Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

MATHEMATICS **0580/32**

Paper 3 (Core) **February/March 2015**

2 hours

Candidates answer on the Question Paper.

Additional Materials: Electronic calculator
Tracing paper (optional)
Geometrical instruments

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
If working is needed for any question it must be shown below that question.
Electronic calculators should be used.
If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.
For π, use either your calculator value or 3.142.

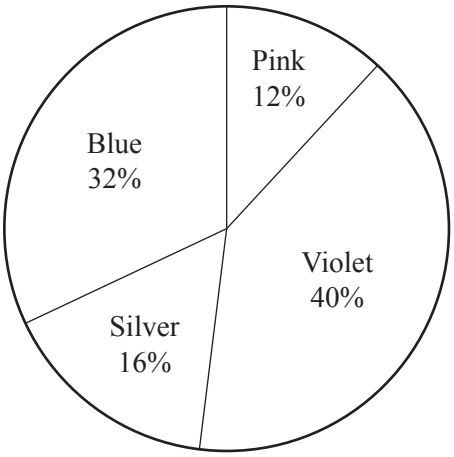
At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total of the marks for this paper is 104.

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

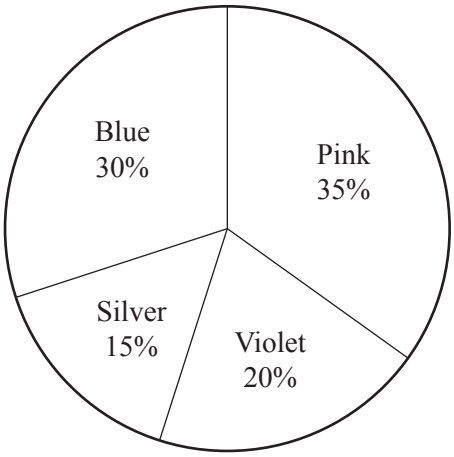
This document consists of **16** printed pages.

1 **(a)** Parminder sells dresses.
The pie charts show information about the colour of dresses she sold.
She sold 250 dresses in 2013 and 280 dresses in 2014.

Sales in 2013



Sales in 2014



(i) Write down the most popular colour of dress she sold in 2013.

Answer(a)(i) ..... [1]

(ii) Write down the **fraction** of dresses sold in 2014 that were either pink or silver.

Answer(a)(ii) ..... [1]

(iii) Write down the ratio of Blue : Pink dresses sold in 2013.
Give your answer in its simplest form.

Answer(a)(iii) ..... : ..... [2]

(iv) Work out how many **more** pink dresses were sold in 2014 than in 2013.

Answer(a)(iv) ..... [3]

(v) Complete the table by writing True or False beside each statement.
The first answer has been completed for you.

Statement	True or False
40% of the dresses sold in 2013 were violet.	True
Blue was the second most popular colour in both 2013 and 2014.	
One third of the dresses sold in 2014 were blue.	
Violet was more popular than silver in both 2013 and 2014.	

[2]

(vi) From 2013 to 2014 the number of silver dresses sold has increased but the percentage sold has decreased.

Give a reason why the percentage sold has decreased.
You do not need to do any calculations.

Answer(a)(vi) .....

..... [1]

(b) The table shows the number of metres of silk needed to make a dress.

Dress length	Height of customer to the nearest 10 cm			
	160 cm	170 cm	180 cm	190 cm
Short	4.0	4.3	4.6	4.9
Medium	4.8	5.0	5.2	5.4
Long	5.5	5.8	6.2	6.6

Silk costs $12.50 per metre.
It takes 6 hours to make one dress.
The dressmaker charges $9.25 per hour.

A customer orders a dress for each of her two daughters.
She orders a long dress for one daughter who is 160 cm tall.
She orders a short dress for her other daughter who is 176 cm tall.

Calculate the total cost of the two dresses.

Answer(b) $ ..... [4]

2 Olga owns a fruit and vegetable shop.

(a) An apple weighs 70 g correct to the nearest 5 g.

Complete the statement about the mass, m grams, of this apple.

Answer(a) ..... $\leqslant m <$ ..... [2]

(b) The number of strawberries in each of 12 boxes is shown below.

23	21	21	20	21	20
22	22	21	20	20	20

(i) Find the range.

Answer(b)(i) ..... [1]

(ii) Write down the mode.

Answer(b)(ii) ..... [1]

(iii) Find the median.

