

# Algebra 1: Grade 7/8 Summer Packet

Mr. Chamberlain 2011-12

Name \_\_\_\_\_

Date \_\_\_\_\_ Period \_\_\_\_\_

*NO CALCULATOR; Reduce fractions to lowest terms; SHOW STEPS where appropriate.*

This packet should be completed **WITHOUT ASSISTANCE FROM ANYONE** and in one sitting (90 minute maximum). **SHOW ALL YOUR WORK** where appropriate. Please attach (staple) any scrap work. **THIS ASSIGNMENT WILL NOT BE GRADED...** I want you to complete it so that I can get a sense of where you are as an individual and where the class is as a whole. **DO NOT FRET** if you don't know all of the answers... that is not my expectation. – Mr. C.

The **COMPLETED ASSIGNMENT** should be placed in my mailbox at the FMS main office by **Thurs. Sept. 1<sup>st</sup> 2:00pm** at the latest.

Student Signature: \_\_\_\_\_

Parent/Guardian Name: \_\_\_\_\_

Parent/Guardian Signature: \_\_\_\_\_

*Algebraic expressions are mathematical “phrases” that contain numbers, variables, and operational symbols.  $5$ ,  $x + 5$ ,  $3(x - 2)^2$ ,  $9y$  are all algebraic expressions.*

1. Write an algebraic expression to represent:
  - a) the **SUM** of  $x$  and 17                      1a. \_\_\_\_\_
  - b) the **PRODUCT** of  $x$  and 17                      1b. \_\_\_\_\_
  - c) the **QUOTIENT** of  $x$  and 17.                      1c. \_\_\_\_\_
  
2. Write an algebraic expression to represent the integer 15 *decreased by* the square of a number,  $g$ .                      2. \_\_\_\_\_
  
3. Evaluate:  $4 + (-x)$  when  $x = -4$                       3. \_\_\_\_\_
  
4. Simplify:  $(12 - 3) \div 9 \cdot 15$                       4. \_\_\_\_\_
  
5. Evaluate:  $a^3 - b^2 \div c + 7$  when  $a = 3$ ,  $b = 4$ , and  $c = 8$                       5. \_\_\_\_\_

6. Evaluate:  $6[3^2 - 2(1+2)] \div 3 + 3^2$  Show ALL steps “Top-Down” NEATLY!

6. \_\_\_\_\_

7. What is the name of your new FAVORITE WEBSITE?

7. \_\_\_\_\_

8. **N.B.** When you multiply a number by its reciprocal, the product = 1.

8. \_\_\_\_\_

What is the multiplicative inverse (aka the reciprocal) of  $\frac{5}{6}$  ?

**FYI**

A **replacement set** is a list of values that are *potential* solutions for a given equation or inequality. A **solution set** is a list of values that *satisfies* an equation or inequality. Write your answer using set notation. To use *set notation*, enclose your list of values within brackets { } separated by commas.

For #9 & 10, the replacement set for  $x$  is  $\{-4, -2, 0, 2, 4\}$ . What is the solution set?

For example, if the values 0 & 2 are solutions, write the solution set as  $x = \{0, 2\}$

9.  $x^2 = 16$

9. \_\_\_\_\_

10.  $x + 7 > 5$

10. \_\_\_\_\_

Multiple Choice (fill in the letter of the answer choice at right)

11. The following table illustrates the price of a rental car based on miles driven. Based on the table below, about what would be the price for 429 miles driven?

| # of Miles | Price   |
|------------|---------|
| 100        | \$60.00 |
| 150        | \$70.00 |
| 200        | \$80.00 |
| 250        | \$90.00 |

- a) \$85      b) \$105  
c) \$125      d) \$170

11. \_\_\_\_\_

12. Choose ONE incorrect answer choice from the previous question that, *in your opinion*, was the easiest choice to eliminate. Explain your reasoning in your own words below. (Write the letter of the eliminated answer choice here) -->

12. \_\_\_\_\_

13. **ZERO** is a very special number that we will make much use of in Algebra. Which statement illustrates the **multiplicative property of ZERO (also known as the zero product property)**?

13. \_\_\_\_\_

- a)  $4a \cdot 1 = 4a$                       b)  $4a \cdot 0 = 0$   
c)  $4a \div 1 = 4a$                       d)  $4a + 0 = 4a$

14. **ONE** is a very special number that we will make much use of in Algebra. Which statement illustrates the **multiplicative property of ONE, (also known as the identity property)**?

