Name_____

Pre-Algebra 7/Accelerated Pre-Algebra
Summer Math Assignment

Directions: Complete all pages of this packet. Show all work. Highlight or draw a box around the final answer to each problem.

Due: Friday, September 9, 2016

*Do not wait until the last minute to complete this packet!

Name: _____ Date: _____

PRE-TEST

1 The Real Number System

Recognizing types of numbers

Use the > symbol. Order from greatest to least. Graph each number on a horizontal number line.

1. $15.6, -13, 7\frac{3}{5}, \frac{28}{7}, -8$

Comparing decimals

Compare. Write <, >, or =.

2. 2.852 ☐ 2.852
3. 12.7 ☐ 1.27
4. 0.035 ☐ 0.35
5. 48.75 ☐ 48.755

Rounding numbers

Round each number.

6. 539.61 to the nearest whole number.
7. 87.235 to the nearest hundredth.
8. 2.63 to the nearest tenth.
9. 1,645.09 to the nearest hundred.

Round 1,129.872

10. to 2 decimal places.
11. to the nearest tenth.
12. to the nearest whole number.
13. to the nearest hundred.

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Finding squares, cubes, square roots, and cube roots

Find the square and cube of each number.

14. 13

15. 8

Find the square root of each number.

16. 196

17. 16

Find the cube root of each number.

18. 216

19. 512

Order the numbers from greatest to least. Use the > symbol.

20. $\sqrt[3]{125}, 10, \sqrt{81}$

21. $\sqrt[3]{1,000}, 12, \sqrt{121}$

Determining absolute values

Refer to the following set of numbers for questions 22–25.

151, −149, 183, −296, 140, 222

22. Find the absolute value of each number. _____

23. Which number is farthest from 0? _____

24. Which number is closest to 0? _____

25. Which number has the least absolute value? _____

Use the number line to find the absolute value of each of the following numbers.

26. $|-17|$

27. $|0.56|$

Copy and complete each inequality using >, =, or <.

28. $|-0.5|$ ☐ $|-1.7|$

29. $|37|$ ☐ $|-39|$

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PRE-TEST

Rational Number Operations

Comparing numbers on a number line

Complete each of the following with > or <.

1. 8 _____ −1

2. −10 _____ −9

3. 0 _____ −22

4. $-2\frac{1}{5}$ _____ −2

5. −3.25 _____ −3.23

6. 0.1 _____ −0.1

Using order of operations to simplify numerical expressions

Evaluate each expression.

7. 87 + (26 − 11) · 4

8. 75 − (56 ÷ 7) · 8

Expressing improper fractions and mixed numbers in other forms

Express each improper fraction as a mixed number.

9. $\frac{27}{4}$

10. $\frac{15}{8}$

Express each mixed number as an improper fraction.

11. $2\frac{1}{5}$

12. $9\frac{2}{3}$

Adding and subtracting fractions

Add or subtract. Express your answer in simplest form.

13. $\frac{3}{5} + \frac{2}{7}$

14. $\frac{8}{9} - \frac{3}{4}$

15. $4\frac{1}{2} - 2\frac{2}{3}$

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Multiplying and dividing fractions

Multiply or divide. Express your answer in simplest form.

16. $\frac{5}{7} \cdot \frac{2}{15}$

17. $\frac{3}{8} \cdot 2\frac{2}{5}$

18. $\frac{21}{5} \div \frac{7}{8}$

19. $\frac{3}{4} \div 1\frac{5}{7}$

Multiplying and dividing decimals

Multiply or divide.

20. $16.3 \cdot 5.6$

21. $45.28 \div 0.4$

Using percents

Solve each percent problem.

22. 15% of $280

23. 35 is what percent of 140?

24. 18 girls out of 32 students is what percent?

25. Nathan baked 250 rolls on Friday. On Saturday he baked 340 rolls.

a) Find the increase in the number of rolls that Nathan baked.

b) Find the percent increase in the number of rolls baked.

