

1. The perimeter of a rectangle is 40 cm. If the length is 5 more than twice the width, find the length.

- A 5 cm
- B 10 cm
- C 15 cm
- D 20 cm

2. Suppose function $f(x) = |x|$ is shifted 5 units left and up 2 units. What function of g models this

- A $g(x) = |x - 5| + 2$
- B $g(x) = |x + 5| + 2$
- C $g(x) = |x - 2| + 5$
- D $g(x) = |x + 2| - 5$

3. Which of the following correctly expresses R as a function of E and I given the original function below?

$$I = \frac{E}{5R}$$

- A
- B
- C $R = 5EI$
- D $R = 5E/I$
- E $R = 5I/E$
- $R = E/(5I)$
- $R = I/(5E)$

4. The midpoint of a segment is at $(-5, 2)$. One of the endpoints is $(3, 10)$. What are the coordinates of the other endpoint?

- A $(-1, 6)$
- B $(-7, -6)$
- C $(-13, -6)$
- D $(-13, 6)$
- E $(-8, -8)$

5. The cost of buying s shirts and h hats can be determined by using the equation $C = 8s + 4h$. Suppose you have \$200 to spend. Which of the

- A Each shirt costs \$8.
- B Each hat costs \$4
- C Eight shirts and 12 hats cost \$112.
- D You can buy 15 shirts and 18 hats.
- E You can buy 20 shirts and 15 hats.

6. A company manufactures DVDs.

- The company spent \$247,000 to develop its process for manufacturing the DVDs.
- The company spends an additional \$1.25 to manufacture each DVD.

Which function represents the average total cost per DVD, y , for the company to manufacture x total DVDs?

- A $y = \frac{x}{1.25x}$
- B $y = \frac{1.25x}{x}$
- C $y = \frac{x}{1.25x + 247,000}$
- D $y = \frac{1.25x + 247,000}{x}$

7. Twenty-one students at a school have an allergy to peanuts, shellfish, or both.

- Fourteen students at the school are allergic to peanuts.
- Twelve students at the school are allergic to shellfish.

How many of the students are allergic to both peanuts and shellfish?

- A 12
- B 7
- C 5
- D 2

8. A city map is placed on a coordinate grid. The post office is located at the point $P(5, 35)$, the library is located at the point $L(15, 10)$, and the fire station is located at the point $F(9, 25)$. What is the ratio of the length of \overline{PF} to the length of \overline{LF} ?

- A 2 : 3
- B 3 : 2
- C 2 : 5
- D 3 : 5

9. The value, V , of a car can be modeled by the function $V(t) = 13,000(0.82)^t$, where t is the number of years since the car was purchased. To the nearest tenth of a percent, what is the monthly rate of depreciation?

- A 1.5%
- B 1.6%
- C 9.2%
- D 18.0%

10. Which expression is equivalent to $\left(\frac{16x^{\frac{1}{5}}y^{-2}}{x^{\frac{1}{5}}y^6}\right)^{\frac{3}{2}}$?

- A $24x^{\frac{9}{2}}y^{\frac{9}{2}}$
- B $\frac{24x^{\frac{3}{4}}}{y^9}$
- C $\frac{64}{x^{\frac{1}{2}}y^8}$
- D $\frac{64x^{\frac{1}{2}}}{y^{12}}$