

Two-Equation Word Problems

Define x and y, write a system of two equations, solve it, and answer in context.

1.

A jar holds 45 nickels and dimes worth 345 cents. How many nickels and dimes are in the jar?

x = _____

y = _____

Equation 1: _____

Equation 2: _____

Solve:

Answer in context: _____

2.

A school sold 62 concert tickets. Adult tickets cost \$16 and student tickets cost \$13. Ticket sales totaled \$911. How many of each ticket were sold?

x = _____

y = _____

Equation 1: _____

Equation 2: _____

Solve:

Answer in context: _____

3.

At a school store, 2 notebooks and 1 pen cost \$13. A second purchase of 1 notebook and 3 pens costs \$19. Find each unit price.

x = _____

y = _____

Equation 1: _____

Equation 2: _____

Solve:

Answer in context: _____

4.

A farm pen contains 32 chickens and rabbits. Together they have 86 legs. How many chickens and rabbits are in the pen?

x = _____

y = _____

Equation 1: _____

Equation 2: _____

Solve:

Answer in context: _____

Two-Equation Word Problems
Worked Answer Key

Define x and y, write a system of two equations, solve it, and answer in context.

1. A jar holds 45 nickels and dimes worth 345 cents. How many nickels and dimes are in the jar?

x = nickels; y = dimes.
Model: $x + y = 45$ and $5x + 10y = 345$.
Multiply Eq. 1 by 5 and Eq. 2 by -1.
Scaled equations: $5x + 5y = 225$; $-5x - 10y = -345$.
Add: $-5y = -120$, so $y = 24$.
Back-substitute to get $x = 21$, $y = 24$.
Eq. 1: $1(21) + 1(24) = 45 = 45$.
Eq. 2: $5(21) + 10(24) = 345 = 345$.
The jar contains 21 nickels and 24 dimes.

2. A school sold 62 concert tickets. Adult tickets cost \$16 and student tickets cost \$13. Ticket sales totaled \$911. How many of each ticket were sold?

x = adult tickets sold; y = student tickets sold.
Model: $x + y = 62$ and $16x + 13y = 911$.
Multiply Eq. 1 by 13 and Eq. 2 by -1.
Scaled equations: $13x + 13y = 806$; $-16x - 13y = -911$.
Add: $-3x = -105$, so $x = 35$.
Back-substitute to get $x = 35$, $y = 27$.
Eq. 1: $1(35) + 1(27) = 62 = 62$.
Eq. 2: $16(35) + 13(27) = 911 = 911$.
35 adult tickets and 27 student tickets were sold.

Two-Equation Word Problems

Worked Answer Key

Define x and y , write a system of two equations, solve it, and answer in context.

- 3. At a school store, 2 notebooks and 1 pen cost \$13. A second purchase of 1 notebook and 3 pens costs \$19. Find each unit price.**

x = price of one notebook; y = price of one pen.

Model: $2x + y = 13$ and $x + 3y = 19$.

Multiply Eq. 1 by 1 and Eq. 2 by -2.

Scaled equations: $2x + y = 13$; $-2x - 6y = -38$.

Add: $-5y = -25$, so $y = 5$.

Back-substitute to get $x = 4$, $y = 5$.

Eq. 1: $2(4) + 1(5) = 13 = 13$.

Eq. 2: $1(4) + 3(5) = 19 = 19$.

A notebook costs \$4 and a pen costs \$5.

- 4. A farm pen contains 32 chickens and rabbits. Together they have 86 legs. How many chickens and rabbits are in the pen?**

x = chickens; y = rabbits.

Model: $x + y = 32$ and $2x + 4y = 86$.

Multiply Eq. 1 by 2 and Eq. 2 by -1.

Scaled equations: $2x + 2y = 64$; $-2x - 4y = -86$.

Add: $-2y = -22$, so $y = 11$.

Back-substitute to get $x = 21$, $y = 11$.

Eq. 1: $1(21) + 1(11) = 32 = 32$.

Eq. 2: $2(21) + 4(11) = 86 = 86$.

The pen contains 21 chickens and 11 rabbits.