Answer(b)(iii) ..... [2]

(iv) Calculate the mean.

Answer(b)(iv) ..... [2]

(v) Find the probability that a box chosen at random has 22 or 23 strawberries in the box.

Answer(b)(v) ..... [1]

(c) The shop sells potatoes in bags A, B and C.

Work out which bag is the best value.
You must show all your working.

Answer(c) ..... [3]

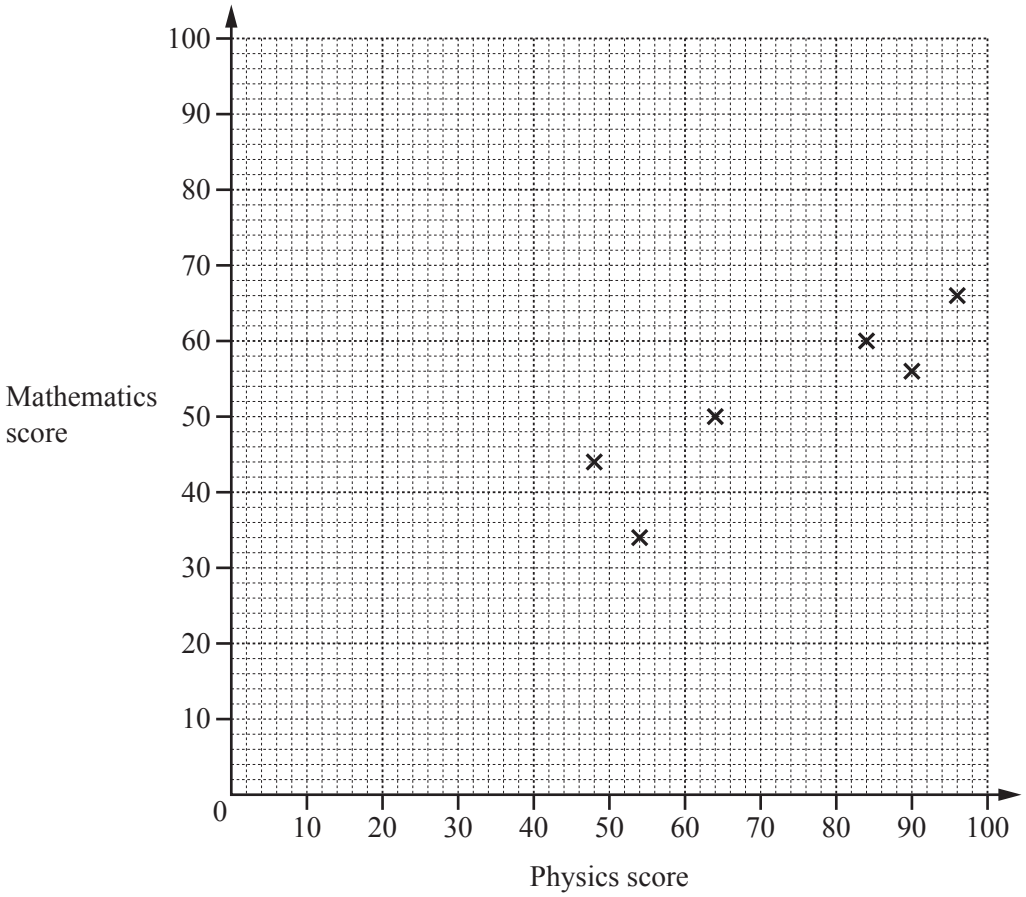
(d) The price of plums is $2.40 per kilogram.
Olga reduces this price by 35%.

Calculate the new price per kilogram.

Answer(d) $ ..... [2]

3 **(a)** Ten students take a physics examination and a mathematics examination.
Their scores are recorded in the table below.

Student	A	B	C	D	E	F	G	H	I	J
Physics score	48	54	64	84	90	96	60	40	75	26
Mathematics score	44	34	50	60	56	66	40	25	55	18



(i) Complete the scatter diagram.
The first six points have been plotted for you. [2]

(ii) What type of correlation is shown by the scatter diagram?

