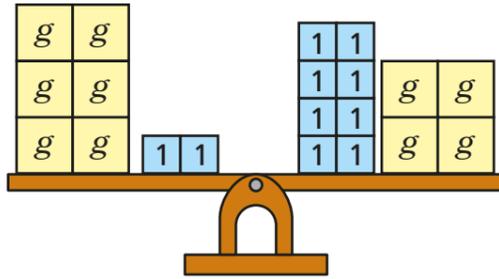


Solve equations with unknowns on both sides



1 Here are some scales.



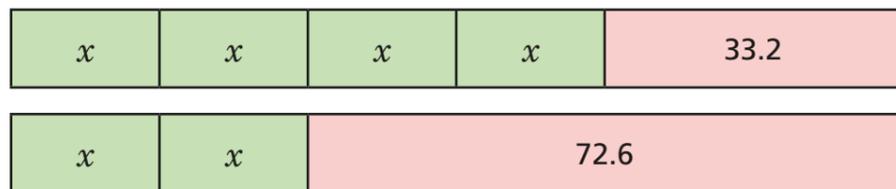
a) What equation is represented by the scales?

$$6g + 2 = 4g + 8$$

b) Solve the equation to work out the value of g .

$$g = 3$$

2 Here is a bar model.



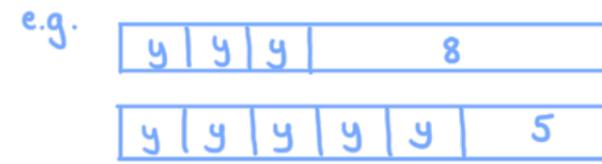
a) What equation is represented by the bar model?

$$4x + 33.2 = 2x + 72.6$$

b) Solve the equation to work out the value of x .

$$x = 19.7$$

3 a) Draw a diagram to represent the equation $3y + 8 = 5y + 5$



b) Solve the equation.

$$y = 1.5$$

4 Solve the equations.

a) $4h + 7 = h + 28$

d) $3(m + 5) = 10m + 1$

$$h = 7$$

$$m = 2$$

b) $15j + 25 = 42.85 + 5j$

e) $4n - 9.5 = \frac{1}{2}(n + 9)$

$$j = 1.785$$

$$n = 4$$

c) $\frac{1}{2}k + 5 = k + 2$

f) $18 - 2p = p + 3$

$$k = 6$$

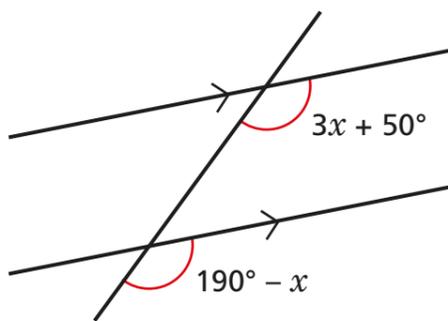
$$p = 5$$

- 5 Esther says that the two equations have the same solution. Solve the two equations.

$3x + 9 = x - 8$	$x + 9 = 3x - 8$
$2x + 9 = -8$ $2x = -17$ $x = -\frac{17}{2}$	$9 = 2x - 8$ $17 = 2x$ $\frac{17}{2} = x$

Comment on the mistake Esther has made.

- 6 Two angles are shown on the diagram.



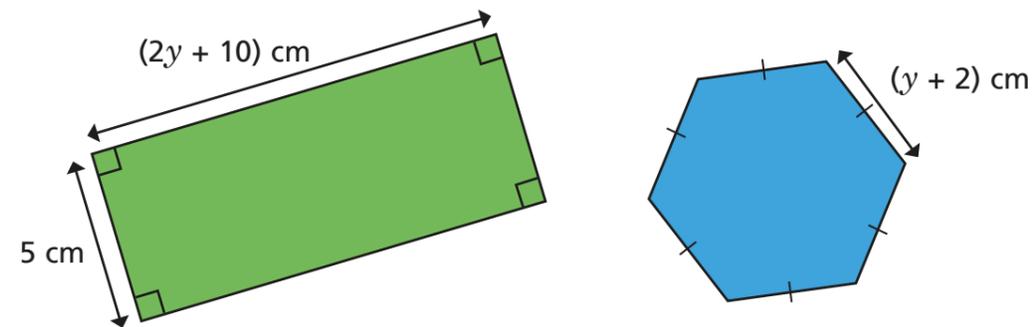
- a) Explain why $3x + 50 = 190 - x$

Corresponding angles are equal.

- b) Solve the equation to work out the value of x .

$x =$ 35°

- 7 The perimeter of the rectangle is equal to the perimeter of the regular hexagon.



- a) Explain why $2(2y + 15) = 6(y + 2)$.
b) Solve the equation to find the value of y .

$y =$ 9

- 8 Solve the equations.

a) $-f + 10 = 16 - 3f$

b) $10 - f = -16 - 3f$

$f =$ 3

$f =$ -13

- 9 Tick the equations that do not have a solution.

$2(x + 6) = 17 - 2x$

$6(5 + 2x) = 12x - 5$ ✓

$3(9 - 2x) = -2(5 + 3x)$ ✓

$12 - 4x = -4(5 - x)$

Discuss with a partner why this happens.