14. \_\_\_\_\_

- a)  $4a \cdot 1 = 4a$                       b)  $4a \cdot 0 = 0$   
c)  $4a \div 1 = 4a$                       d)  $4a + 0 = 4a$

15. Evaluate the expression  $r^2 + 2r + 7$  when  $r = 5$ . 15. \_\_\_\_\_

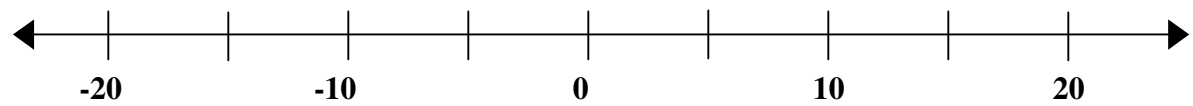
16. Evaluate the expression  $r^2 + 2r + 7$  when  $r = -5$ . 16. \_\_\_\_\_

17. Which of the following mathematical sentences is true based on the suggested substitution? 17. \_\_\_\_\_

- a)  $\frac{1}{2}x + 5 = 11$  when  $x = 6$
- b)  $3x + 5 < x^2$  when  $x = 4$
- c)  $\frac{x + 20}{2} = 14$  when  $x = 4$
- d)  $\frac{5 + 20}{x} = x$  when  $x = 5$

18. Show/describe the solution to the problem using the number line below. 18. \_\_\_\_\_

$17 - 26 = \underline{\hspace{2cm}}$

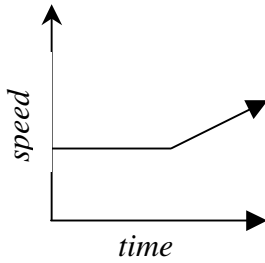


Explain how you solved this problem in words below.

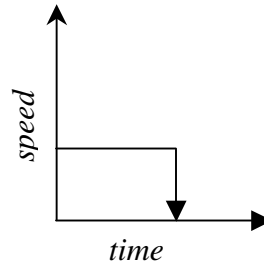
19. Which graph best represents the speed of a car traveling steadily along flat ground and then allowed to drift (no gas or brake pedal applied), continuing along on flat ground until it stops?

19. \_\_\_\_\_

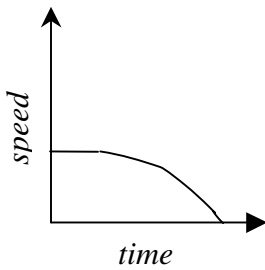
a)



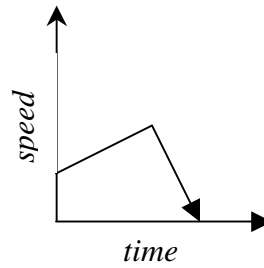
b)



c)



d)



20. Briefly describe below what might be happening to the car for EACH of the incorrect answer choices in the problem above.

Open-Ended Response

21. Insert grouping symbols into the numerical expression  $13 + 7 \cdot 4 - 2$  so that its value is 40.

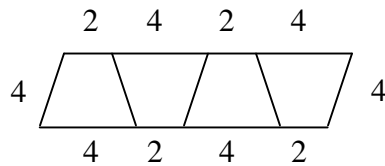
Re-write the expression here =>

22. Insert grouping symbols into  $2x + 2 \cdot 4 - 3$  so that its value is 12 when  $x = 5$ .

Re-write the expression here =>

23. Continue the pattern of adjacent similar trapezoids. What is the perimeter of a figure consisting of 6 trapezoids?

23. \_\_\_\_\_



24. Consider the previous problem. Can you find/develop a formula to find the perimeter of a figure containing  $n$  trapezoids?

24. \_\_\_\_\_

25. Absolute value brackets ( $| \quad |$ ) quantify the DISTANCE (in units) that a number is from zero on a number line.

For example,  $|-5| = 5$  and  $|6.2| = 6.2$  and  $|4 - 6| = |-2| = 2$

- Evaluate:
- a)  $\frac{5}{0}$  25a. \_\_\_\_\_
- b)  $\frac{0}{7}$  25b. \_\_\_\_\_
- c)  $|-13 - (-8)|$  25c. \_\_\_\_\_
- d)  $-|-9|$  25d. \_\_\_\_\_

- 26.
- a)  $\frac{1}{4} + \frac{2}{5} =$  26a. \_\_\_\_\_
- b)  $3\frac{1}{4} - 2\frac{5}{6} =$  26b. \_\_\_\_\_
- c)  $\frac{3}{4} \cdot \frac{2}{5} =$  26c. \_\_\_\_\_
- d)  $6\frac{3}{4} \div \frac{3}{8} =$  26d. \_\_\_\_\_

27. Think of a real-life situation and write a **STORY PROBLEM** (a.k.a. **WORD PROBLEM**) for problem 26d above.