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PRE-TEST

Algebraic Expressions

Recognizing parts of an algebraic expression

Consider the algebraic expression $8y + 5$. State the following.

1. How many terms are there? _____
2. Identify the coefficient of the algebraic term. _____
3. What is the constant term? _____
4. Identify the operational symbol. _____

Evaluating algebraic expressions

Complete the table.

5.

x	11 + x	9x	7x − 4
3	11 + 3 = 14		
0			
−2			
5			

Simplifying algebraic expressions

State whether each expression can be simplified. Explain your reasoning.

6. $5p - 3 + p$
7. $r + 2r - 3r$
8. $9a - 3b + c$
9. $21 - 4b - 8$

Simplify each expression.

10. $6t - t + 6$
11. $4 + m - 1$
12. $7a - 4a + 3a$
13. $b + 9b - 2$

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Expanding algebraic expressions

Expand each expression.

14. $4(2a - 1)$

15. $2(3 + 5b)$

16. $7(c - 2)$

17. $5(2d + 3)$

Factoring algebraic expressions

Factor each expression.

18. $6x + 2$

19. $3y + 9$

20. $8a - 16$

21. $14b - 21$

Recognizing equivalent expressions

Choose an equivalent expression.

22. $4(x + 3)$ is equivalent to

a) $4x + 3$ **b)** $4x + 7$ **c)** $4x + 12$ **d)** $x + 12$

23. $8y - 12$ is equivalent to

a) $4(4y - 3)$ **b)** $4(2y - 3)$ **c)** $4(y - 12)$ **d)** $8(y - 4)$

Writing algebraic expressions to represent unknown quantities

y is an unknown number. Write an expression for each of the following.

24. 3 more than twice the number _____

25. 11 less than the number _____

26. 5 more than one-quarter of the number _____

27. 7 times the number _____

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PRE-TEST

Algebraic Equations and Inequalities

Solving algebraic equations by balancing

Solve each equation.

1. $y + 8 = 14$

2. $x - \frac{3}{4} = 1$

3. $\frac{1}{7}p = 3$

4. $3.6z = 7.2$

Solving algebraic equations by substitution

State whether each statement is True or False.

5. $x = 11$ is the solution of the algebraic equation $x - 7 = 4$. _____

6. $p = 6$ is the solution of the algebraic equation $3p + 6 = 15$. _____

7. $y = 1$ is the solution of the algebraic equation $9 + 2y = 11$. _____

8. $w = 2$ is the solution of the algebraic equation $5w - 4 = 6$. _____

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Graphing inequalities on a number line

Draw a number line to represent each inequality.

9. $x \leq 8.5$

10. $p > \frac{1}{4}$

11. $y < -4$

12. $r \geq 15$

Writing algebraic inequalities

Complete with =, >, or <.

13. $2 \square -8$

14. $-5 \square -3$

15. $4 \cdot (-1) \square (-4) \cdot 1$

16. $8 \div (-2) \square (-2) \div 8$

Use *x* to represent the unknown quantity. Write an algebraic inequality for each statement.

17. The weight limit for a bridge is less than or equal to 50,000 pounds.

18. The bus ride to school is at least 45 minutes.

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19. The roof is designed to withstand a load of at most 300 pounds.

20. At a ribbon-cutting ceremony, the duration of the mayor's speech was less than 10 minutes.

21. A U.S. citizen must be at least 18 years of age to vote in an election.

22. The highest recorded temperature in March was greater than 95°F.

23. To receive an A in a health course, students must score more than 150 points on the exam.

24. There are more than 500 runners who signed up to participate in a marathon.

25. An auditorium can seat at most 2,000 people.

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PRE-TEST

Direct and Inverse Proportion

Comparing quantities using a ratio

Write a ratio to compare quantities.

A survey was conducted to find out the favorite sports of a group of students. Of the 40 students surveyed, 15 of them like football, 12 of them like basketball, 8 of them like baseball, and 5 of them like swimming. Write a ratio in simplest form to compare each of the following.

