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Equations - Worksheet

Skill

Group A - Simple linear equations

Solve:

1) $2x + 1 = 7$

2) $2x + 1 = 11$

3) $3x + 1 = 16$

4) $3x + 1 = x + 5$

5) $3x + 1 = 2x + 7$

6) $5x + 1 = x + 7$

7) $2(x - 4) = 8$

8) $3(x - 4) = 18$

9) $4(x - 3) = 8$

10) $2(x - 4) = x + 3$

11) $3(x - 4) = x + 4$

12) $5(x - 4) = 2x + 7$

Group B - Equations with fractions

Solve:

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

2) $\frac{x}{5} = 3$

3) $\frac{x}{9} = 3$

4) $\frac{24}{x} = 3$

5) $\frac{24}{x} = 6$

6) $\frac{24}{x} = 2$

7) $\frac{x+1}{4} = 2$

8) $\frac{x+1}{5} = 3$

9) $\frac{x+3}{5} = 6$

10) $\frac{3(x-1)}{2} = 15$

11) $\frac{3(x-2)}{2} = 18$

12) $\frac{3(x-2)}{4} = 9$

Group C - Quadratic equations

Solve:

1) $x^2 + 5x + 6 = 0$

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

3) $x^2 + 7x + 12 = 0$

4) $x^2 + x - 30 = 0$

5) $x^2 + 7x - 30 = 0$

6) $x^2 + 7x - 8 = 0$

7) $x^2 - 4x - 21 = 0$

8) $x^2 - 4x - 12 = 0$

9) $x^2 - 11x - 12 = 0$

10) $x^2 - 9x + 20 = 0$

11) $x^2 - 12x + 20 = 0$

12) $x^2 - 12x + 27 = 0$

Equations - Worksheet

Applied

1) **(a)** Make I the subject:

$P = I^2 R$

(b) Make V the subject:

$\rho = \dfrac{m}{V}$

2) **(a)** Solve these simultaneous equations:

$2x + y = 5$

$3x + 4y = 10$

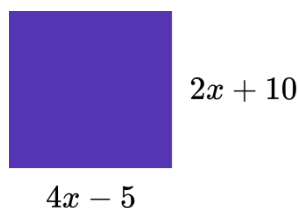**(b)** Solve these simultaneous equations:

$2x - 3y = 4$
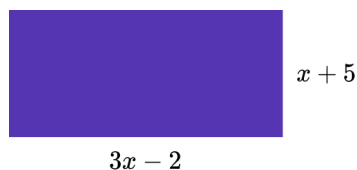
$7x + 5y = 14$

3) **(a)** Solve:

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

(b) Solve:

$2x^2 + 7x - 9 = 0$

4) **(a)** Here is a square. All lengths are in cm. Find its perimeter.

$2x + 10$

$4x - 5$

(b) Here is a rectangle. All lengths are in cm. Its length is twice its width.
Find its perimeter.

$x + 5$

$3x - 2$

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Equations - Exam Questions

1) Solve: $4x - 5 = 14$ ....

(2 marks)

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2) Solve the simultaneous equations: ....
$4x + y = 2$
$x - y = 8$ **(2 marks)**

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3) Solve: $x^2 - 4x - 32 = 0$ ....

(3 marks)

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4) Rearrange the equation to make x the subject: ....
$y = 5x + 7$ **(2 marks)**

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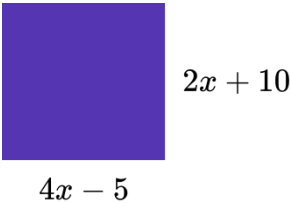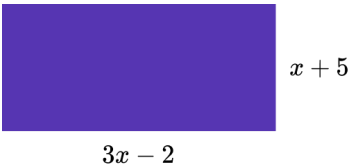
Equations - Answers

