriate. Explain your reasoning.

4. Weights, in pounds, of 15 dogs: {55, 62, 48, 59, 74, 165, 70, 56, 82, 64, 71, 60, 53, 78, 63}

Best Center: __Median__   Why? __165 is an outlier__

5. Ages of 12 players on a basketball team: {11, 10, 11, 11, 8, 11, 12, 11, 9, 10, 11, 12}

Best Center: __Mode__   Why? __11 repeats many times__

6. The speed of the last 10 pitches thrown by a pitcher: {90, 92, 85, 88, 94, 86, 93, 90, 88, 95}

Best Center: __Mean__   Why? __No outliers__

7. All digital cameras in an electronics store are on sale for 20% off for the weekend. How does this affect the mean, median, mode, and range of prices of the cameras?

All values will decrease.

8. A football team has scored a different number of points in each of their first five game. If they score more points in the sixth game than any prior game, how will this affect the mean, median, mode, and range number of points per game scored?

The mean, median, and range will increase. The mode will not change.

Topic B: Dot Plots & Stem-and-Leaf Plots

The ages of the players on a hockey team are shown below.

Ages (Years)
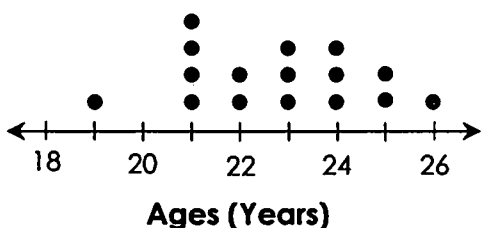
1. Compare the median and mode ages.

19, 21, 21, 21, 21, 22, 22, 23, 23, 23, 24, 24, 24, 25, 25, 26

Mode = 21

Median = 23

The median is greater than the mode.

2. How many players are no more than 24 years old?

13 players

The time it took a group of students to complete a test is shown below.

Minutes

Stem	Leaf
2	5 8
3	0 4 7 9
4	1 3 3 5 7
5	6

Key: 2 | 5 = 25 minutes

3. Find the mean.

25, 28, 30, 34, 37, 39, 41, 43, 43, 45, 47, 56

Mean $= \dfrac{468}{12} = 39$

4. How many students took more than 30 minutes to complete the test?   9 students

---

Topic C: Mean Absolute Deviation

Find the mean absolute deviation of each set of data.

1. The heights, in inches, of six people: {62, 65, 68, 77, 71, 59}

Mean $= \dfrac{402}{6} = 67$

MAD $= \dfrac{5+2+1+10+4+8}{6}$

$= \dfrac{30}{6} = \boxed{5}$

2. The average heart rates, in beats per minute, of five people in a cycling class: {145, 168, 156, 134, 162}

Mean $= \dfrac{765}{5} = 153$

MAD $= \dfrac{8+15+3+19+9}{5}$

$= \dfrac{54}{5} = \boxed{10.8}$

3. Two classes, Class A and Class B, took the same test. Both classes had the same mean score on the test. However, the mean absolute deviation of Class A was 10 and Class B was 2. What does this information reveal about the individual scores in each class?

The MAD of Class B is less than that of Class A, which means Class B had less variation in their data.
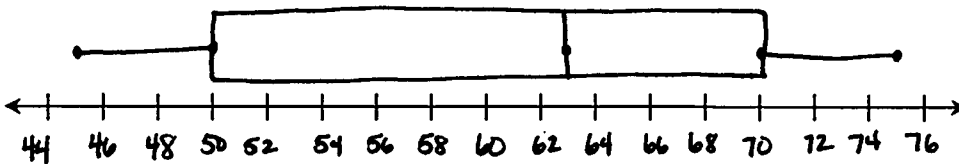
Topic D: Box-and-Whisker Plots

Draw the box-and-whisker plot, then give the five-number summary, range, and interquartile range (IQR).

