

Solving Equations - Worksheet

Skill

Group A - Linear equations

Solve:

1) $x + 5 = 15$

2) $x + 6 = 15$

3) $x + 7 = 15$

4) $2x - 7 = 15$

5) $2x + 7 = 15$

6) $7 - 2x = 15$

7) $2x - 6 = x + 8$

8) $3x - 6 = x + 8$

9) $3x - 8 = x + 6$

Group B - Other equations

Solve:

1) $3(x + 3) = 2(x + 2)$

2) $3(x + 3) = 2(x - 2)$

3) $3(x - 3) = 2(x - 2)$

4) $\frac{2x+2}{3} = \frac{x-3}{2}$

5) $\frac{2x+2}{4} = \frac{x-3}{3}$

6) $\frac{3x-2}{3} = \frac{2x-3}{4}$

7) $2x^3 = 54$

8) $4x^4 = 64$

9) $\frac{x^4}{2} = 8$

Group C - Quadratic equations

Solve by factorising:

1) $x^2 - 10x + 21 = 0$

2) $2x^2 + 8x + 6 = 0$

3) $2x^2 - 4x - 6 = 0$

Solve by using the quadratic formula:

4) $x^2 + 3x + 2 = 0$

5) $x^2 - 3x + 2 = 0$

6) $2x^2 - 3x - 2 = 0$

Solve by completing the square:

7) $x^2 - 6x - 2 = 0$

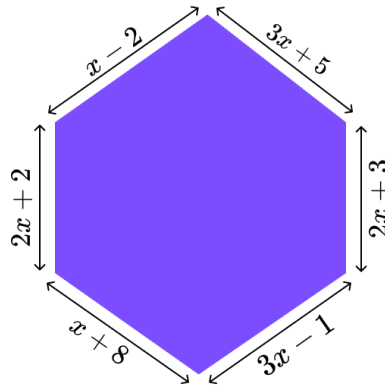
8) $x^2 - 6x + 2 = 0$

9) $x^2 - 6x + 1 = 0$

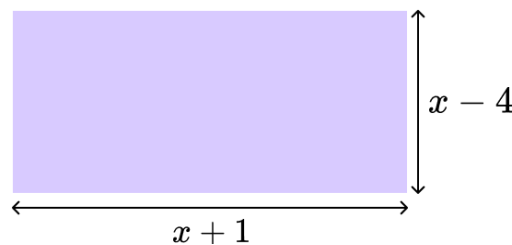
Solving Equations - Worksheet

Applied

- 1) The perimeter of the irregular hexagon is 51cm . Calculate the value of x .



- 2) The base of the rectangle is $x + 1$ and the height of the rectangle is $x - 4$. The area of the rectangle is equal to 6m^2 . Calculate the value of x .



- 3) Triangle ABC contains the angles: x , $2x$, and $3x$.
- Form an equation that represents the sum of the angles within this triangle.
 - Using your equation from part a), determine the value of x .
 - What type of triangle is ABC?

Solving Equations - Exam Questions

1) (a) Solve: $4y = 36$
(1)

(b) Solve: $x^2 - 5x - 24 = 0$
(3)
(4 marks)

2) (a) Solve: $7y - 8 = 13$
(2)

(b) Solve: $2x^2 - 5x - 2 = 0$
Give your answer to 3 significant figures.
.....
(3)
(5 marks)

3) (a) Solve: $4(3 - x) = 32$
(2)

(b) Write $x^2 - 6x + 1$ in the form $a(x + b)^2 + c$
where a , b , and c are integers.
.....
(3)

(c) Hence or otherwise, solve $x^2 - 6x + 1 = 0$.
Give exact answers.
.....
(2)
(7 marks)

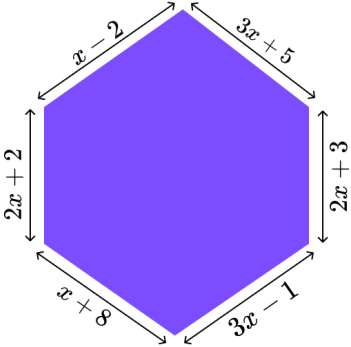
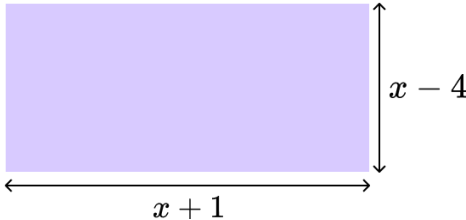
Solving Equations - Answers

