

## ALGEBRA 1

Name \_\_\_\_\_

## 1-4 PRACTICE:

## PROPERTIES OF REAL NUMBERS

Name the property illustrated by each statement.

1.  $(2 \cdot 5) \cdot 6 = 2 \cdot (5 \cdot 6)$  Associative Property - Multiplication

2.  $\frac{7}{9} \cdot 1 = \frac{7}{9}$  Identity - Multiplication

3.  $h + 0 = h$  Identity - Addition

4.  $389 \cdot 0 = 0$  Multiplicative Property of Zero

5.  $27 \cdot x = x \cdot 27$  Commutative Property - Multiplication

6.  $9(-1 \cdot x) = 9(-x)$  Multiplicative Property of -1

7.  $-\frac{2}{3} \cdot -\frac{3}{2} = 1$  Inverse Property - Multiplication

8.  $(a + 3) + 2 = a + (3 + 2)$  Associative Property - Addition

9.  $(a + 3) + 2 = 2 + (a + 3)$  Commutative Property - Addition

10.  $2(a + 3) = 2a + 6$  Distributive Property

Simplify each expression. Justify each step.

11.  $8 + (9x + 4)$

$= 8 + (4 + 9x)$  Commutative

$= (8 + 4) + 9x$  Associative

$= 12 + 9x$  Simplify

12.  $\frac{33xy}{3x}$

$= \frac{33}{3} \cdot \frac{x}{x} \cdot y$

$= 11 \cdot 1 \cdot y$

$= 11y$

Rule of multiplying fractions

Simplify

Identity

Use deductive reasoning to tell whether each statement is true or false. If it is false, give a counter example.

13. For all real numbers  $r$ ,  $s$ , and  $t$ ,  $(r \cdot s) \cdot t = t \cdot (r \cdot s)$ .

True

14. For all real numbers  $p$  and  $q$ ,  $p \div q = q \div p$ .

False ;  $6 \div 3 \neq 3 \div 6$

15. For all real numbers  $x$ ,  $x + 0 = x$ .

True

16. For all real numbers  $a$  and  $b$ ,  $-a \cdot b = a \cdot (-b)$ .

True

Tell whether the expressions in each pair are equivalent. Show why.

17.  $(3 + 7) + m$  and  $m + 10$

$10 + m = m + 10$

18.  $(9 - 7) + \pi$  and  $2\pi$

$2 + \pi \neq 2\pi$

Show how to use mental math to simplify.

19.  $10 \cdot 2 \cdot 9 \cdot 5$

$= 10 \cdot 10 \cdot 9$

$= 900$

20.  $55.3 + 0.2 + 23.8 + 0.7$

$= 56 + 24$

$= 80$