1. The height, in inches, of nine trees at a tree farm:
{56, 68, 45, 65, 63, 49, 75, 51, 72}
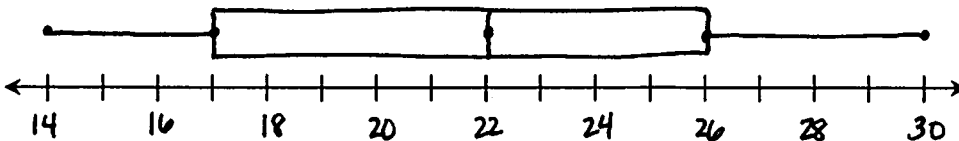
45, 49, 51, 56, 63, 65, 68, 72, 75
50   70

Minimum: __45__
Lower Quartile: __50__
Median: __63__
Upper Quartile: __70__
Maximum: __75__
Range: __30__
IQR: __20__

2. Points scored by a football team in each of their sixteen games:
{17, 21, 25, 23, 20, 27, 16, 24, 17, 14, 21, 28, 23, 30, 14, 27}

14, 14, 16, 17, 17, 20, 21, 21, 23, 23, 24, 25, 27, 27, 28, 30
17   22   26

Minimum: __14__
Lower Quartile: __17__
Median: __22__
Upper Quartile: __26__
Maximum: __30__
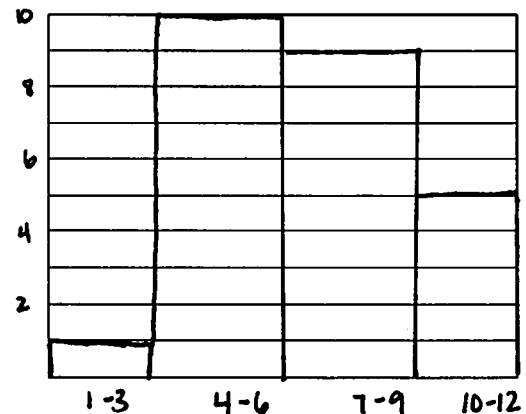Range: __16__
IQR: __9__

Topic E: Histograms

1. Students were asked the numbers of letters in their last name. The results are shown below. Organize the data in a frequency table, then make a histogram to display the data.

{5, 8, 9, 11, 9, 6, 7, 5, 5, 10, 8, 4, 6,
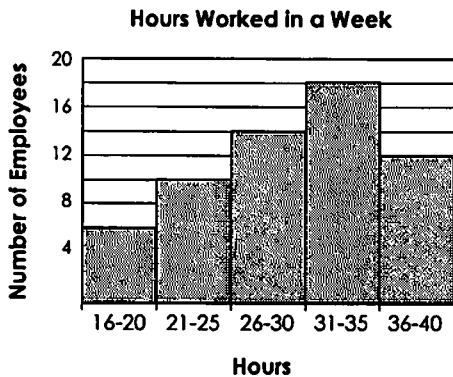7, 11, 4, 3, 8, 8, 5, 10, 6, 5, 8, 12}

Interval	Frequency	
1 – 3	1	I
4 – 6	10	﷽ ﷽
7 – 9	9	﷽ IIII
10 – 12	5	﷽

The histogram below shows the number of hours worked in a single week by each employee at a company.

Hours Worked in a Week

2. How many employees worked 30 hours at most?

$6 + 10 + 14 = $ **30 employees**

3. What percent of the employees worked between 16 and 20 hours?

$\frac{6}{60} = \frac{1}{10} = 0.1$

$\boxed{10\%}$

4. What percent of the employees worked a minimum of 26 hours?

$\frac{44}{60} = \frac{11}{15} = 0.7\overline{3}$

$\boxed{73.3\%}$

Topic F: Circle Graphs

1. A group of students were asked how to get to and from school each day. The results are shown in the table below. Make a circle graph to display the data.

