

Unit 5 Test Review

A = Basic**B = Moderate****C = challenging****A**

1) State the property being illustrated.

a) $(5)(-2)(3) = (3)(-2)(5)$

a) commutative prop. of multiplication
(change order)

b) $5(c - 6) = 5c - 30$

b) distributive property
(two operations)

c) $(6 + 2) + 5 = 6 + (2 + 5)$

c) associative property of addition
(change groups)

d) $-4 + 4 = 0$

d) additive inverse
(opposite)

e) $(-18)(1) = -18$

e) multiplicative identity
(mirror)

f) $12 \cdot \left(\frac{1}{12}\right) = 1$

f) multiplicative inverse
(reciprocal)

g) $(4 \cdot 3)(9) = (3 \cdot 4)(9)$

g) commutative property of mult.
(change order)

A

2) Distribute

a) $6(x + 3) =$

a) $6x + 18$

b) $3a(a - 4) =$

b) $3a^2 - 12a$

c) $-y(y - x + 2) =$

c) $-y^2 + xy - 2y$

A

3) Combine Like Terms

a) $4x - x + 7y + 2x + 9 =$

$$\begin{aligned}
 & \text{a) } \boxed{4x} \ominus \boxed{x} + \boxed{7y} + \boxed{2x} + \boxed{9} \\
 & 4x - x + 2x + 7y + 9 = \\
 & \boxed{5x + 7y + 9}
 \end{aligned}$$

B

b) $4a - 3a^2 + 2a - (a - 6) + 5a^2 =$

$$\begin{aligned}
 & \text{b) } 4a - 3a^2 + 2a - (a - 6) + 5a^2 = \\
 & \boxed{4a} - \boxed{3a^2} + \boxed{2a} - \boxed{a} + \boxed{6} + \boxed{5a^2} = \\
 & \boxed{5a + 2a^2 + 6}
 \end{aligned}$$

A

4) Distribute & Combine Like Terms

a) $4(c + 8) + 6(c - 2) =$

$$\begin{aligned}
 & \text{a) } 4(c + 8) + 6(c - 2) \\
 & \boxed{4c} + \boxed{32} + \boxed{6c} - \boxed{12} \\
 & \boxed{10c + 20}
 \end{aligned}$$

b) $5(y + z) + 3(6z + 2y) =$

$$\begin{aligned}
 & \text{b) } 5(y + z) + 3(6z + 2y) \\
 & \boxed{5y} + \boxed{5z} + \boxed{18z} + \boxed{6y} \\
 & \boxed{11y + 23z}
 \end{aligned}$$

B

c) $-5x + 2y(y - 6) - 3y^2 + 3x =$

c) $-5x + 2y(y - 6) - 3y^2 + 3x$
 $-5x + 2y^2 - 12y - 3y^2 + 3x$
 $-2x - y^2 - 12y$

C

d) $\frac{3}{4}(t - 8) + \frac{1}{4}(12 + t) =$

d) $\frac{3}{4}(t - 8) + \frac{1}{4}(12 + t)$
 $\frac{3}{4}t - \frac{24}{4} + \frac{12}{4} + \frac{1}{4}t = t - 3$

C

e) $-2[5(c + 8) + 4(c - 3) + 2c] =$

e) $-2[5(c + 8) + 4(c - 3) + 2c]$
 $-2[5c + 40 + 4c - 12 + 2c]$
 $-10c - 80 - 8c + 24 - 4c =$
 $-22c - 56$

B

5) Evaluate when $w = -3$

$4w^2 + 3w^2 - w + 8 - 4w =$

f) $4w^2 + 3w^2 - w + 8 - 4w =$
 $7w^2 - 5w + 8 =$
 $7(-3)^2 - 5(-3) + 8 =$
 $63 + 15 + 8 = 86$

B

6) Evaluate if $x = -3$

$8x^2 - 4(x^2 + 2)$

b) $8x^2 - 4(x^2 + 2)$
 $8x^2 - 4x^2 - 8$
 $4x^2 - 8$
 $4(-3)^2 - 8 = 4(9) - 8 = 28$

B

7) Solve if $a = 3$

$7a^2 + 3(2 - 4a^2)$

$7a^2 + 3(2 - 4a^2)$
 $7a^2 + 6 - 12a^2$
 $-5a^2 + 6$
 $-5(3)^2 + 6 =$
 $-45 + 6 = -39$

B

8) $-3x(-5x - 2y + 7z) =$

8) $-3x(-5x - 2y + 7z)$
 $15x^2 + 6xy - 21xz$

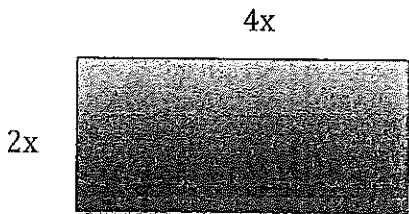
C

9) Solve if $\begin{matrix} x = -1 \\ y = 2 \\ z = -2 \end{matrix}$
 $-3x(-5x - 2y + 7z) =$

9) $-3x(-5x - 2y + 7z)$
 $15x^2 + 6xy + -21xz$
 $15(1) + 6(-1)(2) + (-21)(-1)(-2)$
 $15 + -12 + -42 = -39$

A

10) Write a simplified expression for the perimeter and area of the following figure. Then, tell what the perimeter and area would be if $x = 1, 2, 3, 4$ (make a table)



