81- (4MA0-S 2012-Paper 4H-Q10)-*ALGEBRA*

(a) Expand and simplify

(i) $5(2x + 1) - 3(3x - 1)$

.....

(ii) $(y + 5)(y - 7)$

.....

(4)

(b) Make r the subject of the formula $V = \pi r^2 h$ where r is positive.

$r =$ .....

(2)

(Total for Question is 6 marks)

82- (4MA0-S 2012-Paper 4H-Q20)-*ALGEBRA*

Show that $(6 - \sqrt{8})^2 = 44 - 24\sqrt{2}$

Show each stage of your working clearly.

(Total for Question is 3 marks)

83- (4MA0-S 2012-Paper 4H-Q21)-*ALGEBRA*

Solve $\frac{5}{(x+2)}+\frac{9}{(x-2)}=2$

Show clear algebraic working.

.....

(Total for Question is 5 marks)

84- (4MA0-W 2012-Paper 4H-Q3)-*ALGEBRA*

Solve $7x - 5 = 3x + 2$

Show your working clearly.

$x =$ .....

(Total for Question is 3 marks)

85- (4MA0-W 2012-Paper 4H-Q8)-*ALGEBRA*

$$\frac{y^3 \times y^n}{y} = y^6$$

Find the value of n.

$n =$ .....

(Total for Question is 2 marks)

86- (4MA0-W 2012-Paper 4H-Q10)-*ALGEBRA*

(i) Solve the inequalities $-6 < 4x \leqslant 8$

.....

(ii) n is an integer.

Write down all the values of n which satisfy $-6 < 4n \leqslant 8$

.....

(Total for Question is 4 marks)

87- (4MA0-W 2012-Paper 4H-Q15)-*ALGEBRA*

Solve the inequality $x^2 < 16$

.....

(Total for Question is 2 marks)

(a) Simplify $(16y^8)^{\frac{3}{4}}$

.....

(2)

(b) Given that $2^p \times 8^q = 2^n$

express n in terms of p and q.

$n =$ .....

(2)

(Total for Question is 4 marks)

89- (4MA0-S 2013-Paper 4H-Q6)-*ALGEBRA*

Solve $7y - 6 = 2y + 8$

Show clear algebraic working.

$y =$ .....

(Total for Question is 3 marks)

(a) Solve the inequalities $-6 \leqslant 3x < 9$

.....

(2)

(b) n is an integer.

Write down all the values of n which satisfy $-6 \leqslant 3n < 9$

.....

(2)

(Total for Question is 4 marks)

91- (4MA0-S 2013-Paper 4H-Q23)-*ALGEBRA*

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

Show clear algebraic working.

.....

(Total for Question is 5 marks)

92- (4MA0-S 2013-Paper 4HR-Q7)-*ALGEBRA*

(i) Solve the inequalities $3 \leqslant x + 4 < 7$

.....

(ii) n is an integer.

Write down all the values of n which satisfy $3 \leqslant n + 4 < 7$

.....

(Total for Question is 4 marks)

93- (4MA0-S 2013-Paper 4HR-Q11)-*ALGEBRA*

$A = 2^3 \times 3^2 \times 5^4$

$B = 3^5 \times 5 \times 7^3$

Find the Highest Common Factor (HCF) of A and B.

.....

(Total for Question is 2 marks)

(a) Solve the simultaneous equations

$$5x + 3y = 9$$
$$7x - 2y = 25$$

Show clear algebraic working.

$x =$ .....

$y =$ .....

(4)

(b) P is the point of intersection of the lines with equations $5x + 3y = 9$ and $7x - 2y = 25$

Write down the coordinates of P.

(..... , ...)

(1)

(Total for Question is 5 marks)

95- (4MA0-W 2013-Paper 4H-Q8)-*ALGEBRA*

(a) Factorise $n^2 + 8n$

.....

(2)

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

.....

(2)

(c) Expand and simplify $(y + 7)(y + 2)$

.....

