Algebra I Test Review
Expressions/Operations/Properties

ORDER OF OPERATIONS

1 Simplify.

a.) $6^2 + (-10) + (-9)$

$36 - 10 - 9$
$26 - 9$
17

b.) $16 \div 4 \cdot 5 \cdot 8 \div 2$

$4 \cdot 5 \cdot 8 \div 2$
$20 \cdot 8 \div 2$
$160 \div 2$
80

c.) $3(4 + 2) - 4 \cdot 2$

$12 + 6 - 4 \cdot 2$
$12 + 6 - 8$
$18 - 8$
10

d.) $\frac{12(5+1\cdot 3)}{(4\cdot 7+4)}$ → $\frac{12(5+3)}{28+4}$ → $\frac{12(8)}{32}$ → $\frac{96}{32}$ → 3

e.) $\sqrt{4} - 3^2 + 2 \cdot 1$

$2 - 9 + 2 \cdot 1$
$2 - 9 + 2$
$-7 + 2$
-5

f.) $9 - \sqrt[3]{8} + 1 \cdot (4 \div 2) + 4^2$

$9 - 2 + 1(4 \div 2) + 16$
$9 - 2 + 1(2) + 16$
$9 - 2 + 2 + 16$
$7 + 2 + 16$
$9 + 16$
25

g.) $|-18+2| - 3 \cdot 2^2$

$|-16| - 3 \cdot 4$
$16 - 12$
4

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

3 Identify each property for the given examples.

A $8 + (x + 3) = (8 + x) + 3$ Associative Property

B $8(x + 3) = 8x + 24$ Distributive

C $x + 8 = x + 8$ reflexive

D $8 + x = x + 8$ Commutative

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

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 $2y = 2y$ reflexive

B $2 + y = y + 2$ Commutative

C $2(r + 1) = 2r + 2$ Distributive

D If $r + 2 = 7$, then $7 = r + 2$ symmetric

8 Which property is illustrated?

$(\frac{1}{m})1 = \frac{1}{m}$ multiplying by 1

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

9 Which property is illustrated?

$9 + (-9) = 0$ Adding to make zero

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	Distributive
3x – 4	substitution

11 Justify each step using the appropriate property.

2(x + 1) + 3(x – 2)	Given
2x + 2 + 3x – 6	Distributive
2x + 3x + 2 – 6	commutative
5x – 4	substitution

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

$6 less than twice the cost of x?

flip flop

A $\frac{x}{2} - 6$

B $6 - 2 + x$

C $6 - 2x$

D $2x - 6$

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

$2x + 10$

b.) 7 less than half a number

$\frac{1}{2}x - 7$ or $\frac{x}{2} - 7$

c.) 12 decreased by 4 times a number

$12 - 4x$

EVALUATE ALGEBRAIC EXPRESSIONS

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

$3(-4 - -7)$

$3(-4 + 7)$

$3(3)$

9

NORMAL FLOAT AUTO REAL RADIAN MP
3(-4--7)
9

this is how to type it in the calculator

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

$-2(-3)^2 - (-2)^2$

$-2(9) - (4)$

$-18 - 4$

-22

NORMAL FLOAT AUTO REAL RADIAN MP
-2(-3)²-(-2)²
-22

you must put parentheses around negative numbers when you are raising them to a power

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

$-(-4)^2 - 2$

$-(16) - 2$

$-16 - 2$

-18

NORMAL FLOAT AUTO REAL RADIAN MP
-(-4)²-2
-18

remember the ( ) around negative numbers raised to a power

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

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

$-3(5) - (4)$

$-15 - 4$

-19

NORMAL FLOAT AUTO REAL RADIAN MP
-3(-2+7)-(-2)²
-19

remember the ( ) around negative numbers raised to a power

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

$-\sqrt[3]{8} + (-4)^2$

$-2 + 16$

14

NORMAL FLOAT AUTO REAL RADIAN MP
-∛8+(-4)²
14

you get the cube root in the calculator by typing math 4

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

$4(-3) - \sqrt{(-3)^2} + \sqrt{16}$

$4(-3) - \sqrt{9} + 4$

$-12 - 3 + 4$

$-15 + 4$

-11

NORMAL FLOAT AUTO REAL RADIAN MP
4(-3)-√((-3)²)+√16
-11

2nd x^2

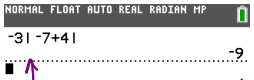
22 Evaluate $-3|x+4|$ when $x = -7$

$-3|-7+4|$

$-3|-3|$

$-3(3)$

-9



2nd Ø enter — to get absolute value

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

$2|3\cdot4-6|-4$

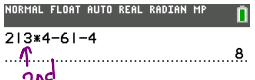
$2|12-6|-4$

$2|6|-4$

$2(6)-4$

$12-4$

8



2nd Ø enter — to get absolute value

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

$SA = \pi(6)(3+6)$

$= \pi(6)(9)$

$= 54\pi$

A 36π

B 42π

C 50π

D 54π

COMBINE LIKE TERMS

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

$-12x - 3 + 2x - 18$

$-10x - 21$

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

$8x + 2 - 3x - 5$

$5x - 3$

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

$12y^2 + 3y^2 + 3x + 4x$

$15y^2 + 7x$

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

$-3m - 2 + 4n - 9$

$-3m + 4n - 11$

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

$-13a - 28 + 12a$

$-1a - 28$

$-a - 28$

30 Simplify

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

$5a - 14a - 1 - 12 - 3b + 3b$ opposites add to Ø

$-9a - 13$