Paper Reference(s)

5504/04

Edexcel GCSE

Mathematics A – 1387

Paper 4 (Calculator)

Intermediate Tier

Friday 14 November 2003 – Morning

Time: 2 hours

Materials required for examination
Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser. Tracing paper may be used.

Items included with question papers
Formulae sheets

Instructions to Candidates

In the boxes on the answer book, write your centre number, candidate number, your surname and initials, the paper reference and your signature.
The paper reference is shown above. If more than one paper reference is shown, you should write the one for which you have been entered.
Answer **ALL** questions in the spaces provided in this book.
Supplementary answer sheets may be used.

Information for Candidates

The total mark for this paper is 100. The marks for the various parts of questions are shown in round brackets: e.g. **(2).**
Calculators may be used.
If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.
This paper has 25 questions. There are no blank pages.

Advice to Candidates

Show all stages in any calculations.
Work steadily through the paper.
Do not spend too long on one question.
If you cannot answer a question leave it out and attempt the next one.
Return at the end to those you have left out.

Leave blank

Answer ALL TWENTY FIVE questions.

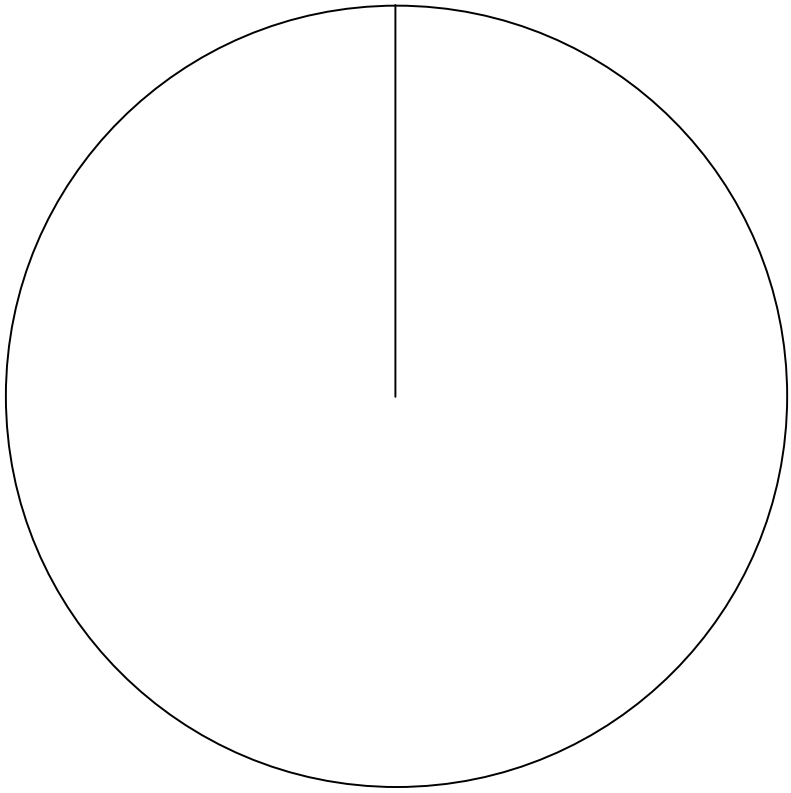
Write your answers in the spaces provided.

You must write down all stages in your working.

1. The table gives information about the lunch arrangements of 900 students.

Choice	Frequency	Angle
Full meal	200	
Hot snack	290	
Cold snack	260	
Packed lunch	150	
Total	900	

Draw an accurate pie chart to show this information.



(4)

Leave blank

2. Change 28 miles to kilometres.

…… km
(2)

---

3. A school has 1200 pupils.
575 of these pupils are girls.

$\frac{2}{5}$ of the girls like sport.

$\frac{3}{5}$ of the boys like sport.

Work out the total number of pupils in the school who like sport.

……..
(3)

Leave blank

4. Jennifer made x cakes.
She put 4 sweets on top of each cake.

(a) Write down an expression, in terms of x, for the number of sweets she used.