	Question	Answer
	Skill Questions	
Group A	Solve: 1) $x + 5 = 15$ 2) $x + 6 = 15$ 3) $x + 7 = 15$ 4) $2x - 7 = 15$ 5) $2x + 7 = 15$ 6) $7 - 2x = 15$ 7) $2x - 6 = x + 8$ 8) $3x - 6 = x + 8$ 9) $3x - 8 = x + 6$	1) $x = 10$ 2) $x = 9$ 3) $x = 8$ 4) $x = 11$ 5) $x = 4$ 6) $x = -4$ 7) $x = 14$ 8) $x = 7$ 9) $x = 7$
Group B	Solve: 1) $3(x + 3) = 2(x + 2)$ 2) $3(x + 3) = 2(x - 2)$ 3) $3(x - 3) = 2(x - 2)$ 4) $\frac{2x+2}{3} = \frac{x-3}{2}$ 5) $\frac{2x+2}{4} = \frac{x-3}{3}$ 6) $\frac{3x-2}{3} = \frac{2x-3}{4}$ 7) $2x^3 = 54$ 8) $4x^4 = 64$ 9) $\frac{x^4}{2} = 8$	1) $x = -5$ 2) $x = -13$ 3) $x = 5$ 4) $x = -13$ 5) $x = -9$ 6) $x = -\frac{1}{6}$ 7) $x = 3$ 8) $x = \pm 2$ 9) $x = \pm 2$

Solving Equations - Answers

Group C	Solve by factorising: 1) $x^2 - 10x + 21 = 0$ 2) $2x^2 + 8x + 6 = 0$ 3) $2x^2 - 4x - 6 = 0$	1) $x = 3, x = 7$ 2) $x = -1, x = -3$ 3) $x = -1, x = 3$
	Solve by using the quadratic formula: 4) $x^2 + 3x + 2 = 0$ 5) $x^2 - 3x + 2 = 0$ 6) $2x^2 - 3x - 2 = 0$	4) $x = -1, x = -2$ 5) $x = 1, x = 2$ 6) $x = -0.5, x = 2$
	Solve by completing the square: 7) $x^2 - 6x - 2 = 0$ 8) $x^2 - 6x + 2 = 0$ 9) $x^2 - 6x + 1 = 0$	7) $x = 3 - \sqrt{11}, x = 3 + \sqrt{11}$ 8) $x = 3 - \sqrt{7}, x = 3 + \sqrt{7}$ 9) $x = 3 - 2\sqrt{2}, x = 3 + 2\sqrt{2}$

Solving Equations - Answers

	Question	Answer
	Applied Questions	
1)	The perimeter of the irregular hexagon is 51cm. Calculate the value of x. 	$x = 3$
2)	The base of the rectangle is $x + 1$ and the height of the rectangle is $x - 4$. The area of the rectangle is equal to 6m^2. Calculate the value of x. 	$(x - 4)(x + 1) = 6$ $x^2 - 3x - 10 = 0$ $(x - 5)(x + 2) = 0$ $x = 5$ only If $x = -2$ the lengths of the rectangle would be negative.
3)	Triangle ABC contains the angles: x, $2x$, and $3x$. a) Form an equation that represents the sum of the angles within this triangle. b) Using your equation from part a), determine the value of x. c) What type of triangle is ABC?	a) $6x = 180$ b) $x = 30^\circ$ c) 30°, 60°, 90° Right angled triangle

Solving Equations - Mark Scheme

	Question	Answer	
	Exam Questions		
1) (a)	Solve: $4y = 36$	(a) $y = 9$	(1)
(b)	Solve: $x^2 - 5x - 24 = 0$	(b) $(x \pm 8)(x \pm 3) = 0$ Their $x = \pm 8$ and $x = \pm 3$ $x = -3, x = 8$	(1) (1) (1)
2) (a)	Solve: $7y - 8 = 13$	(a) $7y = 21$ $y = 3$	(1) (1)
(b)	Solve: $2x^2 - 5x - 2 = 0$. Give your answer to 3 significant figures.	(b) Correct use of the quadratic formula $x = 2.85$ $x = -0.351$	(1) (1) (1)
3) (a)	Solve: $4(3 - x) = 32$	(a) $12 - 4x = 32$ or $3 - x = 8$ $x = -5$	(1) (1)
(b)	Write $x^2 - 6x + 1$ in the form $a(x + b)^2 + c$ where a, b , and c are integers.	(b) $(x - 3)^2 - 9 + 1$ $(x - 3)^2 - 8$ $a = 1$ $b = -3$ $c = -8$	(1) (1) (1) (1)
(c)	Hence or otherwise, solve $x^2 - 6x + 1 = 0$. Give exact answers.	(c) $x = 3 + 2\sqrt{2}$ $x = 3 - 2\sqrt{2}$	(1) (1)

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