

Math: Heart of Algebra

Practice for the New SAT (2016)

Problem Set 1: 8 Questions

Math: Heart of Algebra

1. Luisa is planning a bake sale. Each dozen (12) cupcakes will cost \$3.25 in materials to bake, and Luisa plans to sell each cupcake for \$1.50. Which expression represents Luisa's net profit in dollars after selling x dozen cupcakes?
- (A) $1.5x - 3.25x$
(B) $1.5(12) - 3.25x$
(C) $18x - 3.25x$
(D) $18x - 3.25\left(\frac{x}{12}\right)$
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2. If $-\frac{3}{8} \leq \frac{m}{-2} + 8 \leq 7$, what is a possible value of $4m - 2$?
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3. At a restaurant, a hamburger costs \$10.50 and a salad costs \$12.00. During a 7-hour shift, a waiter sold 18 salads and hamburgers, for a total of \$207. If the number of salads sold is expressed as s , and the number of hamburgers sold is expressed as h , which of the following inequalities is true?
- (A) $18 > s + n$
(B) $18 > s > h$
(C) $18 > h \geq 2s$
(D) $18 < h < s$
4. A small raindrop measuring 1.2 mm in diameter has a terminal velocity of 10.22 miles per hour. A large raindrop measuring 5.0 mm in diameter has a terminal velocity of 20.1 miles per hour. If there is a linear relationship between the diameter of a raindrop and its terminal velocity, what is the terminal velocity of a raindrop measuring 3.0 mm in diameter?
- (A) 17.7 miles per hour
(B) 14.9 miles per hour
(C) 11.4 miles per hour
(D) 7.6 miles per hour
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- 5.
- $$\frac{x}{2} = 2 + \frac{1}{2}y$$
- $$y - 8 = 24$$
- Based on the system of equations above, what is the value of $x^2 - y^2$?
- (A) 272
(B) 136
(C) 144
(D) 16

6. If $\frac{2}{x} - 10 = 12$, what is the value of x ?

7.

$$3x = 8y - 3$$

$$4y + 2x = 5$$

Based on the system of equations above,
what is the value of $\frac{x}{y}$?

(A) $\frac{3}{4}$

(B) $\frac{4}{3}$

(C) 3

(D) 5

8. A printing company charges \$0.20 per page printed with black ink and \$0.50 per page printed in color. The company also charges an additional fixed price for the

cost of printing the title and cover pages. The cost of printing a book, P , can be expressed as $P = 3.5 + 0.5x + 0.2y$. If a discount of $m\%$ is applied to the entire order, which equation represents the total cost of the order?

(A) $P = \frac{m}{100}(0.5x + 0.2y) + 3.5$

(B) $P = \frac{m}{10}(3.5 + 0.5x + 0.2y)$

(C) $P = \frac{m}{100}(3.5 + 0.5x + 0.2y)$

(D) $P = m(3.5 + 0.5x + 0.2y)$

Summary

8 Questions	
2 Easy, 6 Medium, 0 Hard	Estimated Time: 20 minutes

Answers

Answers	Difficulty	Topic	Other Topics
1) C	Easy	Linear Equation in one variable	
2) $6 < x < 65$	Medium	Linear Inequalities in one variable	
3) B	Medium	Create, solve, and interpret systems of linear inequalities in two variables.	
4) B	Medium	Linear relationship in two variables	
5) A	Medium	Two linear equations in two variables	
6) 0.909 or $\frac{1}{11}$	Easy	Solve linear equation in one variable	
7) B	Medium	Solve a system of two linear equations in two variables.	
8) C	Medium	Interpret the variables and constants in linear expressions within a given context.	