……..
(1)

Paul made 3 more cakes than Jennifer.

(b) Write down an expression, in terms of x, for the number of cakes Paul made.

……..
(1)

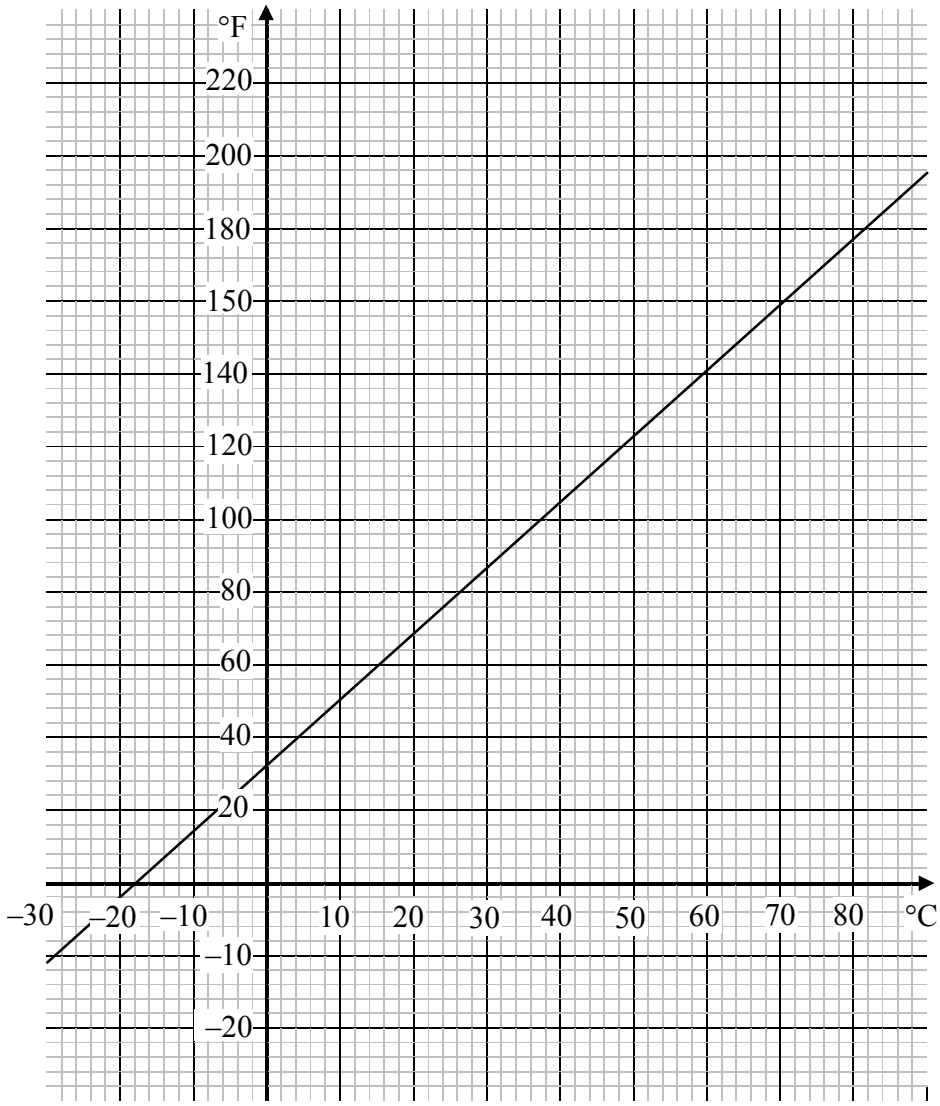
Paul also put 4 sweets on each of his cakes.

(c) Write down an expression, in terms of x, for the number of sweets Paul used.

……..
(1)

Leave blank

5. The graph below can be used to convert between two temperature scales, Fahrenheit (°F) and Celsius (°C).



(a) Use the graph to convert 50 °F to degrees Celsius.

……°C
(1)

(b) Use the graph to convert –10 °C to degrees Fahrenheit.

