

Writing Linear Equations and Inequalities: two-variables (Unit 4)

Name: _____

Date: _____

1. What is the area of a floor whose length is 4 feet longer than its width?

A. $A = W^2 + 4$ B. $A = 2(2W + 4)$
 C. $A = W^2 + 4W$ D. $A = 4W^2$

2. A square window with sides S has the top 6 inches covered by a window shade. What is the area of the window that is uncovered?

A. $A = S - 6$ B. $A = S + (S - 6)$
 C. $A = 4S - 12$ D. $A = S(S - 6)$

3. A square measures 16 cm on a side. What happens to the area of the square if each side is divided by 2?

- A. The area is divided by 2.
 B. The area is divided by 4.
 C. The area is divided by 8.
 D. The area is divided by 16.

4. A bakery uses pans that are twice as long as they are wide. The table shows the width and area of certain pans.

| | | | | |
|-----------|---------------------|-------------------|-------------------|--------------------|
| width w | 0.5 ft | 1 ft | 2 ft | 3 ft |
| area a | 0.5 ft ² | 2 ft ² | 8 ft ² | 18 ft ² |

Which equation models the relationship between width and area? Explain how you know.

A. $a = \frac{w^2}{2}$ B. $a = w^2$
 C. $a = 2w^2$ D. $a = w^2 + 1$

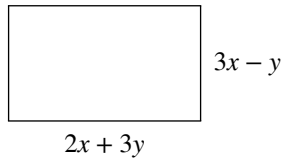
5. Dominoes have to be $2\frac{1}{2}$ times as long as they are wide. The table shows the area for dominoes of different widths.

| | | | | |
|-----------|---------------------|--------------------|----------------------|--------------------|
| width w | 1 in | 2 in | 3 in | 4 in |
| area a | 2.5 in ² | 10 in ² | 22.5 in ² | 40 in ² |

Which equation models the relationship between width and area? Explain how you know.

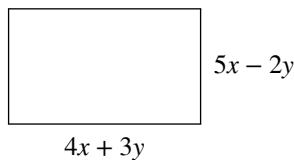
A. $a = 2.5w^2$ B. $a = \frac{w^2}{2.5}$
 C. $a = w^{2.5}$ D. $a = w^2 + 2.5$

6. Consider the given rectangle.



- a) In terms of x and y , what is the perimeter?
 b) If $x = \frac{1}{5}$ and $y = \frac{1}{2}$, then what is the value of the perimeter?
 c) If $x = 1$ and the perimeter is 18 cm, then what is the value of y ?

7. Consider the given rectangle.



- a) In terms of x and y , what is the perimeter?
 b) If $x = \frac{5}{9}$ and $y = \frac{1}{2}$, then what is the value of the perimeter?
 c) If $y = 3$ and the perimeter is 60 cm, then what is the value of x ?

8. On January 1, 1971, Arthur Clarke deposited \$20 in a bank that paid 5% interest compounded annually. How much money did he have in that account on January 1, 2001?
- A. \$86.44 B. \$224.86 C. \$319.42 D. \$536.87
9. On January 1, 1934, George Orwell deposited \$30 in a bank that paid 4% interest compounded annually. How much money was in that account on January 1, 1984?
- A. \$90.00 B. \$151.88 C. \$162.17 D. \$213.20
10. Smith's copy center charges 7¢ for each of the first 10 copies made. For every copy after that the charge is 5¢. Which formula best describes the cost C in dollars for making N copies (assuming $N \geq 10$)?
- A. $C = 0.05N + 0.07N + 10$
 B. $C = 0.05(N - 10) + (0.07 \times 10)$
 C. $C = 0.07(N + 10) + (0.05 \times 10)$
 D. $C = 0.05N + 0.07(N - 10)$

11. The scoring for a particular math contest that is all multiple choice is as follows:

The student starts with an automatic 40 points.

For each correct answer the student receives 5 points.

For each *incorrect* answer the student loses 2 points. (This is done to prevent guessing.)

Jonathon participates in the contest. He answers C questions correctly and I questions incorrectly. Which of these equations could be used to calculate his final score, M ?

- A. $M = 40 + 5C - 2I$ B. $M = 40 + 5C + 2I$
 C. $M = 40 - (5C - 2I)$ D. $M = 5C - 2I$

12. The load L of a beam of fixed length varies directly as the width W of the beam and as the square of the depth D . Write an equation describing this relation using k as the constant.