(2)

(Total for Question is 6 marks)

96- (4MA0-W 2013-Paper 4H-Q10)-*ALGEBRA*

Solve $3x + 16 = 1 - 2x$
Show clear algebraic working.

$x =$.....

(Total for Question is 3 marks)

Solve $\frac{2}{5x-2} = \frac{3}{6x+1}$

Show clear algebraic working.

x = ...

(Total for Question is 4 marks)

(a) Simplify $\frac{5x^5y^6}{x^2y^4}$

.....

(2)

(b) Simplify $(2n^4)^3$

.....

(2)

(Total for Question is 4 marks)

Solve $5x^2 + 2x - 4 = 0$
Give your solutions correct to 3 significant figures.
Show your working clearly.

.....

(Total for Question is 3 marks)

$(3+\sqrt{a})(4+\sqrt{a})=17+k\sqrt{a}$ where a and k are positive integers.

Find the value of a and the value of k.

a =.....

k =.....

(Total for Question is 3 marks)

Solve the simultaneous equations

$$y = 3x + 2$$

$$x^2 + y^2 = 20$$

Show clear algebraic working.

.....

(Total for Question is 6 marks)

(a) Solve $7x - 6 = 2x + 17$
Show clear algebraic working.

$x =$ .....

(3)

(b) Expand and simplify fully $(x + 8)(x + 2)$

.....

(2)

(Total for Question is 5 marks)

Solve the simultaneous equations

$3x + 2y = 7$

$4x - 3y = 15$

Show clear algebraic working.

$x =$ .....

$y =$ .....

(Total for Question is 4 marks)

(a) Solve $5x^2 - 6x - 2 = 0$

Give your solutions correct to 3 significant figures.

Show your working clearly.

.....

(3)

(b) Solve the inequality $\frac{m^2 + 3}{4} > 21$

Show clear algebraic working.

.....

(4)

(Total for Question is 7 marks)

105- (4MA0-S 2014-Paper 4H-Q20)-*ALGEBRA*

Use algebra to show that the recurring decimal $0.3\dot{8} = \frac{7}{18}$

(Total for Question is 2 marks)

106- (4MA0-S 2014-Paper 4H-Q24)-*ALGEBRA*

Given that $\left(2^{\frac{1}{2}}\right)^n = \frac{2^x}{8^y}$

express n in terms of x and y.

(Total for Question is 3 marks)

107- (4MA0-S 2014-Paper 4H-Q25)-*ALGEBRA*

Simplify fully $\dfrac{5}{2x-6} - \dfrac{x+2}{x^2-4x+3}$

.....

(Total for Question is 5 marks)

108- (4MA0-S 2014-Paper 4HR-Q1)-*ALGEBRA*

$f = 5p - 4v$

Work out the value of p when $f = -22$ and $v = -5$

$p =$ .....

(Total for Ouestion _ is 3 marks)

Here is part of a timetable for the Paris to Montpellier express train service.

Paris	06 07	10 07	12 07	18 07	20 07
Valence	08 22	12 24	14 24	20 24	22 24
Nimes	09 09	13 05	15 05	21 05	23 05
Montpellier	09 37	13 34	15 34	21 34	23 34

The average speed of the 20 07 train from Paris is 224 km/h.

Work out the distance this train travels from Paris to Montpellier.

..... km

(Total for Question is 3 marks)

The diagram shows a parallelogram $ABCD$.
In the diagram, all the angles are in degrees.

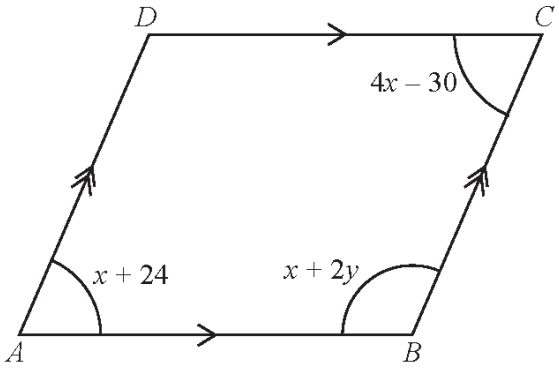

Diagram **NOT** accurately drawn

Work out the value of x and the value of y.

