

HSD SUMMATIVE ASSESSMENT

COURSE: Algebra 1 (8th)

UNIT 1: Relationships Between Quantities and Reasoning with Equations

ANSWER KEY
 PG 1 of 7

Student Name: _____

Class Period: _____

Date: _____

Question 1 Standard: A1.SSE.A.1 Blooms: Understand DOK: 1 Total Points: 1

Write a verbal expression below for the algebraic expression:

$$a^2 + 23a$$

Answer: THE SUM OF A NUMBER SQUARED AND 23 TIMES A NUMBER.

Question 2 Standard: A1.SSE.A.1 Blooms: Understand DOK: 1 Total Points: 1

Write an algebraic expression below for the verbal expression:

Two thirds of the square of the number p .

Answer: $\frac{2}{3}(p)^2 = \frac{2}{3}p^2$

Question 3 Standard: A1.SSE.A.1 Blooms: Understand DOK: 2 Total Points: 1

Jaquan makes n dollars per hour working at the convenience mart and x dollars per hour working at the car wash. Write an algebraic expression below that describes his earnings if he worked 13 hours at the car wash and 27 hours at the convenience mart: total

Answer: $E = 27n + 13x$

Question 4 Standard: A1.SSE.A.1 Blooms: Understand DOK: 2 Total Points: 1

Explain the main difference between an "algebraic expression" and a "verbal expression" in the space provided below:

Answer: A VERBAL EXPRESSION IS WRITTEN IN WORDS, UNDEAS AN ALGEBRAIC EXPRESSION IS WRITTEN IN COEFFICIENTS, VARIABLES & OPERATORS.

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Question 5 Standard: A1.SSE.A.2 Blooms: Understand DOK: 3 Total Points: 3

Cassandra and Giacomo are writing algebraic expressions for the phrase "three times a sum of n squared and 3". Is either of them correct? Cassandra says: $3(n^2 + 3)$ Giacomo says: $3n^2 + 3$

Explain your answer below:

Circle the correct answer (1 point): Cassandra Giacomo Neither

Justify fully (2 points):

BECAUSE IT MENTIONS "3 TIMES A SUM" THAT MEANT THERE NEEDED TO BE PARENTHESES AROUND THE SUM & THE 3 GETS DISTRIBUTED

Question 6 Standard: A1.SSE.A.2 Blooms: Understand DOK: 1 Total Points: 2

Evaluate the expression: $8 \div 4 + 5(10 - 3)$

* TEACHER NOTE:

Show ALL work here (2 points):

$8 \div 4 + 5(10 - 3)$
 $2 + 5(7) = 2 + 35 = 37$

THESE ANSWER PROMPTS ARE A CONVENIENCE BUT A CORRECT ANSWER ANYWHERE SHOULD BE CONSIDERED RIGHT

Answer (1 point): 37

Question 7 Standard: A1.SSE.A.2 Blooms: Apply DOK: 2 Total Points: 3

Write an expression below using only the *Whole Numbers* 1 through 5 with ALL 5 digits involving ONLY addition and/or subtraction to create a numeric expression with a value of "3":

Show ALL work here (2 points) which PROVES your answer:

$5 - 4 = 1$
 $3 - 2 = 1$
 $+ 1$
 3

* Answer (1 point): $5 - 4 + 3 - 2 + 1$

Total Points for this Page:

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Question 8

Standard: A1.SSE.A.2

Blooms: Apply

DOK: 1

Total Points: 3

Simplify the following expression in the space provided below: $2(6x + 5) - 7x$

Show ALL your work (2 points):

$$2(6x+5) - 7x$$

$$12x + 10 - 7x$$

$$5x + 10$$

5x + 10

PREFERRED ANSWER
Answer (1 point):

$5(x+2)$

ALTERNATIVE ANSWER
SHOULD BE CONSIDERED CORRECT

Question 9

Standard: A1.CED.A.1

Blooms: Apply

DOK: 2

Total Points: 3

Solve the following equation in the space provided below: $6h + [(3)(10) - 8] = (2)(3)h + 22$

Show ALL your work (2 points):

$$6h + [(3)(10) - 8] = (2)(3)h + 22$$

$$6h + 22 = 6h + 22$$

$$0 = 0$$

IDENTITY STATEMENT

Answer (1 point):

Question 10

Standard: A1.CED.A.1

Blooms: Apply

DOK: 2

Total Points: 4

An electric generator can power 3550 Watts of electricity. Write and solve an equation which determines how many 75 Watt light bulbs the generator could power.

