Archbishop Williams High School

Summer 2019

Summer Math Requirement

3 10 5 54 18 7 26
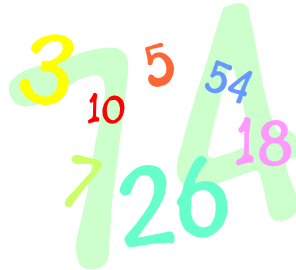
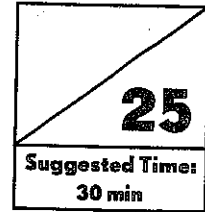## Students Entering **Grade 8 Pre-algebra**

DIRECTIONS:
- Complete ALL problems
- Pencil ONLY
- Show ALL work. NO work = NO Grade
- Calculators are not needed
- Summer Math Packet will be graded
- Due Friday, September 6, 2019

Student Name _____

CHAPTER TEST A

① The Real Number System

$$\boxed{\begin{array}{c} 25 \\ \textbf{Suggested Time:} \\ \textbf{30 min} \end{array}}$$

Concepts and Skills (10 × 1 point = 10 points)

Write each number in $\frac{m}{n}$ form where m and n are integers and $n \neq 0$. Simplify your answers.

1. 6.2

2. −0.48

3. $23\frac{7}{10}$

4. −30.25%

For each pair of numbers, find the absolute value of each number. Then, determine which number is farther from 0 on a number line.
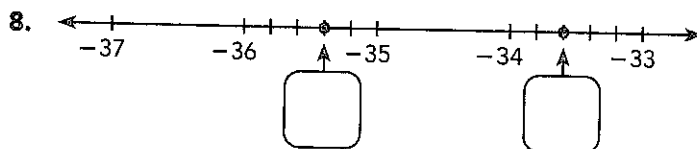
5. $-58\frac{2}{5}$ and -54

6. -129.7 and $129\frac{3}{10}$

Fill in the blank.

7. There are _____ significant digits in 0.01030.

Fill in the missing rational numbers on the number line.

8.

Round each number to the given number of significant digits.

9. −920,463   (to 3 significant digits)   _____

10. 307.0974   (to 5 significant digits)   _____

Problem Solving
(Question 11: 3 points,
Question 12: 4 points,
Questions 13 to 16: 4 × 2 points = 8 points)

Solve. Show your work.

11. Using long division, express the rational numbers $\frac{25}{16}$ and $\frac{23}{12}$ in
decimal form and determine which rational number is greater.

12. Write each rational number as a repeating decimal using bar notation
and list the repeating digits. You may use a calculator.

	Rational Numbers	Decimal Representations in Bar Notation	Repeating Digits
a)	$\frac{17}{13}$		
b)	$-\frac{8}{41}$		

13. The speed of light in a vacuum is approximately 300,000,000 kilometers per second, which is rounded from 299,792,458 kilometers per second. What is the maximum number of trailing zeros that can possibly be significant?

14. With the use of a calculator, locate irrational number $-\sqrt[3]{1,111}$, to 2 decimal places on the number line using rational approximations.

15. You are given the list of real numbers below.

$\sqrt{61}, \dfrac{47}{6}$, and 7.8093

a) Using a calculator, represent each real number with 3 decimal places.

b) Order the real numbers from least to greatest using the symbol <.

16. The area of Texas is about 268,581 square miles. Round the area to 3 significant digits.

CHAPTER TEST A

(2) Rational Number Operations

Concepts and Skills
(Questions 1 to 4: 4 × 1 point = 4 points,
Questions 5 to 7: 3 × 2 points = 6 points)

Evaluate each expression.

1. $-16 + (-13)$

2. $329 - (-104)$

3. $\left(\frac{5}{27}\right) \cdot \left(-\frac{9}{15}\right)$

4. $-68 \div (-4)$

5. $18.2 + 7.3 - 3\frac{2}{5} \cdot 0.4 - (-6.5)$

6. $-39.85 + 41.76 \div 1.2 + \frac{5}{8} \cdot (-0.6)$

7. $\dfrac{\left(1\frac{4}{7}\right)}{-\left(\frac{15}{21}\right)}$

Problem Solving (Questions 8 to 10: 3 × 2 points = 6 points
Questions 11 to 13: 3 × 3 points = 9 points)

Solve. Show your work.

8. The highest outdoor temperature ever recorded in the United States was 134°F, measured at Death Valley, California. The coldest outdoor temperature recorded was −79.8°F, measured at Prospect Creek, Alaska. Find the difference between these two temperatures.

9. A group of tourists are viewing a U.S. national park. Their tour bus starts its journey at an elevation of 138 feet below sea level. The bus stops for a short break after ascending 470 feet in elevation. What is the new elevation of the bus relative to sea level?

10. Jessie needs $1\frac{5}{8}$ gallons of paint to paint her room. She only has $\frac{5}{6}$ gallons of paint. How many more gallons of paint does she need?

11. Mrs. Williamson wants to buy 2 T-shirts and 6 pairs of socks for her children. Each pair of socks costs $3.60 and each T-shirt costs $15.80. If she only budgeted $50, how much is her budget short?

12. A sporting goods store is offering a 6% discount on the sale of football jerseys. The price of each football jersey is $39.90 before the discount. How much will Jason be charged if Jason buys 5 football jerseys?