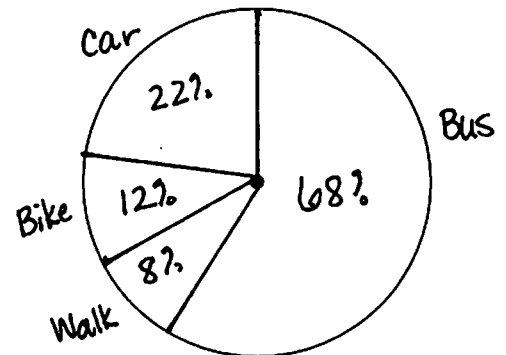| Transportation to/from School	Number of Students
Bus	87
Bike	18
Car	33
Walk	12

$\frac{87}{150} = \frac{29}{50} = 68\%$
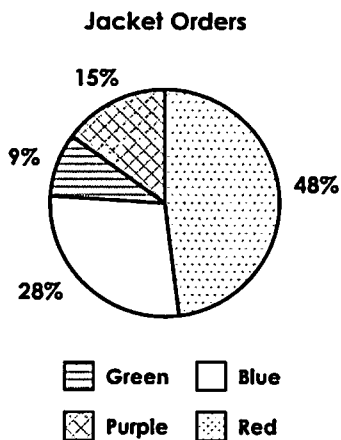
$\frac{18}{150} = \frac{3}{25} = 12\%$

$\frac{33}{150} = \frac{11}{60} = 22\%$

$\frac{12}{150} = \frac{2}{25} = 8\%$

Transportation

Car 22%, Bus 68%, Bike 12%, Walk 8%

A new jacket comes in four colors. The circle graph below represents the last 200 jacket orders.

Jacket Orders

15%, 9%, 28%, 48%

Green, Blue, Purple, Red

2. How many of the orders were for a green jacket?

$$200 \times 0.09 \over 18.00$$

$\boxed{18 \text{ orders}}$

3. How many of the orders were for a purple or a red jacket?

$$\begin{array}{r} 200 \\ \times 0.63 \\ \hline 600 \\ 12000 \\ \hline 126.00 \end{array}$$

$\boxed{126 \text{ orders}}$

Math 6 Review
QUIZ 6

Name: _____

Date: _____ Per: _____

1. If 26 is added to the list of numbers below, which measures will not change? Check all that apply.

{7, 11, 15, 15, 22}

☐ Mean   ☑ Mode
☐ Median   ☐ Range

2. The data below represent the number of students in 8 classes. Which measure is the greatest?

{25, 23, 32, 19, 28, 29, 23, 21}

19, 21, 23, 23, 25, 28, 29, 32

(A) mean   25
B. median   24
C. mode   23
D. range   13

Use for questions 3 and 4: Employees at a company were invited to participate in a 3-month-long weight loss challenge. The stem-and-leaf plot below shows the number of pounds each participant lost.

Stem	Leaf
0	5 9
1	0 2 2 5 5 6 8 9
2	0 0 1 3 7
3	1 4

Key: 3 | 4 = 34 pounds

3. What is the median number of pounds lost?

A. 15
B. 16
C. 17
(D.) 18

4. What is the range? Write your answer in the box.

34 -5

29

5. The list below represents the heights, in inches, of nine books lined up on a shelf. Which action will cause the median height to increase but the range of heights to remain the same?

{6, 7, 7, 8, 8, 10, 12, 14, 16}

A. removing the shortest book
B. removing the tallest book
(C.) adding another book that is 6 inches tall
D. adding another book that is 16 inches tall

6. Jaxson is a customer service specialist for a cable company. The data below represents the length, in minutes, of his last six service calls. What is the mean absolute deviation for this set of data?
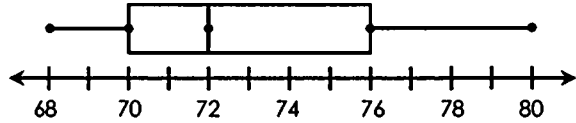
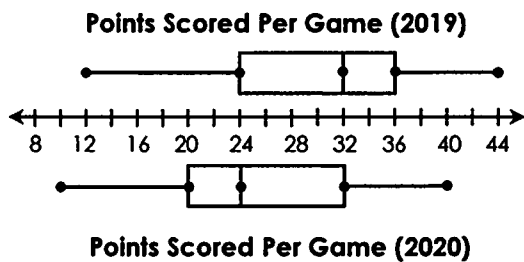{12, 53, 25, 37, 20, 45}

Mean = 32

$MAD = \dfrac{20+21+7+5+12+13}{6}$

(A) 13
B. 14
C. 15
D. 16

7. The box-and-whisker plot below represents the golf scores by a group of golfers. Which list could represent the individual scores?