……°F
(1)

Leave blank

6. (a) Solve $7x + 18 = 74$

$x =$ .....

(2)

(b) Solve $4(2y - 5) = 32$

$y =$ .....

(2)

(c) Solve $5p + 7 = 3(4 - p)$

$p =$ .....

(3)

---

7. Amy bought 17 footballs for a total cost of £50.83.

James bought 11 footballs.

The cost of each football bought by Amy and James was the same.

Work out how much James paid for his 11 footballs.

£.....

(2)

Leave blank

8.

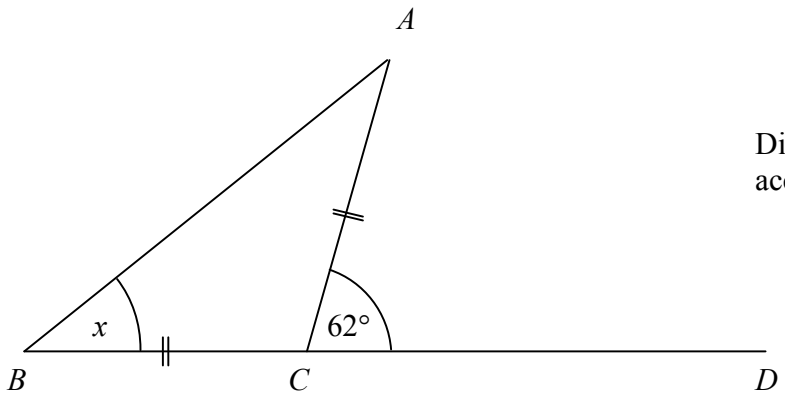


Diagram **NOT** accurately drawn

Triangle ABC is isosceles, with $AC = BC$.
Angle $ACD = 62°$.
BCD is a straight line.

(a) Work out the size of angle x.

$x =$ ……°
(2)

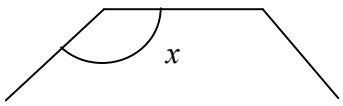


Diagram **NOT** accurately drawn

The diagram shows part of a **regular** octagon.

(b) Work out the size of angle x.

$x =$ ……°
(3)

Leave blank

9. (a) Use your calculator to work out

(i) 2.4^3

.....

(ii) $\sqrt{39.69}$

.....

(2)

(b) Use your calculator to work out the value of

$$\frac{(7.91 - \sqrt[3]{81}) \times 4.32}{6.23 + 1.491}$$

Give your answer correct to 3 significant figures.

.....

(3)

---

10. (a) Simplify $4x + 7y + 2x - 3y$

.....

(2)

(b) Simplify $2pq + pq$

.....

(1)

(c) Factorise $3t - 12$

.....

(1)

(d) Expand and simplify $3(2x - 1) - 2(2x - 3)$

.....

(2)

Leave blank

11. Prendeep bought a necklace in the United States of America.
Perndeep paid 108 dollars ($).

Arthur bought an identical necklace in Germany.
Arthur paid 117 Euros (€)

£1 = $1.44
£1 = 1.6€

Calculate, in pounds, the difference between the prices paid for two necklaces.
Show how you worked out your answer.

£.....

(5)

Leave blank

12. Wayne bought an engagement ring for Tracy.
The total cost of the ring was £420 **plus** VAT at $17\frac{1}{2}$ %.

(a) Work out the cost of the ring.

£.....

(2)

Wayne invited 96 people to an engagement party.
Only 60 of the people invited came to the party.

(b) Express 60 as a percentage of 96.