1. The number of students who like basketball to the number of students who like football.

2. The number of students who like swimming to the number of students who like baseball.

Recognizing equivalent ratios

Tell whether each pair of ratios are equivalent.

3. 5 : 9 and 15 : 27

4. 6 to 21 and 8 to 28

5. $\frac{14}{16}$ and $\frac{4}{6}$

6. $\frac{3}{4}$ and $\frac{4}{3}$

Tell whether each ratio is in simplest form. Then write two ratios that are equivalent to the given ratio.

7. 7 : 15

8. 9 to 27

9. $\frac{11}{12}$

10. $\frac{5}{9}$

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Finding rates and unit rates

Find the unit rate.

11. The official world record for the men's marathon is 2 hours 3 minutes 59 seconds set by Haile Gebrselassie of Ethiopia. This Berlin marathon, held in September, 2008, was 42.195 kilometers long. Write Gebrselassie's average speed for this marathon in meters per second. Round your answer to the nearest tenth.

Find and compare unit rates.

The cost of two brands of a household item is given. Find the unit price and tell which is a better buy.

12. A: \$6.15 for 24 fl oz of dishwashing liquid
B: \$9.60 for 42 fl oz of dishwashing liquid

13. A: \$4.29 for 4 oz of shoe polish
B: \$6.33 for 6 oz of shoe polish

Identifying and plotting coordinates

Use the coordinate plane on the right.

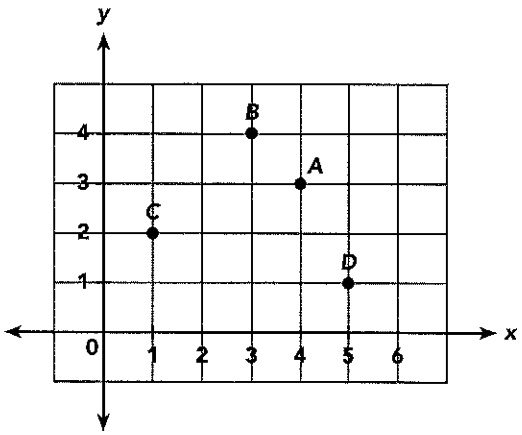
14. Give the coordinates of points *A*, *B*, *C*, and *D*.

Point *A*: _____

Point *B*: _____

Point *C*: _____

Point *D*: _____



Solving percent problems

Solve word problems involving percent.

15. A school has 1,200 students. If 65% of the students are girls, how many girls attend the school?

16. A book costs \$25. Marilyn bought the book during a sale with 15% discount. How much did she pay for the book?

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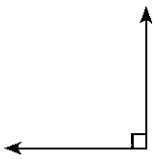
6 Angle Properties and Straight Lines

Classifying angles

Tell whether each angle is an acute, obtuse, or right angle.

1. 

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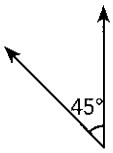
2. 

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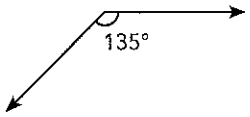
3. 

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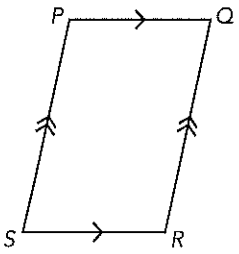
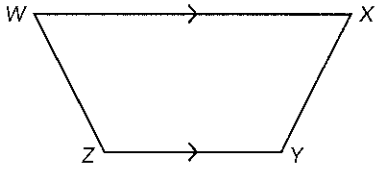
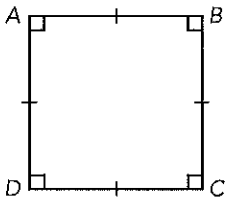
Identifying parallel lines and perpendicular lines

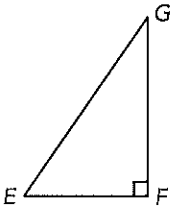
Identify each pair of parallel line segments.