- **A.** {68, 70, 70, 72, 74, 74, 78, 80}
- **B.** {68, 70, 72, 72, 72, 74, 76, 80}
- **C.** {68, 69, 71, 72, 72, 74, 76, 80}
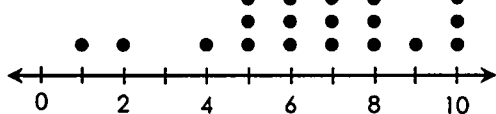- **(D.)** {68, 69, 71, 71, 73, 74, 78, 80}

8. The box-and-whisker plot below shows the number of points scored by a football team in each game in their 2019 season compared to their 2020 season. Which measure is the same for both seasons?

Points Scored Per Game (2019)

Points Scored Per Game (2020)

- **A.** median
- **B.** lower quartile
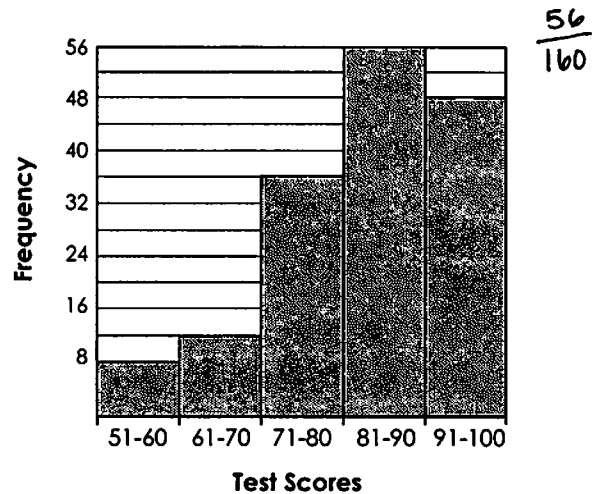- **C.** range
- **(D.)** interquartile range

9. The dot plot below shows the number of books read by a group of 20 students over the summer. Which statement is true?

1, 2, 2, 4, 5, 5, 5, 6, 6, 6, ⑦, 7, 7, 8, 8, 8, 8, 9, 10, 10, 10
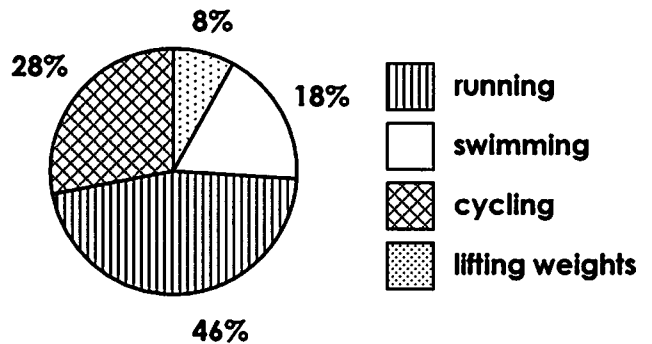

Number of Books Read

- **A.** median = 6, interquartile range = 3
- **B.** median = 6, interquartile range = 4
- **(C.)** median = 7, interquartile range = 3
- **D.** median = 7, interquartile range = 4

10. Mr. Abrams gave a test to his math students. The histogram below represents the distribution of scores. What percent of his students had a score that was at most 80?

$\frac{56}{160}$

Test Scores

- **A.** 30%
- **C.** 40%
- **(B.)** 35%
- **D.** 45%

Use for questions 11 and 12: Beth exercised for 350 minutes last week. The circle graph below represents the amount of minutes she spent running, swimming, cycling, and lifting weights.

- running
- swimming
- cycling
- lifting weights

11. How many minutes did she spend cycling?

- **A.** 92
- **(B.)** 98
- **C.** 104
- **D.** 112

350
× .28
2800
7000
98.00

12. In which two activities did she spend exactly 189 minutes?

Cycle = 98
Run = 161
Swim = 63
Weights = 28

- **A.** swimming and running
- **B.** cycling and running
- **C.** swimming and cycling
- **(D.)** lifting weights and running

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