	Question	Answer
Group A	Skill Questions	
	Solve: **1)** $2x + 1 = 7$ **2)** $2x + 1 = 11$ **3)** $3x + 1 = 16$ **4)** $3x + 1 = x + 5$ **5)** $3x + 1 = 2x + 7$ **6)** $5x + 1 = x + 7$ **7)** $2(x - 4) = 8$ **8)** $3(x - 4) = 18$ **9)** $4(x - 3) = 8$ **10)** $2(x - 4) = x + 3$ **11)** $3(x - 4) = x + 4$ **12)** $5(x - 4) = 2x + 7$	**1)** $x = 3$ **2)** $x = 5$ **3)** $x = 5$ **4)** $x = 2$ **5)** $x = 6$ **6)** $x = 1.5$ **7)** $x = 8$ **8)** $x = 10$ **9)** $x = 5$ **10)** $x = 11$ **11)** $x = 8$ **12)** $x = 9$
Group B	Solve: **1)** $\dfrac{x}{4} = 3$ **2)** $\dfrac{x}{5} = 3$ **3)** $\dfrac{x}{9} = 3$ **4)** $\dfrac{24}{x} = 3$ **5)** $\dfrac{24}{x} = 6$ **6)** $\dfrac{24}{x} = 2$ **7)** $\dfrac{x+1}{4} = 2$ **8)** $\dfrac{x+1}{5} = 3$ **9)** $\dfrac{x+3}{5} = 6$	**1)** $x = 12$ **2)** $x = 15$ **3)** $x = 27$ **4)** $x = 8$ **5)** $x = 4$ **6)** $x = 12$ **7)** $x = 7$ **8)** $x = 14$ **9)** $x = 27$

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Equations - Answers

	10) $\frac{3(x-1)}{2} = 15$ **11)** $\frac{3(x-2)}{2} = 18$ **12)** $\frac{3(x-2)}{4} = 12$	**10)** $x = 11$ **11)** $x = 14$ **12)** $x = 18$
Group C	Solve: **1)** $x^2 + 5x + 6 = 0$ **2)** $x^2 + 7x + 6 = 0$ **3)** $x^2 + 7x + 12 = 0$ **4)** $x^2 + x - 30 = 0$ **5)** $x^2 + 7x - 30 = 0$ **6)** $x^2 + 7x - 8 = 0$ **7)** $x^2 - 4x - 21 = 0$ **8)** $x^2 - 4x - 12 = 0$ **9)** $x^2 - 11x - 12 = 0$ **10)** $x^2 - 9x + 20 = 0$ **11)** $x^2 - 12x + 20 = 0$ **12)** $x^2 - 12x + 27 = 0$	**1)** $x = -2$ or $x = -3$ **2)** $x = -1$ or $x = -6$ **3)** $x = -4$ or $x = -3$ **4)** $x = -6$ or $x = 5$ **5)** $x = -10$ or $x = 3$ **6)** $x = -8$ or $x = 1$ **7)** $x = -3$ or $x = 7$ **8)** $x = -2$ or $x = 6$ **9)** $x = -1$ or $x = 12$ **10)** $x = 4$ or $x = 5$ **11)** $x = 2$ or $x = 10$ **12)** $x = 3$ or $x = 9$

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Equations - Answers

	Question	Answer
	Applied Questions	
1)	**(a)** Make I the subject: $P = I^2 R$ **(b)** Make V the subject: $\rho = \dfrac{m}{V}$	**(a)** $I = \sqrt{\dfrac{P}{R}}$ **(b)** $V = \dfrac{m}{\rho}$
2)	**(a)** Solve these simultaneous equations: $2x + y = 5$ $3x + 4y = 10$ **(b)** Solve these simultaneous equations: $2x - 3y = 4$ $7x + 5y = 14$	**(a)** $x = 2$ and $y = 1$ **(b)** $x = 2$ and $y = 0$
3)	**(a)** Solve: $2x^2 - 5x - 3 = 0$ **(b)** Solve: $2x^2 + 7x - 9 = 0$	**(a)** $x = -0.5$ or $x = 3$ **(b)** $x = -4.5$ or $x = 1$
4)	**(a)** Here is a square. All lengths are in cm. Find its perimeter. $\qquad\qquad 2x + 10$ $4x - 5$ **(b)** Here is a rectangle. All lengths are in cm. Its length is twice its width. Find its perimeter. $\qquad\qquad x + 5$ $3x - 2$	**(a)** Perimeter is $100cm$ **(b)** Perimeter is $102cm$

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Equations - Mark Scheme

	Question	Answer	
	Exam Questions		
1)	Solve: $4x - 5 = 14$	$4x = 19$ $x = 4\dfrac{3}{4}$	**(2)**
2)	Solve the simultaneous equations: $4x + y = 2$ $x - y = 8$	$4x + x = 2 + 8$ $5x = 10$ $x = 2$ $4(2) + y = 2$ $8 + y = 2$ $y = -6$	**(3)**
3)	Solve: $x^2 - 4x - 32 = 0$	$x^2 - 4x - 32 = 0$ $(x \pm a)(x \pm b) = 0$ $(x - 8)(x + 4) = 0$ $x = 8 \text{ or } x = -4$	**(3)**
4)	Rearrange the equation to make x the subject: $y = 5x + 7$	$y = 5x + 7$ $y - 7 = 5x$ $\dfrac{y-7}{5} = x$ $x = \dfrac{y-7}{5}$	**(2)**

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