



1 Solve $x + 7 = 12$

(1 mark)

Subtract 7 from both sides

$$x = 12 - 7 = 5$$

$$x = 5$$

2 Solve $\frac{w}{4} + 2 = 9$

(2 marks)

Keep the two sides equal by applying the same operation to both. Undo the addition first, then undo division by 4

$$\begin{array}{rcl} -2 & \frac{w}{4} & = 7 \\ \hline & w & = 28 \end{array}$$

$$w = 28$$

3 Solve

a. $x + 7 = 12$

b. $4y = 28$

c. $\frac{m}{3} = 5$

(3 marks)

a)

$$\begin{array}{rcl} x + 7 & = & 12 \\ -7 & & -7 \\ \hline x & = & 5 \end{array}$$

b)

$$\begin{array}{rcl} 4y & = & 28 \\ \div 4 & & \div 4 \\ \hline y & = & 7 \end{array}$$

c)

$$\begin{array}{rcl} \frac{m}{3} & = & 5 \\ \times 3 & & \times 3 \\ \hline m & = & 15 \end{array}$$

4 Solve $y - 9 = 14$

(1 mark)

Add 9 to both sides

$$y = 14 + 9 = 23$$

$$y = 23$$

5 Solve $5x - 7 = 23$

(2 marks)

$$\begin{array}{rcl} +7 & 5x & = 30 & +7 \\ \div 5 & x & = 6 & \div 5 \end{array}$$

$$x = 6$$

6 a. Solve $4m = 28$

b. Solve $t \div 5 = 6$

(2 marks)

a) Divide both sides by 4

$$m = 28 \div 4 = 7$$

b) Multiply both sides by 5

$$t = 6 \times 5 = 30$$

7 Solve $3(x + 4) = 27$

(2 marks)

$$\begin{array}{rcl} \div 3 & x + 4 & = 9 & \div 3 \\ -4 & x & = 5 & -4 \end{array}$$

$$x = 5$$

8 a. Solve $w + 13 = 40$

b. Solve $8k = 60$

(2 marks)

a) Subtract 13 from both sides

$$w = 40 - 13 = 27$$

b) Divide both sides by 8

$$k = 60 \div 8 = 7.5$$

9

a. Solve $c - 8 = 11$

b. Solve $6d = 54$

c. Solve $e \div 4 = 7$

(3 marks)

a) Add 8 to both sides

$$c = 11 + 8 = 19$$

b) Divide both sides by 6

$$d = 54 \div 6 = 9$$

c) Multiply both sides by 4

$$e = 7 \times 4 = 28$$

10

Solve $\frac{2x + 5}{3} = 7$

(3 marks)

$$\begin{array}{rcl}
 \times 3 & 2x + 5 & = 21 & \times 3 \\
 -5 & 2x & = 16 & -5 \\
 \div 2 & x & = 8 & \div 2
 \end{array}$$

$$x = 8$$

11

a. Solve $2x + 5 = 21$

b. Solve $3x - 4 = 11$

(3 marks)

a)

$$\begin{array}{rcl}
 & 2x + 5 & = 21 \\
 -5 & 2x & = 16 & -5 \\
 \div 2 & x & = 8 & \div 2
 \end{array}$$

b)

$$\begin{array}{rcl}
 & 3x - 4 & = 11 \\
 +4 & 3x & = 15 & +4 \\
 \div 3 & x & = 5 & \div 3
 \end{array}$$

$$a) x = 8 \quad b) x = 5$$

- 12 I think of a number. I multiply it by 4 and then subtract 7. The answer is 29.

Work out my number.