.....%

(2)

Leave blank

13. A can of drink is in the shape of a cylinder.
The can has a radius of 4 cm and a height of 15 cm.

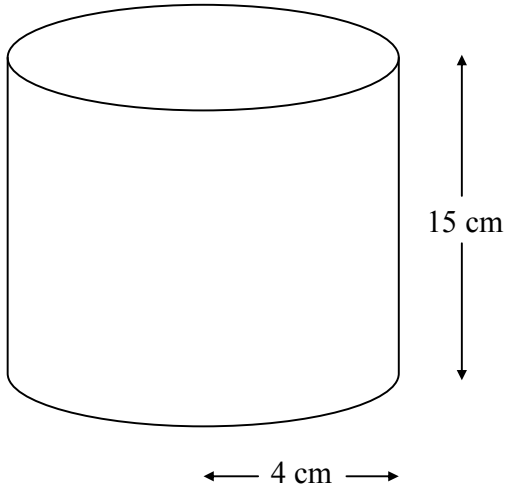


Diagram **NOT** accurately drawn

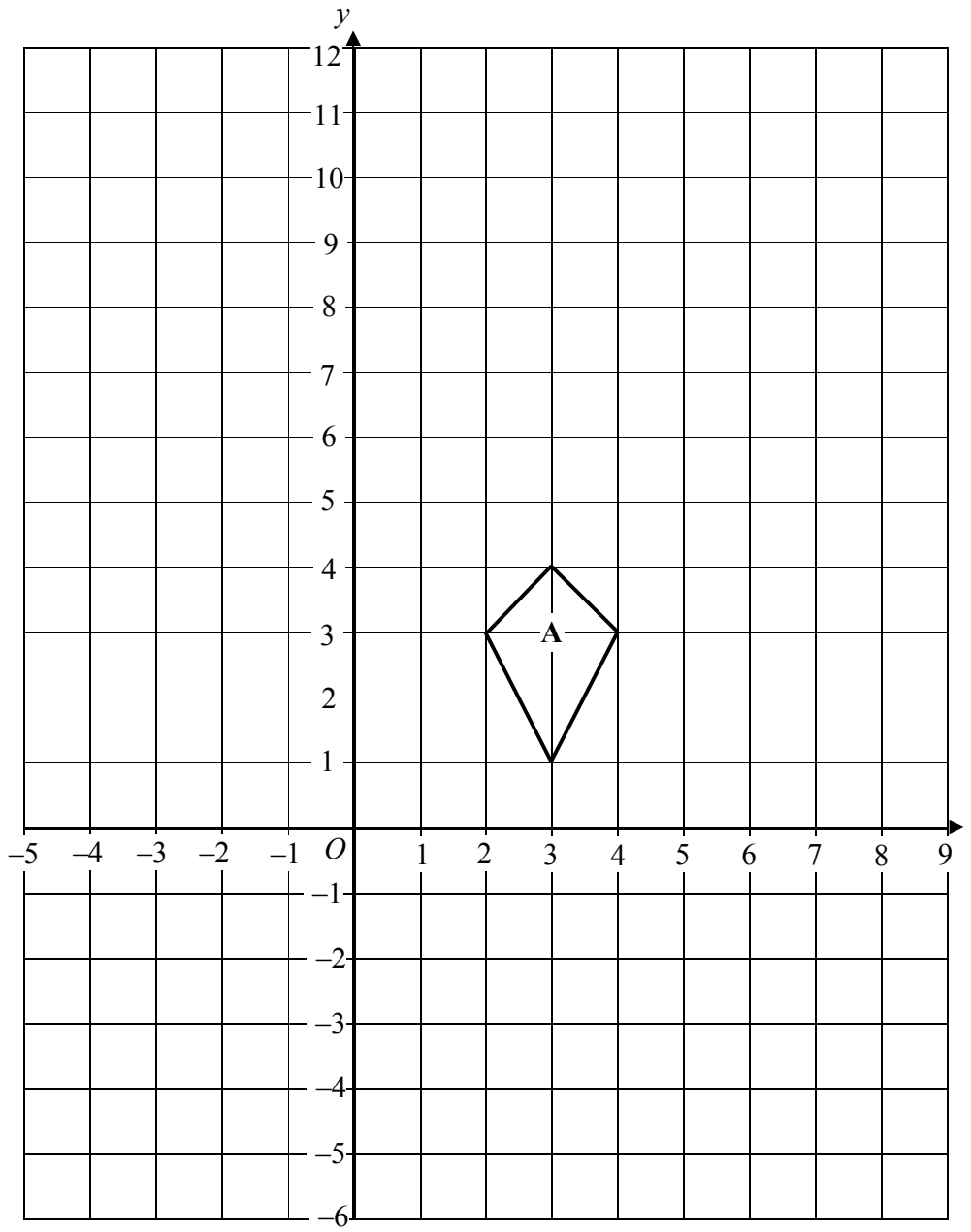
Calculate the volume of the cylinder.
Give your answer correct to 3 significant figures.

