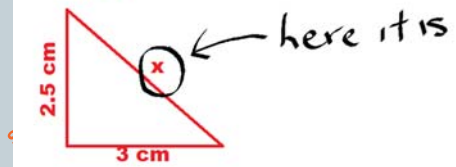
MasterMath

Algebra

EQUATIONS - PART

Find x



System of Linear Equations

$x + 6 = y$

$y + x = 26$

The number of boys (x) plus 6 equals the number of girls (y). The number of girls plus boys equals 26. How many boys are there?

Solution:
Solve for one variable, and substitute that solution into other equations:

$y = x + 6$
$y + x = 26$
$x + 6 + x = 26$
$2x + 6 = 26$
$2x + 6 - 6 = 26 - 6$
$2x = 20$
$x = 10$

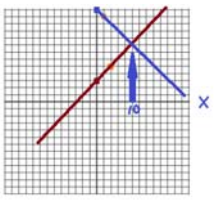
Solving Systems of Equation

System of Linear Equations

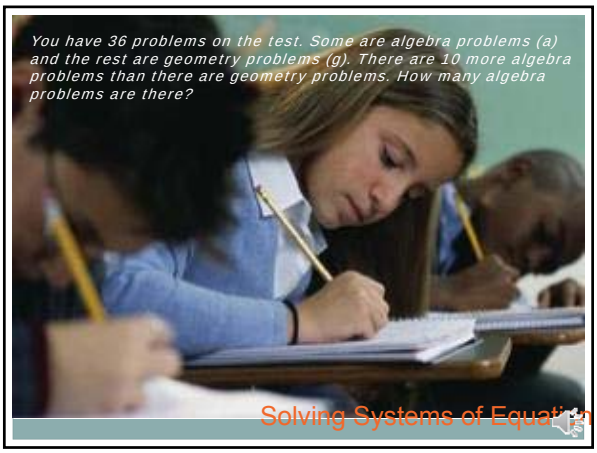
$y = x + 6$

$y = -x + 26$

The number of boys (x) plus 6 equals the number of girls (y). The number of girls plus boys equals 26. How many boys are there?



Solving Systems of Equation



You have 36 problems on the test. Some are algebra problems (a) and the rest are geometry problems (g). There are 10 more algebra problems than there are geometry problems. How many algebra problems are there?

Solution Steps:

1. What are you trying to solve for? Give it a name.
2. What do you know?
3. Set up equations and solve.

$a + g = 36$

$a - 10 = g$

$a + (a - 10) = 36$
$2a - 10 = 36$
$2a - 10 + 10 = 36 + 10$
$2a = 46$
$2a \div 2 = 46 \div 2$
$a = 23$

Solving Systems of Equation

You try it!

Sandra has a doll collection containing 40 dolls. Each doll has either brown hair or red hair. She has 8 more brown-haired dolls than red-haired dolls. How many red-haired dolls does she have?

Solving Systems of Equation

You try it!

Sandra has a doll collection containing 40 dolls. Each doll has either brown hair (b) or red hair (r). She has 8 more brown-haired dolls than red-haired dolls. How many red-haired dolls does she have? (r)

Solution Steps:

1. What are you trying to solve for? Give it a name.

r

2. What do you know:

b + r = 40
b = r + 8

3. Set up equations and solve:

b = r + 8
b + r = 40
r + 8 + r = 40
2r + 8 = 40
2r + 8 – 8 = 40 – 8
2r = 32
2r ÷ 2 = 32 ÷ 2
r = 16

Solving Systems of Equation

You try it!

You buy 3 music downloads at ***Zap*** and 2 music downloads at ***Flash***, and spend $16. Your friend buys 1 download at ***Zap*** and 4 downloads at ***Flash***, and he spends $12. How much do downloads at ***Zap*** cost?

Solving Systems of Equation

You try it!

You buy 3 music downloads at ***Zap*** (Z) and 2 music downloads at ***Flash*** (F), and spend $16. Your friend buys 1 download at ***Zap*** and 4 downloads at ***Flash***, and he spends $12. How much do downloads at ***Zap*** cost? (Z)

Solution Steps:

1. What are you trying to solve for? Give it a name.

Z

2. What do you know:

3Z + 2F = 16
1Z + 4F = 12

3. Set up equations and solve:

3Z + 2F = 16
3Z – 3Z + 2F = 16 – 3Z
2F = 16 – 3Z
2F ÷ 2 = (16 – 3 Z) ÷ 2
F = 8 – 1.5 Z

1Z + 4F = 12
Z + 4(8 – 1.5 Z) = 12
Z + 32 – 6 Z = 12
-5Z + 32 = 12
-5 Z + 32 - 32 = 12 – 32
-5Z ÷ -5 = -20 ÷ -5
Z = 4.00

Solving Systems of Equation