Answer(a)(ii) ..... [1]

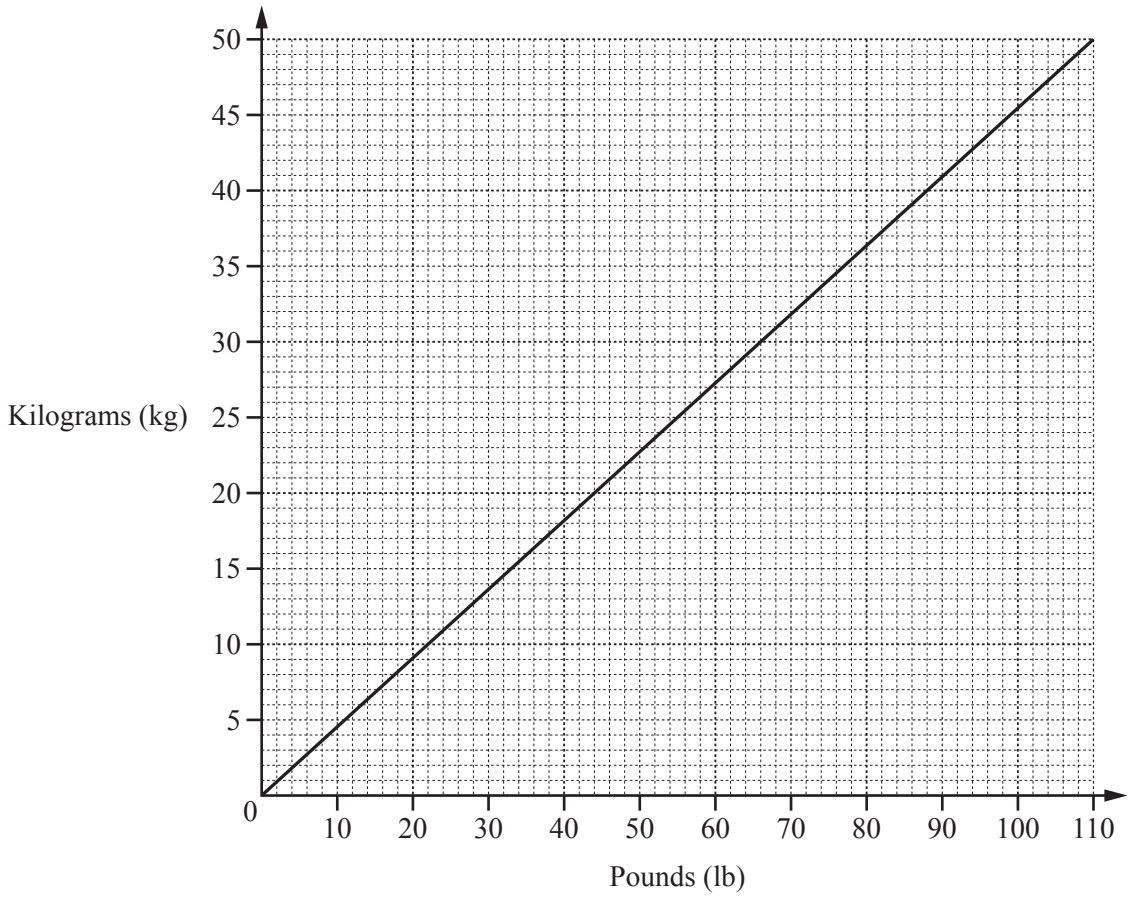
(iii) On the grid, draw a line of best fit. [1]

(iv) Another student scored 52 in the mathematics examination.

Use your line of best fit to estimate this student's score in the physics examination.

Answer(a)(iv) ..... [1]

(b) This graph can be used to convert between pounds (lb) and kilograms (kg).



Use the graph to convert

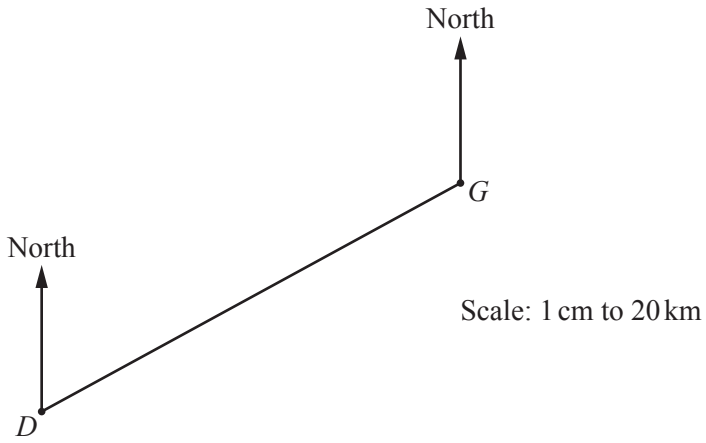
(i) 50 pounds to kilograms,

Answer(b)(i) ..... kg [1]

(ii) 275 kilograms to pounds.

