



- 1) Express 63 as a product of prime factors

- 2) Find the 50th term of the sequence 6, 10, 14, 18, ...

- 3) Work out $10 - 8 + 3 \times 2$

- 4) Work out $448.5 \div 1.3$

- 5) Work out 73.6×0.58



- 1) Work out $2\frac{2}{5} + 3\frac{3}{4}$
- 2) Increase £330 by 20%
- 3) Expand and simplify $3(5x + 6) - 2(x + 5)$
- 4) Solve $2x - 6 = 5x + 9$
- 5) Work out the value of $5 - 3d$ when $d = -5$



- 1) Work out $3\frac{1}{4} \div 1\frac{2}{3}$
- 2) Decrease £560 by 20%
- 3) Expand and simplify $2(4x + 5) - 2(3 - 2x)$
- 4) Solve $6x + 3 = 7 - 4x$
- 5) Work out the value of $3c^2$ when $c = 2$

- 1) Express 216 as a product of prime factors and hence show if it is a square or a cube number
- 2) Find the 50th term of the sequence -4, 5, 14, 23, ...
- 3) Work out $2 \times 3^2 - 4 + 5 \times 6$
- 4) Work out $43.68 \div 1.2$
- 5) Work out 0.083×0.17



- 1) Work out $2\frac{4}{5} \div 3\frac{1}{3}$
- 2) Decrease £780 by 15%
- 3) Expand and simplify $4(3x + 2) - (3 - 2x)$
- 4) Solve $3x - 13 = 7 + 5x$
- 5) Work out the value of $8 - 2c^2$ when $c = 3$



1) Expand and simplify $(3x - 5)(7x - 4)$

2) Factorise fully $8x + 20x^3$

3) Factorise $x^2 - 2x - 8$

4) Work out $33 \div 0.3$

5) Work out $3\frac{1}{3} \times 2\frac{2}{5}$



- 1) Make x the subject of $y = ax^2 - 4$
- 2) Divide 400kg in the ratio 3 : 5
- 3) Work out the value of $3x^2 + y$ when $x = -2$ and $y = 6$
- 4) The mean of 7, 12, 3, x , 11 is 9. Find x
- 5) Solve $\frac{x}{2} + 6 = 3x - 14$



1) Expand and simplify $(4x + 5)(3x - 7)$

2) Factorise fully $8x^3 + 12x^2$

3) Factorise $x^2 - 9x + 20$

4) Work out $64 \div 0.5$

5) Work out $1\frac{1}{3} \div 2\frac{1}{6}$



- 1) Make x the subject of $y = \sqrt{ax - 4}$
- 2) Divide 450kg in the ratio 2 : 7
- 3) Work out the value of $2x^2 - y$ when $x = 3$ and $y = -2$
- 4) The median of 7, 25, x , 7, 8 and 28 is 10. Find x
- 5) Solve $\frac{3x+7}{2} = 2x + 14$



1) Expand and simplify $(3x - 5)(4x - 7)$

2) Factorise fully $6x^3 - 18x^4$

3) Factorise $x^2 - 3x - 18$

4) Work out $64 \div 0.4$

5) Work out $3\frac{1}{3} - 2\frac{5}{6}$



- 1) Make x the subject of $y = \sqrt{ax} - b$
- 2) Divide 440kg in the ratio 3 : 5
- 3) Work out the value of $3x^2 - 2y$ when $x = -2$ and $y = 3$
- 4) The mean of 7, 15, x , 7, 8 and 18 is 10. Find x
- 5) Solve $\frac{2x-1}{3} = 2x - 11$

HA3.1



- 1) Solve the inequality $4x - 6 \leq 2x + 3$

- 2) Expand and simplify $3(2x + 3) + 4(6 - 3x)$

- 3) Work out $5\frac{2}{7} - 1\frac{3}{4}$

- 4) Work out 3.6×4.6

- 5) Work out $2802 \div 0.6$



1) Simplify $\sqrt{75} + 3\sqrt{12}$

2) Simplify $(2xy^2)^3$

3) Complete $4.5\text{cm}^2 = \dots\dots\text{mm}^2$

4) Make x the subject of $y = \sqrt{\frac{x+a}{b}}$

5) Calculate the area of a semi-circle with diameter 12cm. Leave your answer in terms of π