.....

(3)

Leave blank

14.



Shape **A** has a line of symmetry.

(a) Write down the equation of this line of symmetry.

.....

(1)

Leave blank

(b) Reflect shape **A** in the x-axis to give shape **B**.
Draw and label shape **B**.

(1)

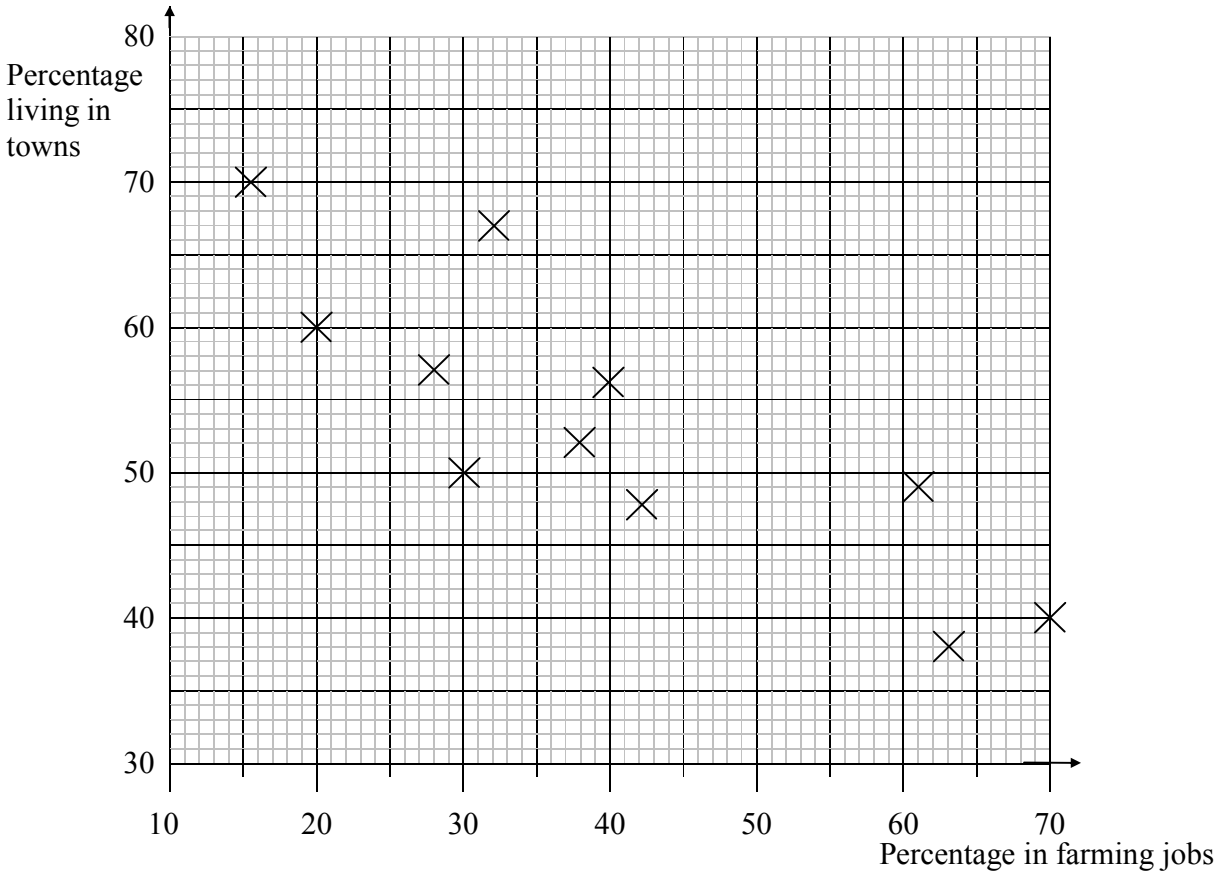
(c) Enlarge shape **A** by scale factor 2, centre O, to give shape **C**.
Draw and label shape **C**.