Answer(b)(ii)..... lb [2]

4 The diagram shows the positions of two villages Dormouth, *D*, and Greenton, *G*.
The scale is 1 centimetre represents 20 kilometres.



(a) Find the distance, in kilometres, from Dormouth to Greenton.

Answer(a) ..... km [1]

(b) Measure the bearing of Dormouth from Greenton.

Answer(b) ..... [1]

(c) Foxhill is 84 km from Dormouth.
The bearing of Foxhill from Dormouth is 105°.

Mark the position of Foxhill on the diagram. Label it *F*. [2]

(d) A straight road joins Dormouth to Foxhill.
A car drives from Dormouth to Foxhill at a constant speed of 54 km/h.

Calculate the time it takes to complete the 84 km journey.
Give your answer to the nearest minute.

Answer(d) ..... h ..... min [3]

(e) Change 54 km/h to m/s .

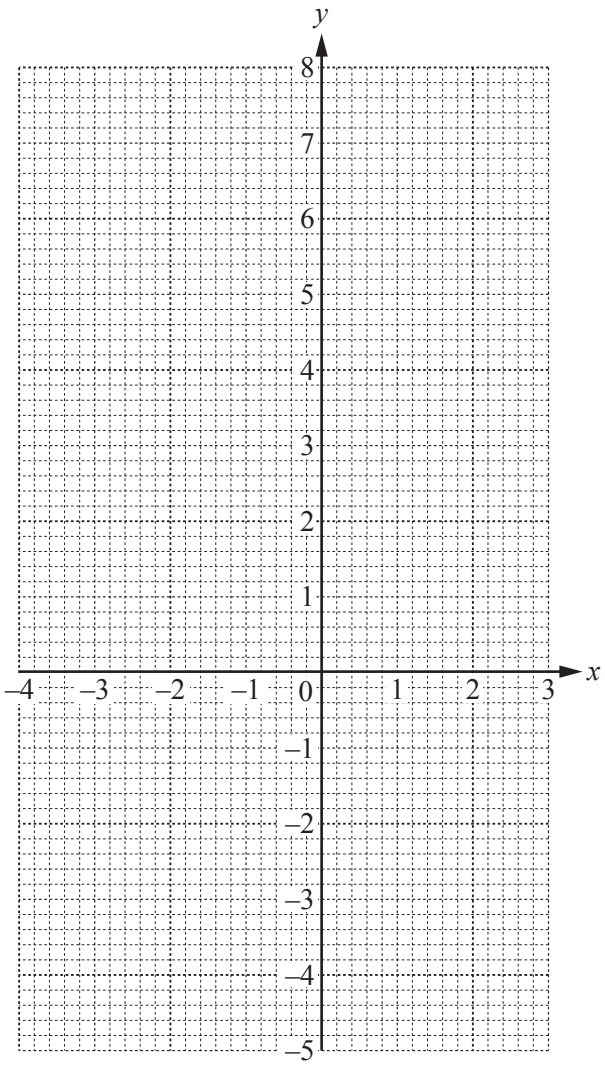
Answer(e) ..... m/s [2]

5 **(a)** **(i)** Complete the table of values for $y = x^2 + x - 4$.

x	–4	–3	–2	–1	0	1	2	3
y			–2	–4		–2		8

[2]

(ii) On the grid, draw the graph of $y = x^2 + x - 4$ for $-4 \leqslant x \leqslant 3$.



[4]

(b) **(i)** Write down the co-ordinates of the lowest point of the graph.

