L6 Making Systems of Equations

In the rest of this unit we will be solving systems of equations. This involves solving two or more variables using two or more equations. Since some of the questions will be word problems we must start by making the equations.

Before you can make an equation you must first define each variable that you are using.

For each of the following
a) Define each variable
b) Make a system of equations

1. The sum of two numbers is 54 and their difference is 16.

x = 1st number
y = 2nd number

$x + y = 54$
$x - y = 16$

Calc Work
① $y = 54 - x$
② $-y = 16 - x$
$y = -16 + x$

2nd
Trace
Intersect

$x = 35$
$y = 19$

2. The sum of two numbers is 20. Two times the first number minus the second is 28.

x = 1st number
y = 2nd number

$x + y = 20$
$2x - y = 28$

$2x - y = 28$
$2x^2$

3. Two bananas and three oranges cost \$4.35. Five bananas and three oranges cost \$7.32.

x = bananas
y = oranges

$2x + 3y = \$4.35$
$5x + 3y = \$7.32$

4. Three times Mark's age less his fathers age is 4. The sum of their ages is 52.

x = Mark's age
y = dads age

$3x - y = 4$
$x + y = 52$

5. The average of two numbers is 34 and their difference is 16.

x = 1st number
y = 2nd number

$\frac{x+y}{2} = 34$
$x - y = 16$

6. Katrina has 14 coins, dimes and nickels. In all she has $1.

x = dimes
y = nickels

$x + y = 14$
$0.1x + 0.05y = 1$
(0.1x: value dime; 0.05y: value nickel)

dime = 10¢ = $0.1
nickel = $5¢ = 0.05

7. Mary paid her $2.50 theater ticket with 13 coins, some were dimes and the other were quarters.

x = dimes
y = quarters

$x + y = 13$
$0.1x + 0.25y = \$2.50$

8. On a test some problems are worth 5 marks and others are worth 4 marks. Julie solved 18 problems and got a total of 83 marks.

x = # of 5 mark questions
y = # of 4 mark questions

$x + y = 18$
$5x + 4y = 83$
($5x$: value; $4y$: value)

9. To see a play 4 adults and 11 children cost $29.25. Two nights later 7 adults and 13 children paid $40.25.

x = adult price
y = child price

$4x + 11y = \$29.25$
$7x + 13y = \$40.25$