(3)

Leave blank

15. The scatter graph shows information about 12 countries.

For each country, it shows the percentage of the population in farming jobs and the percentage of the population living in towns.



(a) Describe the relationship between the percentage of the population in farming jobs and the percentage of the population living in towns.

……

……

(1)

(b) Draw the line of best fit on the scatter graph.

(1)

In Mathsland, the percentage of the population in farming jobs is 35%.

(c) Use your line of best fit to estimate the percentage of Mathsland's population living in towns.

……%

(1)

Leave blank

16. Daniel leaves his house at 0700.

He drives 87 miles to work.
He drives at an average speed of 36 miles per hour.

At what time does Daniel arrive at work?

.....

(3)

17.

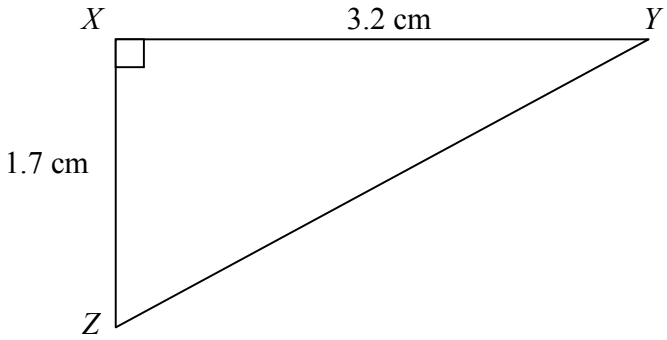


Diagram **NOT** accurately drawn

XYZ is a right-angled triangle.
XY = 3.2 cm.
XZ = 1.7 cm.

Calculate the length of *YZ*.
Give your answer correct to 3 significant figures.

..... cm

(3)

Leave blank

18. Charles found out the length of reign of each of 41 kings.
He used the information to complete the frequency table.

Length of reign (L years)	Number of kings		
$0 < L \leq 10$	14		
$10 < L \leq 20$	13		
$20 < L \leq 30$	8		
$30 < L \leq 40$	4		
$40 < L \leq 50$	2		

(a) Write down the class interval that contains the median.

……
(2)

(b) Calculate an estimate for the mean length of reign.

…… years
(4)

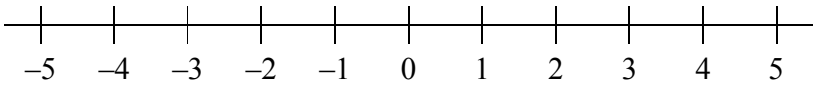
Leave blank

19. (i) Solve the inequality

$$5x - 7 < 2x - 1$$

.....

(ii) On the number line, represent the solution set to part (i).



(3)

---

20. A floppy disk can store 1 440 000 bytes of data.

(a) Write the number 1 440 000 in standard form.

.....

(1)

A hard disk can store 2.4×10^9 bytes of data.

(b) Calculate the number of floppy disks needed to store the 2.4×10^9 bytes of data.

.....

