

ORDER OF OPERATIONS

- 1 Simplify.
- a.) $6^2 + (-10) + (-9)$
- b.) $16 \div 4 \cdot 5 \cdot 8 \div 2$
- c.) $3(4 + 2) - 4 \cdot 2$
- d.) $\frac{12(5+1 \cdot 3)}{(4 \cdot 7 + 4)}$
- e.) $\sqrt{4} - 3^2 + 2 \cdot 1$
- f.) $9 - \sqrt[3]{8} + 1 \cdot (4 \div 2) + 4^2$
- g.) $|-18 + 2| - 3 \cdot 2^2$

- 3 Identify each property for the given examples.

- A $8 + (x + 3) = (8 + x) + 3$
- B $8(x + 3) = 8x + 24$
- C $x + 8 = x + 8$
- D $8 + x = x + 8$

- 4 Which property of real numbers is illustrated by the following?
 $5(mn) = (mn)5$

- A Commutative Property
- B Associative Property
- C Distributive Property
- D Symmetric Property

- 5 Which property of equality is illustrated by-
 $(ab)c = a(bc)$

- A Reflexive Property
- B Distributive Property
- C Associative Property
- D Commutative Property

PROPERTIES

- 2 Which property of real numbers justifies the following statement?
If $3a + 4b = 9$, then $9 = 3a + 4b$
- A Commutative Property
- B Associative Property
- C Distributive Property
- D Symmetric Property

- 6 Which property of equality is illustrated by-
If $a + b = c$ and $c = d + e$,
Then $a + b = d + e$.

- A Commutative Property
- B Symmetric Property
- C Reflexive Property
- D Transitive Property

7 Identify each property for the given examples.

- A $2y = 2y$
- B $2 + y = y + 2$
- C $2(r + 1) = 2r + 2$
- D If $r + 2 = 7$, then $7 = r + 2$

8 Which property is illustrated?

$$\left(\frac{1}{m}\right)1 = \frac{1}{m}$$

- A Multiplicative Inverse
- B Multiplicative Identity
- C Additive Identity
- D Additive Inverse

9 Which property is illustrated?

$$9 + (-9) = 0$$

- A Multiplicative Inverse
- B Multiplicative Identity
- C Additive Identity
- D Additive Inverse

10 Justify each step using the appropriate property.

$3(x - 4) + 8$	Given	
$3x - 12 + 8$		_____
$3x - 4$		_____

11 Justify each step using the appropriate property.

$2(x + 1) + 3(x - 2)$	Given	
$2x + 2 + 3x - 6$		_____
$2x + 3x + 2 - 6$		_____
$5x - 4$		_____

TRANSLATE ALGEBRAIC EXPRESSIONS

12 Which expression represents-
a divided by the sum of b and 3?

- A $b \div a + 3$
- B $\frac{a+3}{b}$
- C $\frac{a}{b+3}$
- D $\frac{a}{b} + 3$

13 Which expression represents
\$5 less than twice the cost of x?

- A $\frac{x}{2} - 5$
- B $5 - 2 + x$
- C $5 - 2x$
- D $2x - 5$

14 Select **each** phrase that verbally translates this algebraic expression:

$$\frac{1}{4}\sqrt[3]{x} - 5$$

- A One-fourth the cube root of x less five.
- B One-fourth times the cube root of x less than five.
- C Five subtract one-fourth times the cube root of x.
- D Five less than one fourth times the cube root of x.

15 Translate each of these into an algebraic expression.

- a.) The sum of twice a number and 10
- b.) 7 less than half a number
- c.) 12 decreased by 4 times a number

EVALUATE ALGEBRAIC EXPRESSIONS

16 Evaluate $a(b - c)$
when $a = 3$, $b = -4$, and $c = -7$

17 What is the value of $-2x^2 - y^2$
if $x = -3$ and $y = -2$?

18 Let $a = -4$ and $b = 2$, find
 $-a^2 - b$.

19 Find $-3(m + 7) - m^2$ when $m = -2$

20 Evaluate $-\sqrt[3]{a} + b^2$
when $a = 8$ and $b = -4$

21 Evaluate $4a - \sqrt{a^2} + \sqrt{b}$
when $a = -3$ and $b = 16$

22 Evaluate $-3|x + 4|$
when $x = -7$

23 Evaluate $2|3x - 6| - x$
when $x = 4$

24 The formula for surface area of a cone is
 $SA = \pi r(l + r)$. Find the surface area if
 $l = 3$ and $r = 6$.

A 36π

B 42π

C 50π

D 54π

COMBINE LIKE TERMS

25 Simplify $-3(4x + 1) + 2(x - 9)$

26 Simplify $(8x + 2) - (3x + 5)$

27 Simplify $12y^2 + 3(y^2 + x) + 4x$

28 Simplify $-3m - (2 - 4n) - 9$

29 Simplify $-13a - 4(7 - 3a)$

30 Simplify
 $5a - 1 - 3b - 14a + 3b - 12$