4. 

5. 

Identify each pair of perpendicular line segments.

6. 

7. 

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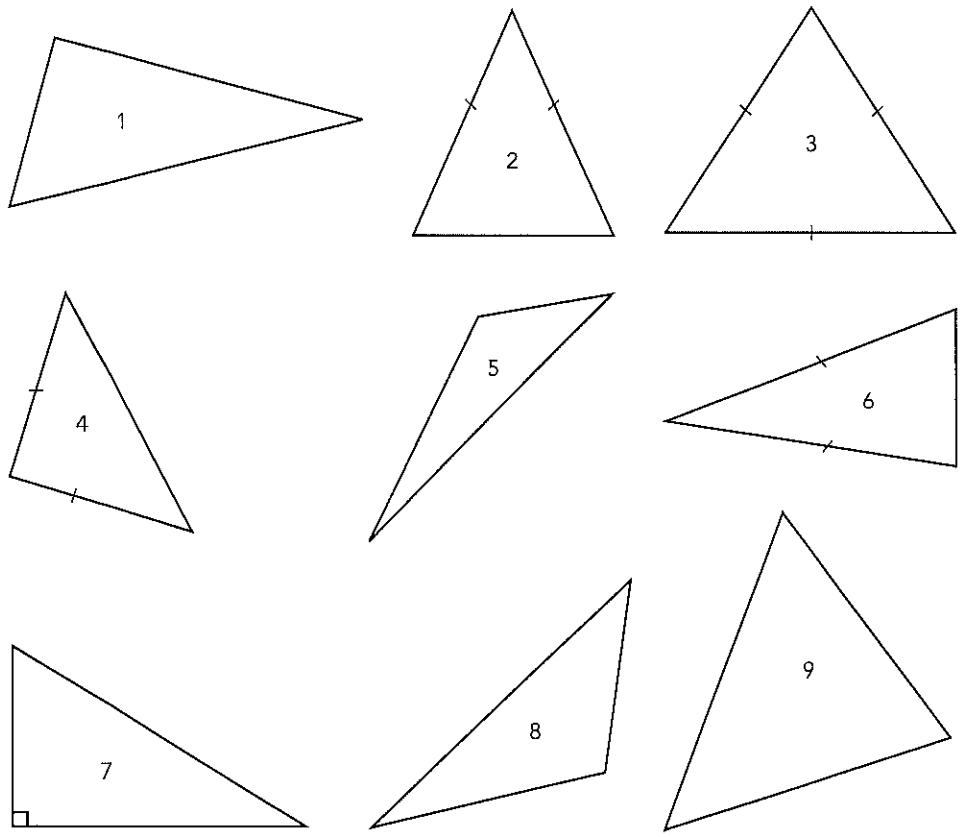
7 Geometric Construction

Classifying triangles

Complete the table by classifying the triangles.

1.



Type of Triangle	Figure
Equilateral triangle	
Scalene triangle	
Isosceles triangle	
Right triangle	
Acute triangle	
Obtuse triangle	

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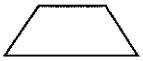
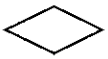
Naming Quadrilaterals

Complete the table.

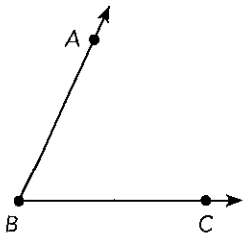
2.

Quadrilateral	Type of Quadrilateral	Both Pairs of Opposite Sides are Parallel	The Measure of Every Interior Angle is 90°	All Sides have Equal Length
				
				
				
				
				

Using a protractor to measure an angle in degrees

Measure $\angle ABC$.

3.