(3)

Leave blank

21. (a) Complete the table for $y = x^2 - 3x + 1$

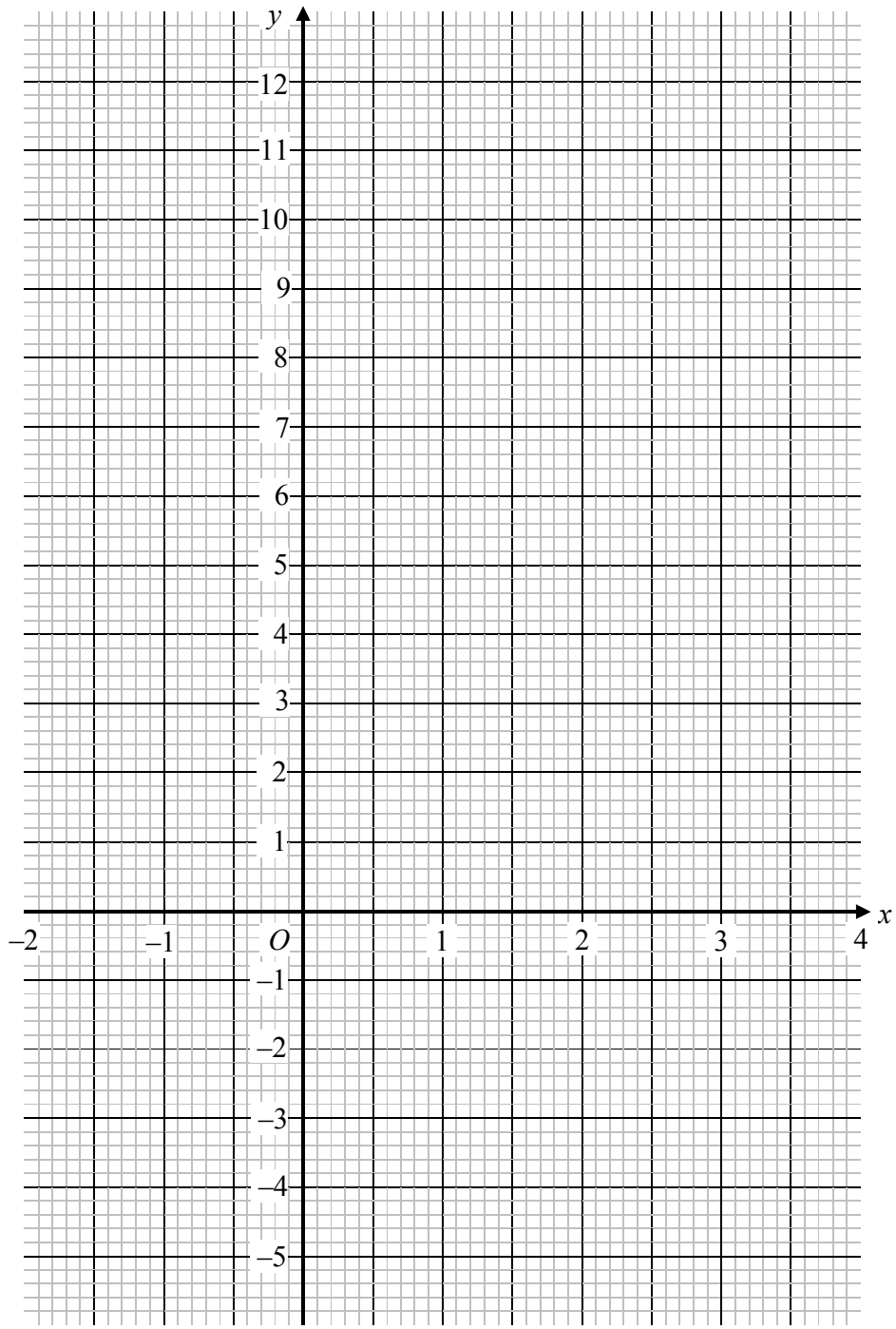
x	–2	–1	0	1	2	3	4
y	11		1	–1		1	5

(2)

(b) On the grid opposite, draw the graph of $y = x^2 - 3x + 1$

(2)