- 1) Solve the inequality $3x - 5 > 5x + 7$

- 2) Expand and simplify $5(a - 2b) - 3(b + 2a)$

- 3) Work out $2\frac{2}{3} \div 1\frac{3}{5}$

- 4) Work out 0.28×3.9

- 5) Work out $47.67 \div 0.7$



1) Simplify $2\sqrt{75} + \sqrt{8} + \sqrt{27} - 3\sqrt{12}$

2) Simplify $a^4 \times a^2 \times b^3 \div a$

3) Complete $65\text{cm}^2 = \dots\dots\dots\text{m}^2$

4) Make x the subject of $9 + ax = 3x - b$

5) Calculate the area of a semi-circle with diameter 5cm. Leave your answer in terms of π



- 1) Solve the inequality $7x + 5 \geq 5x - 7$
and show the solution on a number line

- 2) Expand and simplify $3(2a - b) + 3(4b - 3a)$

- 3) Work out $4\frac{1}{6} \div 2\frac{3}{5}$

- 4) Work out 0.34×3.5

- 5) Work out $2.07 \div 0.6$



- 1) Simplify $\sqrt{20} + 2\sqrt{45} + \sqrt{50} + \sqrt{80}$

- 2) Simplify $a^5 \times a^3 \times b^2 \div a^2$

- 3) Complete $65\text{cm}^2 = \dots\dots\dots\text{mm}^2$

- 4) Make x the subject of $ax = xy + b$

- 5) Calculate the area of a semi-circle with diameter 10cm. Leave your answer in terms of π

HA4.1



1) Factorise and solve $x^2 - x - 12 = 0$

2) Express in completed square form $x^2 - 10x + 12$

3) Simplify $\frac{3x}{4} - \frac{x}{5}$

4) Expand and simplify $\sqrt{7}(2\sqrt{7} - 5)$

5) Find the gradient of the line $3y + 2x = -12$



- 1) Simplify $\frac{(3x^2y)^2}{xy}$
- 2) Express 1764 as a product of primes and hence find its square root
- 3) A price is increased from £300 to £345. Calculate the percentage change
- 4) Estimate $\frac{9.6^2 - 38}{2.73416}$
- 5) Express 0.03008 in standard form



- 1) Factorise and solve $x^2 - 9x + 20 = 0$

- 2) Express in completed square form $x^2 + 14x + 100$

- 3) Simplify $\frac{5}{2x} - \frac{8}{3x}$

- 4) Expand and simplify $2\sqrt{3}(3 + 5\sqrt{3})$

- 5) Find the gradient of the line $4 - 2y = 3x$



- 1) Simplify $\frac{(2x^3y)^3}{x}$
- 2) Express 216 as a product of primes and hence find its cube root
- 3) A price is reduced from £400 to £344. Calculate the percentage change
- 4) Estimate $\frac{8.107 \times 4.83}{0.002138}$
- 5) Express 430812.03 in standard form to 3 significant figures



- 1) Factorise and solve $x^2 - 7x + 12 = 0$

- 2) Express in completed square form $x^2 - 18x + 100$

- 3) Simplify $\frac{3x+4}{2} - \frac{2x-1}{3}$

- 4) Expand and simplify $3\sqrt{2}(2\sqrt{2} - 7)$

- 5) Find the gradient of the line $4x + 3y = 7$



- 1) Simplify $\frac{(3x^2y^3)^2}{x^2y}$
- 2) Express 324 as a product of primes and hence find its square root
- 3) A price is increased from £300 to £732. Calculate the percentage change
- 4) Estimate $\frac{46.77 \times 319}{0.032}$ by rounding each number to 1 significant figure
- 5) Express 0.005042 in standard form to 3 significant figures

HA5.1



- 1) Solve, by completing the square
 $x^2 - 8x + 7 = 0$

- 2) Simplify $\frac{x^2 - 9x + 20}{x - 4}$

- 3) Work out $3\frac{1}{2} \times 1\frac{3}{4}$

- 4) Solve $-3 < 2x + 7 \leq 15$

- 5) Expand and simplify $(3x - 7)(5x - 3)$



- 1) Work out $5.64 \div 0.3$
- 2) Find the gradient of the line joining (1,4) and (5,16)
- 3) Make x the subject of $4x + a = 9 - x$
- 4) Evaluate 9^{-2} and $9^{\frac{1}{2}}$
- 5) Solve simultaneously $3x + 2y = 19$ and $5x - 2y = 21$