$x =$ .....

$y =$ .....

(Total for Question is 4 marks)

(a) Factorise $2t^2 - 7t + 3$

.....

(2)

(b) Rearrange the formula $y = a - bx^2$ to make x the subject.

$x =$ .....

(3)

(Total for Question is 5 marks)

Here is a hexagon.

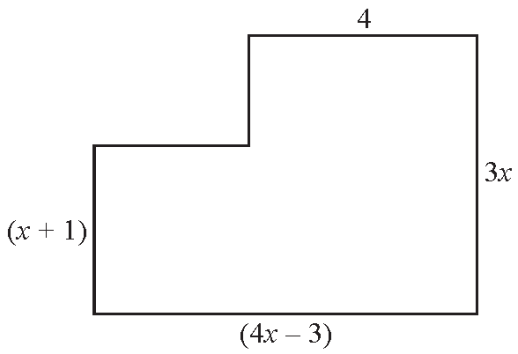

Diagram **NOT** accurately drawn

In the diagram, all the measurements are in centimetres.
All the corners are right angles.

The area of the hexagon is 40 cm²

(a) Show that $4x^2 + 9x - 47 = 0$

(3)

(b) Solve $4x^2 + 9x - 47 = 0$

Show your working clearly.
Give your solutions correct to 3 significant figures.

(3)

(c) Find the length of the longest side of the hexagon.
Give your answer correct to 3 significant figures.

..... cm

(2)

(Total for Question is 8 marks)

(a) Simplify $(16x^4y^2)^{\frac{1}{2}}$

.....

(2)

(b) Simplify fully $\dfrac{2x^2 - 8}{4x^2 - 8x}$

.....

(3)

(Total for Question is 5 marks)

(a) Show that

$$(a^2 + 1)(c^2 + 1) = (ac - 1)^2 + (a + c)^2$$

(3)

(b) By finding suitable values of a and c, use part (a) to write 650065 as the sum of two square numbers.

650065 = ... + ...

(3)

(Total for Question is 6 marks)

Solve $6(3y + 5) = 39$

Show clear algebraic working.

$y =$ .....

(Total for Question is 3 marks)

(a) Simplify $k \times k \times k \times k \times k$

.....

(1)

(b) Expand $2(7t - 3)$

.....

(1)

(c) Expand and simplify fully

(i) $4(2y + 6) - 3(2y - 7)$

.....

(ii) $(x - 6)(x - 4)$

.....

(4)

(d) Simplify fully $\dfrac{v^4 \times v^7}{v^5}$

.....

(2)

(Total for Question is 8 marks)

Factorise fully $4(x - 5)^2 + 3(x - 5)$

.....

(Total for Question is 2 marks)

Solve the simultaneous equations

$$2x - y = 7$$

$$x^2 + y^2 = 34$$

Show clear algebraic working.

(Total for Question is 7 marks)

The table shows the population of each of three countries in 2012.

Country	Population
India	1.21×10^9
Turkey	7.48×10^7
Singapore	5.2×10^6

(a) Find the total population of India, Turkey and Singapore in 2012.
Give your answer in standard form.

.....

(2)

Population density is calculated by the formula

Population density = Population ÷ Land area

The land area of India is 3.29×10^6 km^2

(b) Calculate the population density of India in 2012.
Give your answer correct to 3 significant figures.

..... people/km^2

(2)

(Total for Question is 4 marks)

Express $\frac{4}{x-1} - \frac{3}{x+1}$ as a single fraction.

Give your answer as simply as possible.

.....

(Total for Question is 3 marks)