13. Emily participates in a trivia quiz show. In each round, 20 points are awarded for a correct answer and 10 points are deducted for an incorrect answer.

a) Emily answered 7 questions correctly and 8 incorrectly in the first round. What was her score for the first round?

b) Emily answered 4 questions correctly and 11 incorrectly in the second round. What was her score for the second round?

c) If the final score is the average of the points for both rounds, find Emily's final score.

CHAPTER TEST A

③ Algebraic Expressions

Concepts and Skills (10 × 1 point = 10 points)

Simplify each expression.

1. $9a - 2a + 5a$

2. $\frac{3}{4}x - \frac{1}{2}x + \frac{1}{8}x$

3. $9.8y - 5.2x - 6.8y + 7.2x$

4. $\frac{2}{3} + \frac{5}{8}p - \frac{1}{3} - \frac{1}{8}p$

Expand each expression.

5. $-2.1(3p - 5)$

6. $\frac{1}{4}\left(\frac{m}{3} + \frac{2}{5}\right)$

Factor each expression.

7. $5p + 35q$

8. $-18r - 6s$

Translate each verbal description into an algebraic expression. Simplify.

9. Three-fifths x subtracted from 4 times one-eighth w

10. 60% of the product of one-twelfth y and two-thirds z

Problem Solving (Questions 11 to 13: 3 × 2 points = 6 points, Questions 14 to 16: 3 × 3 points = 9 points)

Solve. Show your work.

11. A pencil costs $3.50 and a pen costs $6.70. Jessica bought m pens. She also bought 4 fewer pencils than pens. Write an algebraic expression for the total amount she spent.

12. There are 26 packets of p almonds and 8 packets of q walnuts. Of the total packets of nuts, ten were given away.

   a) Write an algebraic expression for the remaining packets of nuts.

   b) Factor the expression.

13. Find the perimeter of the parallelogram.

$\left(\frac{7}{8}x + \frac{2}{9}y\right)$ cm

$\left(10 - x + \frac{4}{9}y\right)$ cm
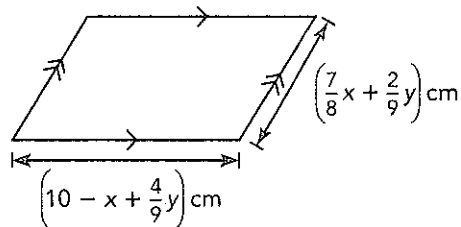
14. David and Denise share *n* pears in the ratio of 4 : 9.

    a) How many pears does Denise have in terms of *n*?

    b) If $n = 39$, how many pears does Denise have? How many pears does David have?

15. The volume of a liquid is *x* liters. When five-eighths of the liquid are poured into a container, the container is two-thirds full. What is the volume of the container?

16. When 40% of the girls left the school assembly, the ratio of the number of boys to girls became 3 to 4. If there were *w* girls when the assembly started, what was the total number of boys and girls when the assembly started?

Name: _____   Date: _____

4 Algebraic Equations and Inequalities

$\boxed{25}$
Suggested Time: 30 min

Concepts and Skills (Questions 1 to 3: 3 × 1 point = 3 points,
Question 4: 2 points,
Questions 5 to 7: 3 × 1 point = 3 points,
Question 8: 2 points)

Solve each equation.

1. $3 + 4x = 19$

2. $8 - \dfrac{2}{5}m = 0$

3. $7.4r - 9 - 2r = 18$

4. $24a - 3(2a - 5) = 51$

Solve each inequality. Graph each solution set.

5. $4 \le 3 - 2y$

6. $10 + 8x < 16$

7. $\dfrac{3}{16} + \dfrac{9}{8}y \ge \dfrac{3}{4}$

8. $5(3x - 2) > 2 + 3x$

Problem Solving
(Question 9: 2 points,
Questions 10 and 11: 2 × 3 points = 6 points,
Questions 12 and 13: 2 × 2 points = 4 points,
Question 14: 3 points)

Write an equation for each problem. Solve and show your work.

9. Graham spent a total of $7.25 on 8 oranges and a packet of strawberries.
   If a packet of strawberries cost $2.85, how much did each orange cost?

10. A ski gondola cabin can safely carry x number of people. There are already
    $\frac{2}{3}x$ people in the cabin when another 15 are allowed to board it. How many
    people can the cabin carry?

11. The sum of the interior angle measures of a triangle is 180°. Angle B is three
    times the measure of angle A. Angle C is 52°. Find the value of x.
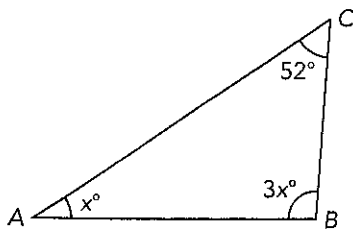
Name: _____ Date: _____

Write an inequality for each problem. Solve and show your work.

12. Marvin scored 96, 93, 97, and 92 on four out of five math tests. In order to receive the highest grade in the class, he must obtain an average score of at least 95 for the five math tests. What score must he get on the fifth test in order to receive the highest grade?

13. A school is sending six teachers and some students to attend a technology fair. The admission price for teachers is $8.50 each and the admission price for students is $6 each. If the budget set aside by the school for this event is $250, at most how many students can attend the fair?

14. The fees for two advertisement companies is shown below.

Company A	Company B
Flat rate of $3 plus 7 cents per word	Flat rate of $1.50 plus 12 cents per word

If an advertisement contains x number of words, for what values of x is Company A's rates cheaper than Company B?