Answer(b)(i) (..... , ...) [1]

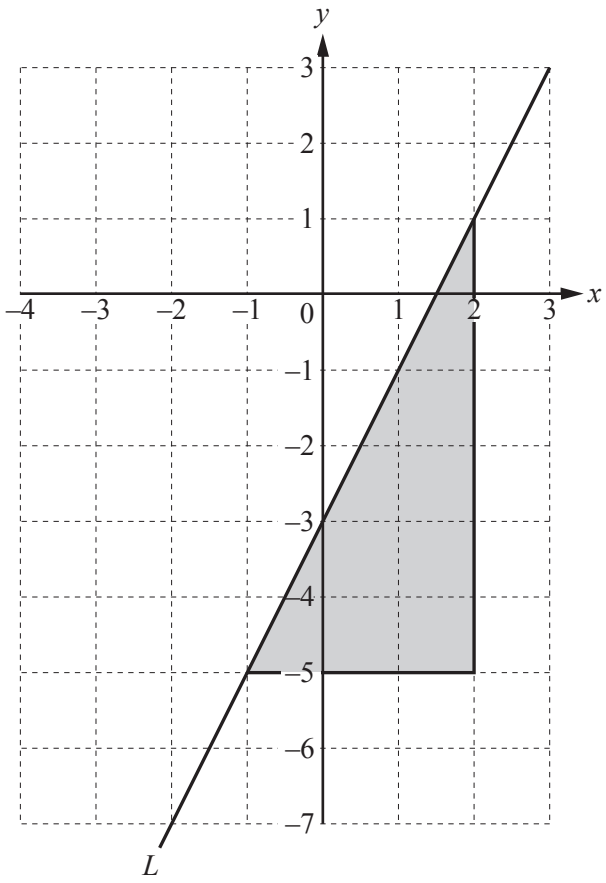
(ii) Write down the equation of the line of symmetry of the graph.

Answer(b)(ii) ..... [1]

(c) Use your graph to solve the equation $x^2 + x - 4 = -3$.

Answer(c) $x =$ ..... or $x =$ ..... [2]

(d)



(i) In the diagram, a line L has been drawn on a 1 cm^2 grid.

Write down the equation of the line L.
Give your answer in the form $y = mx + c$.

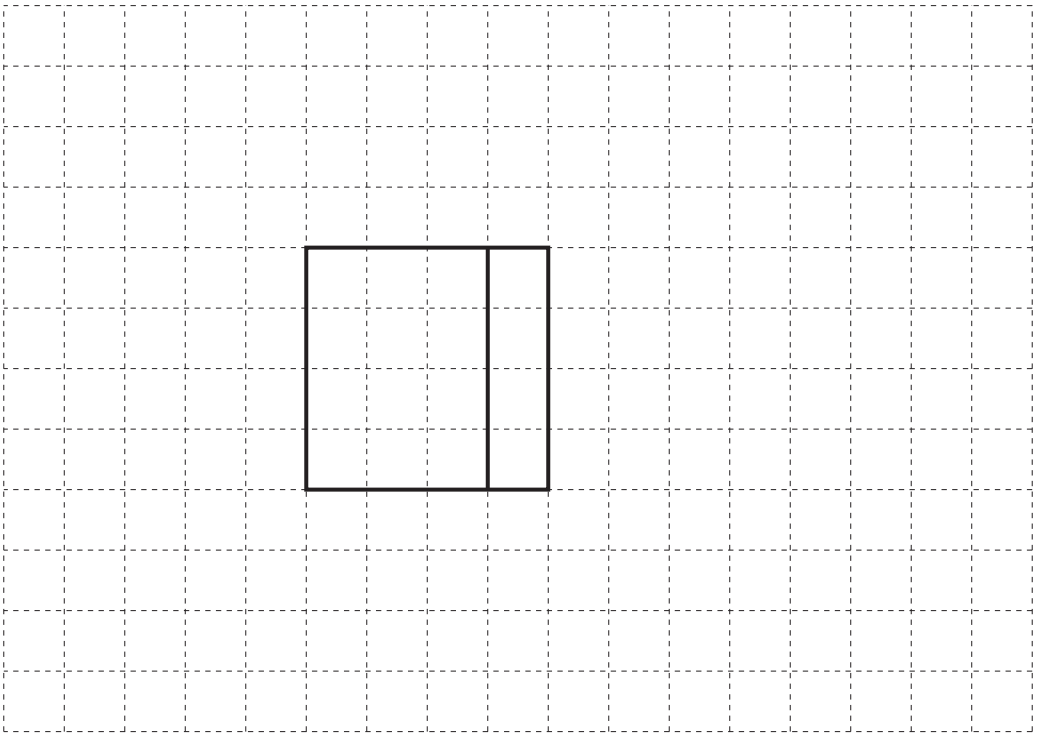
Answer(d)(i) $y =$ ..... [2]

(ii) Find the area of the shaded triangle.