(3 marks)

Let the number be n

$$\begin{array}{rcl} 4n - 7 & = & 29 \\ +7 & & \\ \hline 4n & = & 36 \\ \div 4 & & \\ n & = & 9 \end{array}$$

9

- 13 Solve $\frac{x}{4} + 3 = 8$

(3 marks)

$$\begin{array}{rcl} \frac{x}{4} + 3 & = & 8 \\ -3 & & \\ \hline \frac{x}{4} & = & 5 \\ \times 4 & & \\ x & = & 20 \end{array}$$

$x = 20$

- 14
- Solve $3f = 19.5$
 - Solve $g + 4.7 = 9.2$
 - Solve $h \div 6 = 2.5$

(3 marks)

a) Divide both sides by 3

$$f = 19.5 \div 3 = 6.5$$

b) Subtract 4.7 from both sides

$$g = 9.2 - 4.7 = 4.5$$

c) Multiply both sides by 6

$$h = 2.5 \times 6 = 15$$

15

Priya thinks of a number.

She multiplies the number by 4 and then subtracts 9.

Her answer is 35.

Work out the number Priya thought of.

(3 marks)

Let n be the number, so $4n - 9 = 35$

$$\begin{array}{rcl}
 +9 & 4n & = & 44 & +9 \\
 \div 4 & n & = & 11 & \div 4
 \end{array}$$

Check

$$4 \text{ times } 11 = 44, 44 - 9 = 35$$

11

16

a. Solve $p + 9 = 4$ b. Solve $5q = -30$ c. Solve $r - 3 = -10$

(3 marks)

a) Subtract 9 from both sides

$$p = 4 - 9 = -5$$

b) Divide both sides by 5

$$q = -30 \div 5 = -6$$

c) Add 3 to both sides

$$r = -10 + 3 = -7$$

17

Tom is y years old.

His sister Freya is 7 years older than Tom.

a. Write down an expression, in terms of y , for Freya's age.

b. The sum of Tom's age and Freya's age is 23 years.

Work out Tom's age.

(3 marks)

a) Freya is 7 more than Tom, so her age is $y + 7$

b) Sum of ages

$$y + (y + 7) = 23, \text{ so } 2y + 7 = 23$$

$$b) 2y = 16, \text{ so } y = 8. \text{ Tom is 8 years old}$$

Check

$$\text{Tom } 8, \text{ Freya } 15, \text{ and } 8 + 15 = 23$$

- 18 A rectangle has length $(2x + 3)$ cm and width 5 cm.
The perimeter of the rectangle is 36 cm.
Work out the value of x .

(4 marks)

$$\text{Perimeter} = 2(2x + 3) + 2 \times 5$$

$$\begin{array}{rcl} 4x + 6 + 10 & = & 36 \\ 4x + 16 & = & 36 \\ -16 & & -16 \\ \hline 4x & = & 20 \\ \div 4 & & \div 4 \\ \hline x & = & 5 \end{array}$$

$$x = 5$$

- 19 a. Solve $7s = 42$
b. Solve $2t + 5 = 17$

(3 marks)

a) Divide both sides by 7

$$s = 42 \div 7 = 6$$

b) Subtract 5 from both sides

$$2t = 12$$

b) Divide both sides by 2

$$t = 6$$

- 20 a. Solve $15 = v + 8$
b. Solve $4w - 3 = 25$

(3 marks)

a) The equation is the same as $v + 8 = 15$, so $v = 15 - 8 = 7$

b) Add 3 to both sides

$$4w = 28$$

b) Divide both sides by 4

$$w = 7$$

21

- a. Solve $x - 17 = 26$
 b. Solve $5y + 8 = 43$
 c. Solve $20 - z = 12$

(4 marks)

a) Add 17 to both sides

$$x = 26 + 17 = 43$$

b) Subtract 8 from both sides

$$5y = 35, \text{ then divide by 5: } y = 7$$

c) $20 - z = 12$ means z is the difference between 20 and 12,
 so $z = 8$

Check

$$20 - 8 = 12$$

22

The angles of a triangle are x° , $(2x + 10)^\circ$ and $(3x + 20)^\circ$.

Work out the size of the largest angle.

(4 marks)

Angles in a triangle add to 180°

$$x + (2x + 10) + (3x + 20) = 180$$

$$6x + 30 = 180$$

-30

$$6x = 150 \quad -30$$

$\div 6$

$$x = 25 \quad \div 6$$

$$3x + 20 = 75 + 20 = 95$$

$$\boxed{95^\circ}$$