

Name _____

SHOW AS MUCH WORK AS POSSIBLE BECAUSE YOU MAY RECEIVE PARTIAL CREDIT FOR THE WORK YOU DO IF YOUR ANSWER IS INCORRECT.

1. Formulate the following scenario as a system of two equations. State clearly the meaning of your x - and y -variables. Solve the system and state the solution in the terms of the original problem.
- A collector bought 8 comic books and 5 action figures for a total of \$45 at a flea market. If the action figures cost twice as much as the comic books, how much did each type of item cost?

Let x = the cost of a comic book and y = the cost of an action figure. Then the system for this scenario is:

$$\begin{cases} 8x + 5y = 45 \\ y = 2x \end{cases}$$

Solving by substitution:

$$8x + 5y = 45 \Rightarrow 8x + 5 \cdot (2x) = 45$$

$$\Rightarrow 8x + 10x = 45 \Rightarrow 18x = 45$$

$$x = 2.5$$

$$y = 2 \cdot 2.5 = 5$$

So each comic book costs \$2.50 and each action figure costs \$5.00.

2. Graph and solve the following system of equations:
- $$\begin{cases} x + 2y = 6 \\ 2x - y = 2 \end{cases}$$

Label the x - and y -intercepts for each equation and label the intersection point (if it exists) with its x - and y -coordinates.