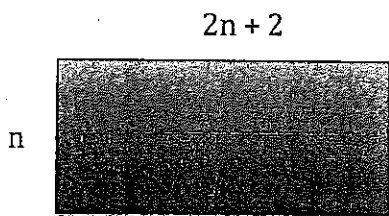
10) Area = $2x \cdot 4x = 8x^2$

x	Area = $8x^2$	Per = $12x$
1	$8(1)^2 = 8$	$12(1) = 12$
2	$8(2)^2 = 32$	$12(2) = 24$
3	$8(3)^2 = 72$	$12(3) = 36$
4	$8(4)^2 = 128$	$12(4) = 48$

Perimeter =
 $2(4x) + 2(2x)$
 $8x + 4x = 12x$

B

11) Write a simplified expression for the perimeter and area of the following figure. Then, tell what the perimeter and area would be if $n = 3, 4, 5, 6$



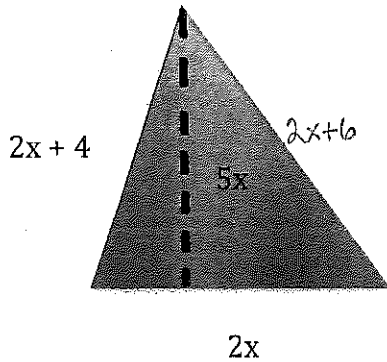
11) Area = $n(2n + 2)$
 $2n^2 + 2n$

Per	x	Area
$6(3)+4$ $18+4=$ 22	3	$2(3)^2 + 2(3) = 18+6 = 24$
$6(4)+4$ $24+4$ 28	4	$2(4)^2 + 2(4) = 32+8 = 40$
$6(5)+4$ $30+4$ 34	5	$2(5)^2 + 2(5) = 50+10 = 60$
$6(6)+4$ $36+4=40$	6	$2(6)^2 + 2(6) = 72+12 = 84$

Per = $2(2n + 2) + 2n = 4n + 4 + 2n$
 $6n + 4$

C

12) Write a simplified expression for the perimeter and area of the following figure. Then, tell what the perimeter and area would be if $x = 1, 2, 3, 4, 5$.



$$12) \text{ Area} = \frac{1}{2} (2x \cdot 5x)$$

$$\frac{1}{2} (10x^2) = \boxed{5x^2}$$

$$\text{Perimeter} = 2x+4+2x+6+2x = \boxed{6x+10}$$

x	Area	Perimeter
1	$5(1)^2 = 5$	$6(1)+10 = 16$
2	$5(2)^2 = 20$	$6(2)+10 = 22$
3	$5(3)^2 = 45$	$6(3)+10 = 28$
4	$5(4)^2 = 80$	$6(4)+10 = 34$
5	$5(5)^2 = 125$	$6(5)+10 = 40$

B

13) Give an example of an equation that is both the commutative and associative properties.

sample answer:

$$5 + (8+3) = (5+3) + 8$$

C

14) Solve if $z = -2$.

$$-6z(z-8) + 5z^2 - 13z - 15 - 9z^2 - 11z$$

$$14) -6z(z-8) + 5z^2 - 13z - 15 - 9z^2 - 11z$$

$$= \boxed{-6z^2} + \boxed{48z} + \boxed{5z^2} - \boxed{13z} - \boxed{15} - \boxed{9z^2} - \boxed{11z}$$

$$= -10z^2 + 24z - 15$$

$$= -10(-2)^2 + 24(-2) - 15$$

$$= -40 - 48 - 15 = \boxed{-103}$$

B

15) Which expression is equivalent to the expression: $6(x+2) - 3(x-1)$?

- a) $3x+9$ b) $9x+5$
 c) $3x+15$ d) $3x-15$

$$15) \overbrace{6(x+2)} - \overbrace{3(x-1)} =$$

$$6x+12 - 3x+3 =$$

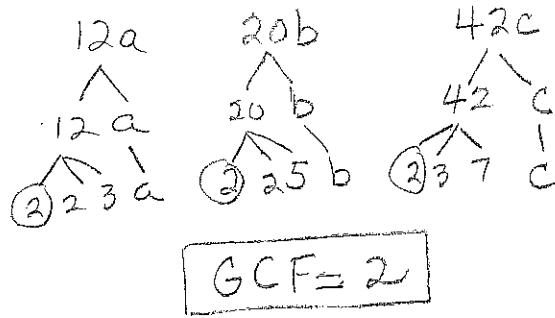
$$\boxed{3x+15}$$

C

A

16) What is the greatest common factor of the terms below?

12a 20b 42c



A

17) Factor: $27x + 18$

$$9(3x + 2)$$

A

18) Factor: $15x^2 - 27x$

$$3x(5x - 9)$$

B

19) Factor: $72x^3 - 48x^2 + 32$

$$8(9x^3 - 6x^2 + 4)$$

B

20) Factor: $20x - 70xy + 35y$

$$5(4x - 14xy + 7y)$$

B

21) What is the factored form of:

$10abc + 50ab - 25b$

$$5b(2ac + 10a - 5)$$

C

22) What is the factored form of:

$-6gh - 15g^2h + 81rs^3 + 9r^2s^2$

$$-3gh(2 + 5g) + 9rs^2(9s + r)$$

B

- 23) There are 29 teams in the NBA. Each team can have a maximum of 12 healthy players plus 3 players on injured reserve. Use the distributive property to find the maximum number of players who can be in the NBA.

$$29(12+3)$$

$$384+87$$

$$435 \text{ players}$$

- 24) Translate the sentences below into algebraic expressions:

A

- a) Two less than a number is four.

$$n-2=4$$

A

- b) Nine more than twice a number is twelve.

$$2n+9=12$$

B

- c) Seven is one-fourth of some number.

$$\frac{1}{4}n=7$$

A

- d) Three times a number decreased by 15.

$$3n-15$$

C

- e) The number x times the difference between b and c .

$$x(b-c)$$