Write Equation here (1 point):

Show ALL your work (2 points):

THIS COUNTS AS EQUATION

$$\frac{3550 \text{ W}}{75 \text{ W}} = B$$

$$B = 47.\bar{3}$$

B = 47

Answer (1 point):

$\frac{\text{SOURCE}}{\text{LOAD}} = \# \text{ OF BULBS SERVED}$

CONCEPT

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Question 11

Standard: A1.CED.A.2

Blooms: Apply

DOK: 2

Total Points: 6

Solve the following equation, $2(6x + 4) = 4y$, in the space provided below and then graph the equation and label the y-intercept as instructed:

Show ALL your work (2 points):

$$2(6x + 4) = 4y$$

$$12x + 8 = 4y$$

$$y = 3x + 2$$

Answer (1 point): $y = 3x + 2$

Graph the equation (2 points):

Answer (1 point): y intercept coordinate point: (0, 2)

(DESIGNED STUDENT INSIGHT)

$m = \frac{3}{1}$
 $b = (0, 2)$

Question 12

Standard: A1.CED.A.4

Blooms: Apply

DOK: 2

Total Points: 3

Solve the following equation for "x" in the space provided below: $y = m(x + h) - b$

Show ALL your work (2 points):

$$y = m(x + h) - b$$

$$\frac{y + b}{m} = \frac{m(x + h)}{m}$$

$$\frac{y + b}{m} - h = x$$

$$\frac{y + b - hm}{m} = x$$

Answer (1 point): $\frac{y + b - hm}{m} = x$

SHOULD BE CONSIDERED CORRECT

ALTERNATIVE ANSWER

PREFERRED ANSWER

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Question 13

Standard: A1.REI.A.1

Blooms: Analyze

DOK: 3

Total Points: 4

A company that replicates DVDs spends \$1,800 per day in building overhead, plus \$0.80 per DVD in supplies and labor. If DVDs sell for \$1.69 per disk, what is the minimum number of DVDs the company must sell each day to make a profit?

Write Equation here (1 point): $TOTAL\ COST = FIXED\ COST + VARIABLE\ COST$

Show ALL your work (2 points):

$$T(D) = 0.80D + 1800$$

$$\therefore 1.69D = 0.80D + 1800$$

$$\frac{0.89D}{0.89} = \frac{1800}{0.89}$$

$$D = 2022.5$$

(DESIRED STUDENT INSIGHT)
STUDENT SHOULD REALIZE 2022 DVDs IS STILL A "LOSS"

Answer (1 point): 2023 DVDs

Question 14

Standard: A1.REI.A.1

Blooms: Analyze

DOK: 3

Total Points: 4

Find the value of "x" so that the rectangles shown below have the same area value:

Write Equation here (1 point): $A_1 = A_2 \therefore (l_1)(w_1) = (l_2)(w_2)$

Show ALL your work (2 points):

$$(12)(x) = (16)(x-2)$$

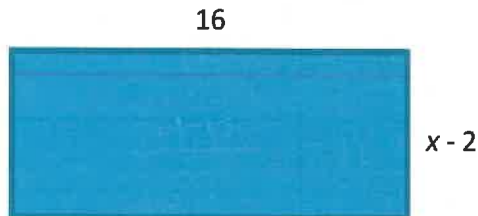
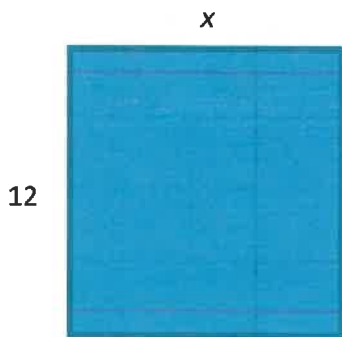
$$12x = 16x - 32$$