- 1) Solve, by completing the square
 $x^2 + 10x + 24 = 0$

2) Simplify $\frac{x^2 - 16}{x + 4}$

3) Work out $6\frac{1}{3} - 3\frac{3}{7}$

4) Solve $-13 < 4x - 5 \leq -1$ and display the solution on a number line

5) Expand and simplify $(6x - 5)(3x + 2)$



- 1) Work out $74.1 \div 0.03$
- 2) Find the gradient of the line joining (11,4) and (2,5)
- 3) Make x the subject of $ax + b = 9 - 3x$
- 4) Evaluate $16^{-\frac{1}{2}}$
- 5) Solve simultaneously $3x + 4y = 14$ and $4x - y = 25$



- 1) Solve, by completing the square

$$x^2 - 14x + 40 = 0$$

- 2) Simplify $\frac{x^2+2x-15}{x^2-9}$

- 3) Work out $4\frac{1}{3} \div 2\frac{8}{9}$

- 4) Solve $-4 \leq 5x + 6 < 6$ and display the solution on a number line

- 5) Expand and simplify $(7x - 4)(2x + 2)$



- 1) Work out $18.205 \div 0.05$
- 2) Find the gradient of the line joining $(-7, 3)$ and $(-5, -6)$
- 3) Make x the subject of $y^2 - 5x = ax + b$
- 4) Evaluate $64^{\frac{2}{3}}$
- 5) Solve simultaneously $3x + 3y = 3$ and $2x - 6y = -30$

HA6.1



- 1) Solve using the quadratic formula (and a calculator)
 $3x^2 - 4x - 2 = 0$

- 2) Work out $3.1 \times 10^3 + 2.8 \times 10^2$

- 3) Find the equation of the line perpendicular to $y = 2x + 10$
passing through the point (6,2)

- 4) Expand and simplify $(2x - 3)^2$

- 5) Find the highest common factor of 60 and 84



- 1) Solve simultaneously:
 $2x - y = 10$ and $5x - 3y = 27$

- 2) Simplify $\sqrt{45} - \sqrt{20}$

- 3) $7.5\text{m}^2 = ? \text{cm}^2$

- 4) Work out the value of $5x^2 - 2x$ when $x = -2$

- 5) Solve by factorising $9x^2 + 18x + 8 = 0$



- 1) Solve using the quadratic formula (and a calculator)
 $4x^2 + 5x - 3 = 0$

- 2) Work out $1.3 \times 10^3 \times 1.3 \times 10^2$

- 3) Find the equation of the line perpendicular to $y = -\frac{1}{2}x + 7$
passing through the point (5,2)

- 4) Expand and simplify $(3x - 5)^2$

- 5) Find the lowest common multiple of 60 and 84

HA6.4



- 1) Solve simultaneously:
 $2x - y = 10$ and $5x + 3y = 3$

- 2) Simplify $\sqrt{5} \times \sqrt{60}$

- 3) ? $\text{m}^2 = 500 \text{ cm}^2$

- 4) Work out the value of $2x^3 + 3x$ when $x = -2$

- 5) Solve by factorising $6x^2 + 17x + 5 = 0$



- 1) Solve using the quadratic formula (and a calculator)
 $3x^2 - 5x - 1 = 0$

- 2) Work out $5.4 \times 10^3 + 2.6 \times 10^4$

- 3) Find the equation of the line perpendicular to $y = -3x + 7$
passing through the point $(9, 6)$

- 4) Expand and simplify $(5x - 6)^2$

- 5) Find the highest common factor of 60 and 84



- 1) Solve simultaneously:
 $2x - 2y = 22$ and $3x + 6y = -12$

- 2) Simplify $\sqrt{7} \times \sqrt{14}$

- 3) ? $\text{m}^3 = 500 \text{ cm}^3$

- 4) Work out the value of $3x^3 - x^2$ when $x = -2$

- 5) Solve by factorising $6x^2 - 13x - 15 = 0$