Leave blank



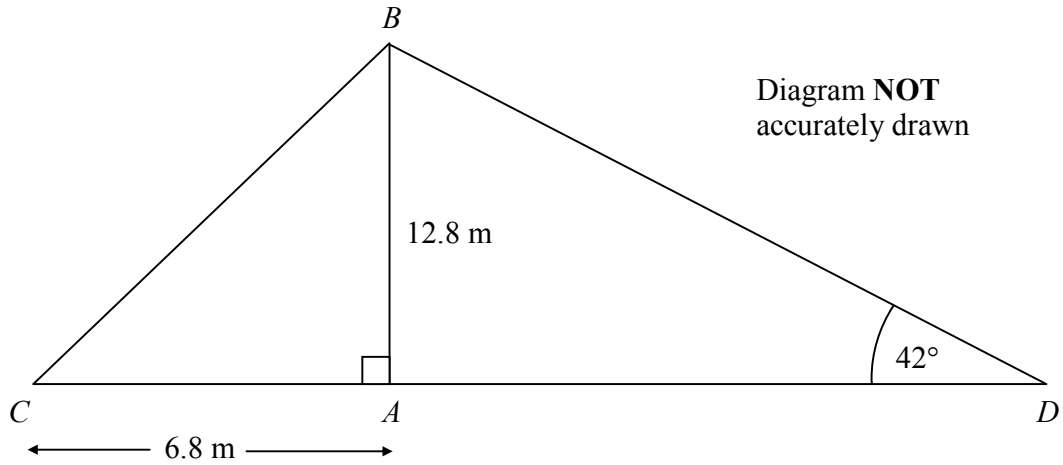
(c) Use your graph to find an estimate for the minimum value of y.

$y =$ ……

(1)

Leave blank

22. The diagram represents a vertical flagpole, *AB*.
The flagpole is supported by two ropes, *BC* and *BD*, fixed to the horizontal ground at *C* and *D*.



AB = 12.8 m.
AC = 6.8 m.
Angle *BDA* = 42°.

(a) Calculate the size of angle *BCA*.
Give your answer correct to 3 significant figures.

…….°
(3)

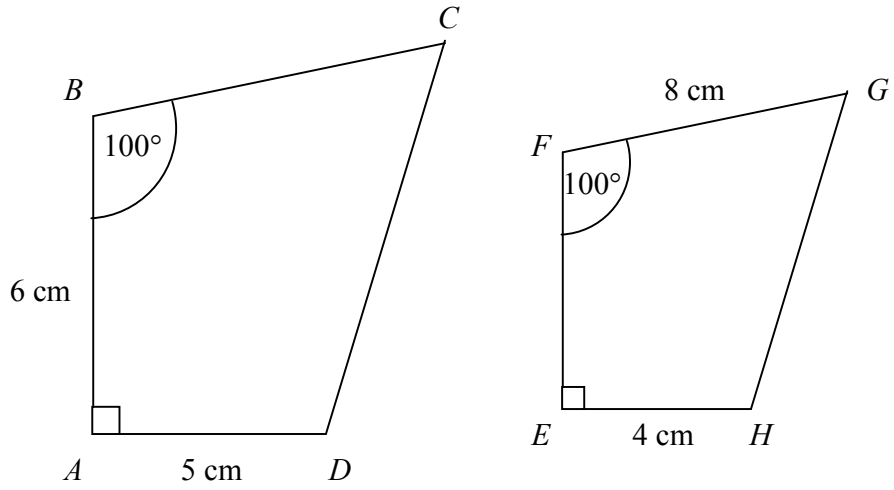
(b) Calculate the length of the rope *BD*.
Give your answer correct to 3 significant figures.

…… m
(3)

Leave blank

23.

Diagrams **NOT** accurately drawn



Shapes *ABCD* and *EFGH* are mathematically similar.

(i) Calculate the length of *BC*.

BC = ... cm

(ii) Calculate the length of *EF*.

EF = ... cm

(5)

Leave blank

24. Solve the simultaneous equations

$$2x + 3y = -3$$

$$3x - 2y = 28$$

$x =$ .....

$y =$ .....

(4)

---

25. Henry invests £4500 at a compound interest rate of 5% per annum.

At the end of n complete years the investment has grown to £5469.78.

Find the value of n.

.....

(2)

TOTAL FOR PAPER: 100 MARKS

END