$$-4x = -32$$

$$x = 8$$

EITHER VERSION IS CORRECT

Answer (1 point): x = 8



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Question 15

Standard: A1.NQ.B.3

Blooms: Understand

DOK: 3

Total Points: 4

Jules just arrived from Europe and has a new job stacking boxes in a warehouse. Each box has dimensions of 1 ft by 1 ft by 1.5 feet, which means they take up 1.5 cubic feet. Jules remembers his European storage room measured 6 meters by 4 meters and the ceiling was 4 meters high. He notices they are proportionally similar. He begins to wonder how many of these 1.5 cubic foot boxes he could have fit into his European storage area of 96 cubic meters. Round your answer to the nearest whole box. (Hint: 1 meter = 3.26 feet)

Show ALL your work (3 points):

$$1 \text{ ft}^3 = ? \text{ m}^3 \rightarrow \left(\frac{1.5 \text{ ft}}{1}\right) \left(\frac{1 \text{ m}}{3.26 \text{ ft}}\right) \left(\frac{1 \text{ m}}{3.26 \text{ ft}}\right) \left(\frac{1 \text{ m}}{3.26 \text{ ft}}\right) = \frac{1}{34.6} \text{ m}^3$$

$$\frac{96 \text{ m}^3}{0.04 \text{ m}^3} = \# \text{ OF BOXES} = 1453.2$$

Answer (1 point): 1453 BOXES

STUDENTS SHOULD REALIZE FRACTIONAL BOXES MUST ROUND DOWNWARD

Question 16

Standard: A1.NQ.A.1

Blooms: Apply

DOK: 2

Total Points: 3

Magdalene is making beaded necklaces. She finds she can make a profit if she sets the price point of each necklace at \$28.62 before tax. If the tax rate is 7.25% of the total sale... what is the final cost of each necklace?

Write Equation here (1 point): $T = 28.62 + (0.0725)(28.62)$

Show ALL your work (1 point):

$$T = 28.62 + 2.07 = 30.69$$

Answer (1 point): \$30.69 EACH

STUDENTS SHOULD REALIZE 7.25% MEANS $\frac{7.25}{100} \therefore 0.0725$

Question 17

Standard: A1.REI.A.2

Blooms: Apply

DOK: 2

Total Points: 3

Solve the following equation for "x": $x^2 + 3x + 2 = 0$

Select the correct answer below (1 point)

a) $x = \{1, 2\}$

c) $x = \{-1, 2\}$

b) $x = \{-2, 1\}$

d) $x = \{-1, -2\}$

Show ALL your work (2 points):

$$(x+2)(x+1) = 0$$

$x+2=0 \rightarrow x=-2$
 $x+1=0 \rightarrow x=-1$

Answer (1 point): x = {-2, -1}

DO NOT SUBTRACT POINTS FOR MISSING IF (d) IS CIRCLED

Total Points for this Page: _____

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Question 18

Standard: A1.REI.A.2

Blooms: Apply

DOK: 2

Total Points: 3

Expand the following expression for "x": $(x-2)(x+2)$

Select the correct answer below (1 point)

a) $x^2 - 4$

c) $x^2 + 4$

b) $x^2 + 4x - 4$

d) $x^2 - 4x + 4$

Show ALL your work (2 points):

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

Answer (1 point):

$x^2 - 4$

TEACHER NOTE

IF STUDENT "KADUS"
THIS IS THE DIFFERENCE
OF TWO SQUARES
THEN THEY MUST
ACKNOWLEDGE THAT RATIONALE
TO NOT SHOW THE
DISTRIBUTION METHOD

Total Points for this Page: