

Unit 7 Test Review
Properties & Expressions

Name: Key

1) Name the property that is shown by each statement.

$ab = ba$ <i>Commutative</i> ⊗	$(12 \cdot a) \cdot 0 = 0$ <i>Zero</i> ⊗
$(4 \cdot 15) - (4 \cdot 6) = 4(15 - 6)$ <i>Distributive</i>	$4 + (2 + 7) = (4 + 2) + 7$ <i>Associative</i> ⊕
$abc \cdot 1 = abc$ <i>Identity</i> ⊗	$xyz + 0 = xyz$ <i>Identity</i> ⊕
$15 + -15 = 0$ <i>Inverse</i> ⊕	$e \cdot (3 \cdot 2) = (3 \cdot 2) \cdot e$ <i>Commutative</i> ⊗
$\frac{1}{4} \cdot 4 = 1$ <i>Inverse</i> ⊗	$5a(a + 6b) = 5a^2 + 30ab$ <i>Distributive</i>

2) Identify the parts of the expressions in: $c + 4a - 2b + 7$

Coefficients	Variables	Terms	Constant
<i>1, 4, -2</i>	<i>c, a, b</i>	<i>c, 4a, -2b, 7</i>	<i>7</i>

3) Translate the following words into algebraic expressions.

287 plus 932 <i>287 + 932</i>	7 subtracted from a number <i>n - 7</i>
a number n divided by 14 <i>n ÷ 14</i>	9 less than a number z <i>z - 9</i>
3 more than the quotient of a number x and 6. <i>3 + (x ÷ 6)</i>	6 times the quantity of a number m minus 5. <i>6(m - 5)</i>

4) Translate the following algebraic expressions to words.

$5 - x$ <i>Five minus a number x.</i>	$2(x + y)$ <i>Two times the quantity of a number x plus a number y.</i>
$\frac{2+h}{3}$ <i>The sum of two and a number h, divided by three</i>	$5g - 2$ <i>Five times a number g, minus two</i>

Evaluate each algebraic expression using the given replacements:

$a = 18$

$b = 3$

$c = 12$

5) $(15 - c)^3$

27

6) $\frac{a}{3} - 4$

2

7) $bc + 4(a - 7)$

 $36 + 4(18 - 7)$
 $36 + 44$

80

8) $2(c - b) + 3(a - c)$

 $2(12 - 3) + 3(18 - 12)$
 $2(9) + 3(6)$
 $18 + 18$

36

Simplify the following expressions. Use the distributive property when needed.

9) $m(m - 8)$

 $m^2 - 8m$

10) $20 + (j + 4)8 - 5j + 7$

 $3j + 59$

11) $10g - g + 8 + 4 + 23g - 5$

 $32g + 7$

12) $2(c + 4d) + c - 8d$

 $3c$

13) $8(h - 20)$

 $8h - 160$

14) $5(3w + 6) + 7w$

 $22w + 30$

15) $7h + 1 - h + 4 + 2 - 5h$

 $h + 7$

16) $11(m - 2n + 5k)$

 $11m - 22n + 55k$

17) $7(12 - 4k) + 3(3m + 7) + 6m$

 $84 - 28k + 9m + 21 + 6m$
 ~~$63 - 28k + 15m$~~
 $105 - 28k + 15m$

18) $8(8 + 3y) + 6(3 - 2y)$

 $64 + 24y + 18 - 12y$

 $82 + 12y$

19) $2t + 4x - t + 9x + 19$

 $t + 13x + 19$

20) $5r + 9r + 7 - 5 - r$

 $13r + 2$

21) $3y + 4s - 2s - 2y + 78$

 $y + 2s + 78$

22) $5k + 17r - 15r + 6k - 1$

 $11k + 2r - 1$

23) $4mn - 4nm + 14 + 6y$

 $14 + 6y$

24) $13v - 4v + 17 + 8x$

 $9v + 17 + 8x$

25) $2(r + 3) - r + 5$

 $2r + 6 - r + 5$

 $r + 11$

26) $3 + 4(x + 2) - 4x$

 $3 + 4x + 8 - 4x$

11

27) Are the following expressions equivalent? EXPLAIN.

$$5(a + 6) = 30a$$

$$5a + 30 \neq 30a$$

$$xy = yx$$

yes

$$xy = yx$$

Commutative
⊗

$$k - j = j - k$$

No

Commutative does not work for



Write an expression, then solve. MAKE SURE TO DEFINE YOUR VARIABLE IF NECESSARY!!!