Answer(d)(ii) ..... cm^2 [1]

6 **(a)** The grid shows part of the net of a cuboid.

Complete the net.



[2]

(b) The volume of another cuboid is $60\,cm^3$.
Each side is a whole number of centimetres long.

Write down a possible set of dimensions for the cuboid.

Answer(b) Length ..... cm

Width ..... cm

Height ..... cm [2]

(c) Each side of a cube has length 2 cm.

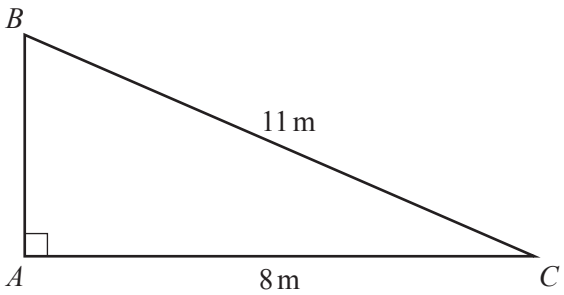
Work out the total surface area of the cube.
Give the units of your answer.

Answer(c) .... [3]

(d) Change $9\,cm^2$ into mm^2.

Answer(d) ..... mm^2 [1]

(e) The diagram shows a triangle.



NOT TO SCALE

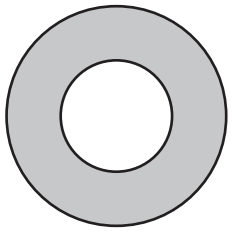
(i) Calculate the length AB.

Answer(e)(i) AB = ... m [3]

(ii) Use trigonometry to calculate angle ACB.

Answer(e)(ii) Angle ACB = ... [2]

(f)



NOT TO SCALE

The **diameter** of the large circle is 13 cm.
The **radius** of the small circle is 2 cm.

Calculate the shaded area.

Answer(f) ..... cm^2 [4]

7 (a) In this part, all constructions must be completed using a ruler and compasses only. All construction arcs must be clearly shown.

ABCD is a rectangle.

(i) Construct the bisector of angle *BCD*. [2]

(ii) Draw the locus of points inside *ABCD* that are 6 cm from *D*. [1]

(iii) Shade the region inside *ABCD* which is

- closer to *BC* than to *CD*

and

- less than 6 cm from *D*. [1]

(b) Draw **two** different triangles *XYZ*, in the space below, which have

- angle *XYZ* = 40°

and

- *XZ* = 5 cm.

For each triangle, the side *XY* has been drawn for you.

X *Y* *X* *Y*

[4]

8 **(a)** A pattern of calculations is shown below.

Complete the last four rows.

$3^2 - 1^2 = 4 \times 2$

$4^2 - 2^2 = 4 \times 3$

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

$6^2 - \ldots\ldots = \ldots\ldots \times \ldots\ldots$

$10^2 - \ldots\ldots = \ldots\ldots \times \ldots\ldots$

$\ldots\ldots - \ldots\ldots = 4 \times 100$

$\ldots\ldots - \ldots\ldots = 4 \times n$

[5]

(b) These are the first five terms in a sequence.

3 7 11 15 19

(i) Write down the next term in the sequence.

Answer(b)(i) ..... [1]

(ii) Write down an expression for the nth term.

Answer(b)(ii) ..... [2]

(iii) Work out the 57th term.

Answer(b)(iii) ..... [1]

(iv) Is the number 237 a term in the sequence?
Give a reason for your answer.

Answer(b)(iv) ..... because .....

..... [2]

Question 9 is printed on the next page.

9 **(a)** **(i)** Calculate the cube root of 68 921.

Answer(a)(i) ..... [1]

(ii) Write 68 921 in standard form.

Answer(a)(ii) ..... [1]

(iii) Write 68 921 correct to 2 significant figures.

Answer(a)(iii) ..... [1]

(b) 96 550 kg is reduced to 88 826 kg.

Calculate the percentage reduction.

Answer(b) ..... % [3]

(c) **(i)** Work out 5^{-2}.

Answer(c)(i) ..... [1]

(ii) Simplify $\left(\sqrt{5}\right)^2$.

Answer(c)(ii) ..... [1]

(iii) Explain why 6 is not a prime number.

Answer(c)(iii) .....

..... [1]

(iv) Explain the term 'irrational number'.

Answer(c)(iv) .....

..... [1]