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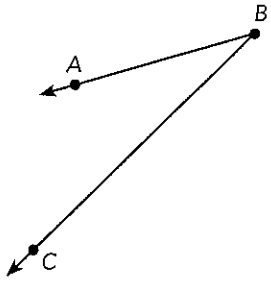

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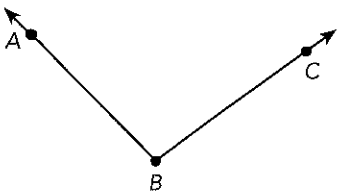

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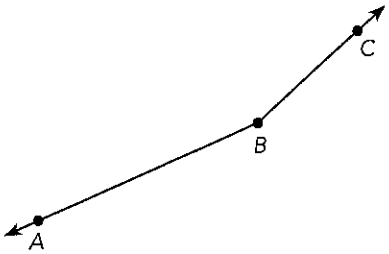

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Using a protractor to draw angles

Use a protractor to draw each angle.

7. $m\angle ABC = 33°$

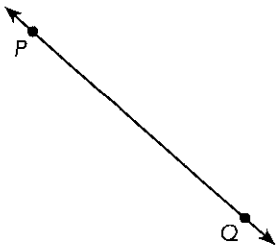
8. $m\angle PQR = 73°$

9. $m\angle XYZ = 105°$

Using a protractor to draw perpendicular line segments

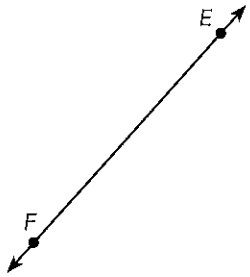
Draw a perpendicular line to each given line.

10.



11.

12.



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PRE-TEST

8 Volume and Surface Area of Solids

Applying surface area and volume formulas for prisms

A cube has edges measuring 11 centimeters each.

1. Find its volume.

2. Find its surface area.

3. The volume of a cube is 125 cubic centimeters. Find the length of each edge of the cube.

Finding the surface area of a square pyramid

4. A pyramid has a square base with area 225 square centimeters. It has four faces that are congruent isosceles triangles. The height of each triangle is 12 centimeters. Find the surface area of the pyramid.

Finding the area and circumference of a circle

Solve.

5. Isabella ordered a vegetable pizza with diameter 8 inches.
Use 3.14 as an approximation for π.

a) Find the circumference of the pizza.

b) Find the area of the pizza.

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6. Emma placed a round rug under her coffee table. The circumference of the rug is 18.84 feet. Use 3.14 as an approximation for π.

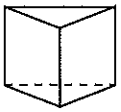
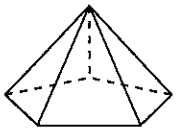
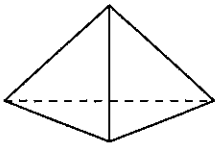
a) Find the radius of the rug.

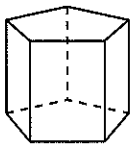
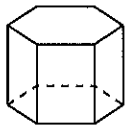
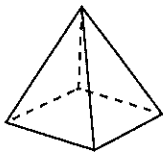
b) Find the area of the rug.

Identifying nets of prisms and pyramids

Match each solid with its net.

7.

Solid			
Net	a) _____	b) _____	c) _____

Solid			
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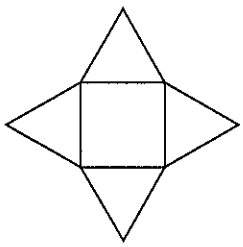
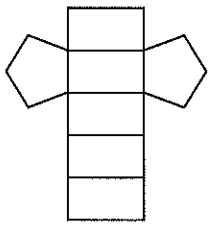
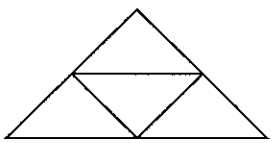
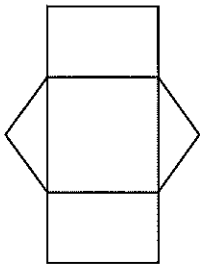
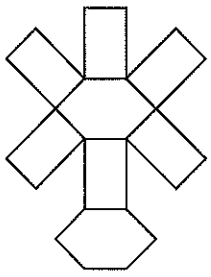
i) 

ii) 

iii) 

iv) 

v) 

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