28) You go to the supermarket. You get six bags of apples and 6 cans of soda. Write an expression to represent the cost.

Variables:

$$a = \text{cost of bags of apples}$$

$$s = \text{cost of can of soda}$$

Expression:

$$6a + 6s$$

If one bag of apples costs \$4.00 and one can of soda is 1.50, how much do you pay the cashier?

$$6(4) + 6(1.50)$$

$$24 + 9$$

$$\underline{\$33}$$

29) Helen bought 3 shirts and 4 pairs of pants. Write an algebraic expression that represents the total cost of the shirts and pants, not including tax.

Variables:

$$s = \text{\# of shirt}$$

$$p = \text{\# of pants}$$

Expression:

$$3s + 4p$$

If one shirt costs \$15.00 and one pair of pants costs \$20.00, how much will Helen spend?

$$3(15) + 4(20)$$

$$45 + 80$$

$$\underline{\$125}$$

<p>30) Paul exercises 5 days a week. Write an algebraic expression that represents how many minutes Paul exercises in two weeks.</p> <p>Variable: <u>$m = \text{minutes works out a day}$</u></p> <p>Expression: <u>$10m$</u></p> <p>If Paul exercises 40 minutes every day he exercises, how long does he exercise in two weeks?</p> <p style="text-align: center;"><u>$10(40)$</u></p> <p style="text-align: center;"><u>400 minutes</u></p>	<p>31) To print tickets, a printer charges a \$70 start up fee plus \$1.25 per ticket. Write an algebraic expression for the cost of t tickets.</p> <p>Variable: <u>$t = \text{\# of tickets printed}$</u></p> <p>Expression: <u>$70 + 1.25t$</u></p> <p>What is the cost of 650 tickets?</p> <p style="text-align: center;"><u>$70 + 1.25(650)$</u></p> <p style="text-align: center;">$70 + 1.25(650)$</p> <p style="text-align: center;"><u>$\\$882.50$</u> $\\232.50</p>
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<p>32) Art supplies cost \$.99 for each color marker and \$1.25 for each poster board. Write an expression for the total cost of supplies.</p> <p>Variables: <u>$m = \text{\# of color markers}$</u> <u>$p = \text{\# of posters}$</u></p> <p>Expression: <u>$.99m + 1.25p$</u></p> <p>If you bought seven markers and two poster boards how much money did you spend?</p> <p style="text-align: center;"><u>$.99(7) + 1.25(2)$</u></p> <p style="text-align: center;"><u>$\\$9.43$</u></p>	<p>33) Your friend has six more than twice as many Frankie's game tokens as you. Write an expression for the number of Frankie's game tokens your friend has.</p> <p>Variable: <u>$t = \text{\# of tokens}$</u></p> <p>Expression: <u>$2t + 6$</u></p> <p>If you have 9 game tokens, how many tokens do you guys have altogether?</p> <p style="text-align: center;"><u>24 friend</u> <u>$2(9) + 6 + 9$</u></p> <p style="text-align: center;"><u>$+ 9 \text{ you}$</u> <u>33 together</u></p> <p style="text-align: center;">33</p>
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<p>Factor the greatest common factor out of the polynomial. If the GCF is 1, write PRIME.</p>		
<p>33) $14x^2 - 7$</p> <p style="text-align: center;"><u>$7(2x^2 - 1)$</u></p>	<p>34) $2a^2 + ab^2 - 4a$</p> <p style="text-align: center;"><u>$a(2a + b^2 - 4)$</u></p>	<p>35) $21a + 21b$</p> <p style="text-align: center;"><u>$21(a + b)$</u></p>
<p>36) $c^2 + d^2 - 6$</p> <p style="text-align: center;"><u>prime</u></p>	<p>37) $60x^2 - 120xy - 30$</p> <p style="text-align: center;">$30(2x^2 - 4xy + 1)$</p> <p style="text-align: center;"><u>$30(2x^2 - 4xy - 1)$</u></p>	<p>38) $15g^5 + 5g^4 - 10g^2$</p> <p style="text-align: center;"><u>$5g^2(3g^3 + g^2 - 2)$</u></p>