

Linear Equations

ANSWERS

Calculator | 30 minutes | Total marks: 30

Name Class

1

Solve

(a) $4x - 7 = 13$

$$4x = 20 \text{ (1)}$$

$$x = 5 \text{ (1)} \quad [2 \text{ marks}]$$

(b) $\frac{x}{3} + 5 = 9$

$$\frac{x}{3} = 4 \text{ (1)}$$

$$x = 12 \text{ (1)} \quad [2 \text{ marks}]$$

(c) $3(2x - 1) = 21$

$$2x - 1 = 7 \text{ or } 6x - 3 = 21 \text{ (1)}$$

$$x = 4 \text{ (1)} \quad [2 \text{ marks}]$$

2

Solve

(a) $5x + 3 = 2x + 18$

$$3x + 3 = 18 \text{ (1)}$$

$$3x = 15 \text{ (1)}$$

$$x = 5 \text{ (1)} \quad [3 \text{ marks}]$$

(b) $7 - 2x = 3x - 8$

$$7 = 5x - 8 \text{ (1)}$$

$$15 = 5x \text{ (1)}$$

$$x = 3 \text{ (1)} \quad [3 \text{ marks}]$$

3

Solve $4(x + 3) = 2(5x - 3)$

$$4x + 12 = 10x - 6 \text{ (1)}$$

$$18 = 6x \text{ (1)}$$

$$x = \underline{3 \text{ (1)}}$$

[3 marks]

4

Solve

(a) $\frac{3x-1}{4} = 5$

$$3x - 1 = 20 \text{ (1)}$$

$$x = \underline{7 \text{ (1)}}$$

[2 marks]

(b) $\frac{x+2}{3} = \frac{x-1}{2}$

$$2(x + 2) = 3(x - 1) \text{ (1)}$$

$$2x + 4 = 3x - 3 \text{ (1)}$$

$$x = \underline{7 \text{ (1)}}$$

[3 marks]

5

Write one word from the box next to each of these.

expression	equation	identity	formula
$5x - 2 = 13$	<u>equation</u>	$3(x + 2) \equiv 3x + 6$	<u>identity</u>
$A = \pi r^2$	<u>formula</u>	$4x^2 - 7$	<u>expression</u>

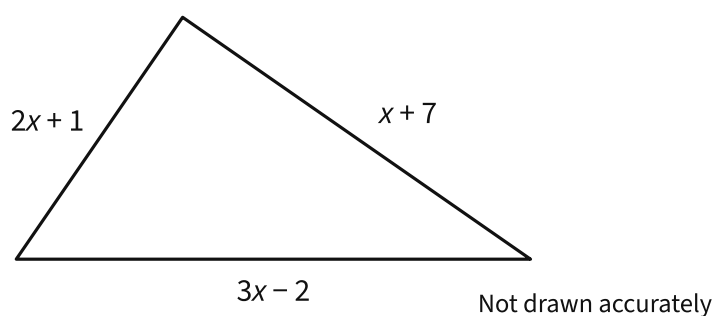
All four correct scores 2 marks. Two or three correct scores 1 mark.

[2 marks]

6

The diagram shows a triangle.

All the lengths are in centimetres.



The perimeter of the triangle is 36 cm.

Work out the length of the longest side.

$$2x + 1 + 3x - 2 + x + 7 = 36 \text{ (1)}$$

$$6x + 6 = 36, \text{ so } x = 5 \text{ (1)}$$

sides 11, 13 and 12 (1)

Answer 13 (1) cm [4 marks]

7

Ben is x years old.

Amy is 3 years older than Ben.

Carl is twice as old as Amy.

The total of their three ages is 45

Work out Ben's age.

$$\text{Amy } x + 3, \text{ Carl } 2(x + 3) \quad (1)$$

$$x + x + 3 + 2x + 6 = 45 \quad (1)$$

$$4x = 36 \quad (1)$$

Answer 9 (1) years [4 marks]

Question	Topic	RAG
1	I can solve equations with brackets and fractions	
2	I can solve equations with unknowns on both sides	
3	I can solve equations with brackets on both sides	
4	I can solve equations with algebraic fractions	
5	I know the difference between an expression, an equation, an identity and a formula	
6	I can form and solve an equation from a shape	
7	I can form and solve an equation from words	