HAA1.3

1) Simplify $\sqrt{112}$

2) £5000 is invested with an interest rate of 2.3% per annum. Write a formula for the value of the investment V, after t years

3) Use the formula $s = \frac{1}{2}(u + v)t$ to find the final velocity when the initial velocity was 12m/s, and it took 3 seconds to travel 48m

4) Evaluate $16^{\frac{3}{2}}$ (i.e 16 to the power of $\frac{3}{2}$)

5) A block has a volume of 10cm³ and a density of 75g/cm³. Calculate the mass.

HAA1.4

1) Find the nth term of the quadratic sequence 8, 17, 32, 53, …

2) Sketch the curve $y = cos\ x$

3) Find the equation of the line with gradient -2 passing through the point (6 , 3)

4) Work out $5 \times 10^4 + 8.5 \times 10^3$

5) Express $x^2 + 12x - 30$ in completed square form

HAA2.3

1) Simplify $\sqrt{48} + 3\sqrt{3}$

2) Find the coordinates of the vertex of the graph

$y = x^2 + 8x + 10$

3) Use the formula $v^2 = u^2 + 2as$ to find the final velocity after 16m when the initial velocity is 10m/s, the acceleration is 3m/s²

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

5) What is the exact value of cos 45°

HAA2.4

1) A pressure of 10N/m² results from a force of 360N acting over an area x m². Find x

2) If $f(x) = 2x + 3x^2$, find the value of $f(-5)$

3) If the nth term of a sequence is $\frac{4-2n}{4n-2}$, write down the first three terms

4) Work out $5.2 \times 10^3 \times 3 \times 10^5$, giving your answer in standard form

5) Solve simultaneously $3x + 2y = 6$ and $4x - y = 19$

HAA3.3

1) Simplify $4\sqrt{7} \times 3\sqrt{7}$

2) Find the nth term of $\frac{3}{4}, \frac{5}{9}, \frac{7}{16}, \frac{9}{25}$

3) Solve $cos\, x = 0.5$ for $0° \leq x < 360°$

4) Find the inverse function of $f(x) = \frac{x+3}{4} - 5$

5) Find the next term in the sequence 6, 3, $\frac{3}{2}$, $\frac{3}{4}$, …

HAA 3.4

1) Find the equation of the line passing through (3 , 4) and (1 , 3)

2) Solve using the quadratic formula (and a calculator), $4x^2 - 5x - 9 = 0$

3) Factorise $8x^2 - 10x - 18$

4) Simplify $\frac{3x+1}{4} - \frac{2x-5}{6}$

5) Write down the first three terms of the sequence defined by: $x_1 = 5$, $x_{n+1} = -3x_n + 2$

HAA4.3

1) Expand $(x+3)^3$

2) r is directly proportional to s. When $r = 40$, $s = 5$.
Find the value of r when $s = 7$

3) Simplify $\frac{x^2+7x+12}{2(x+3)-(x+2)}$

4) If $f(x) = 3 + 2x^2$, find the value of $f(-3)$

5) Find the coordinates of the vertex of the graph
$y = x^2 + 10x + 12$

HAA4.4

1) Find the equation of the line parallel to $2y - 6x = 7$ passing through the point (-2 , 7)

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

3) Sketch the graph of $y = x^2 + 4$

4) A block has a mass of 20g, and a density of 4g/cm³. Calculate its volume

5) Rationalise the denominator

$$\frac{2\sqrt{5}}{\sqrt{5}+2}$$

HAA5.3

1) Solve simultaneously $3x - 4y = 26$ and $5x + 3y = 24$

2) One solution of $sin\, x = 0.422618 \ldots$ is $x = 25°$
What is the other solution in the range $0° \leq x < 360°$?

3) Find the 50th term of the sequences -8, -1, 6, 13, …

4) Find $gf(x)$ where $f(x) = 3x + 2$ and $g(x) = x^2$

5) Simplify $\frac{3}{2x+6} + \frac{3x-5}{x+3}$

HAA5.4

1) Shape B is an enlargement of shape A with scale factor 4.
If the area of shape B is 48cm², what is the area of shape A?

2) Work out $3.2 \times 10^5 \times 4 \times 10^7$, giving your answer in standard form

3) Solve using the quadratic formula (and a calculator)
$2.3x^2 + 4.5x - 6.7 = 0$

4) Evaluate $8^{\frac{2}{3}}$ and $4^{\frac{3}{2}}$

5) The value of x is given as 8.9 rounded to 1 decimal place.
State the upper and lower bounds

HAA6.3

1) Expand and simplify $(x+3)(x-2)^2$

2) If $f(x) = \frac{4x+3}{2}$ find $f^{-1}(x)$

3) Find the equation of the line perpendicular to $2y = 3x + 8$ passing through the point (6, 1)

4) Find the nth term of the sequence 3, 15, 35, 63, 99, …

5) A car travels 40km in 2 hour 40 minutes, what is its average speed?

HAA6.4

1) p is given as 40 correct to two significant figures.
Write an inequality to show the range of values p could be

2) Shape B is an enlargement of shape A with scale factor 3. If the area of shape A is 6cm², what is the area of shape B?

3) Solve, by factorising, $3x^2 + 13x - 10 = 0$

4) Expand and simplify $(\sqrt{5} + 1)(\sqrt{5} - 1)$

5) Sketch the graph of $y = x^2$ and $y = x^3$