WJEC CBAC

GCSE

185/02

MATHEMATICS (2 Tier)
FOUNDATION TIER
PAPER 2

A.M. WEDNESDAY, 12 November 2008

2 hours

ADDITIONAL MATERIALS

A calculator will be required for this paper.

INSTRUCTIONS TO CANDIDATES

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

Take π as 3·14 or use the π button on your calculator.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given at the end of each question or part-question.

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1	9	
2	5	
3	5	
4	4	
5	5	
6	8	
7	4	
8	5	
9	4	
10	3	
11	5	
12	2	
13	4	
14	4	
15	4	
16	3	
17	5	
18	3	
19	3	
20	4	
21	7	
22	4	
TOTAL MARK		

Formula List

Area of trapezium $= \frac{1}{2}(a + b)h$
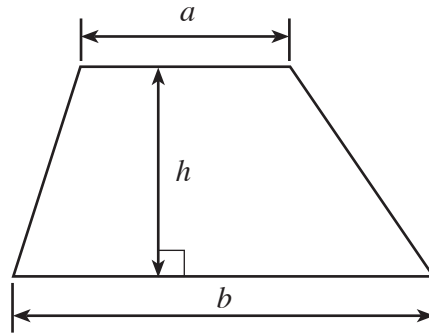
Volume of prism = area of cross-section × length
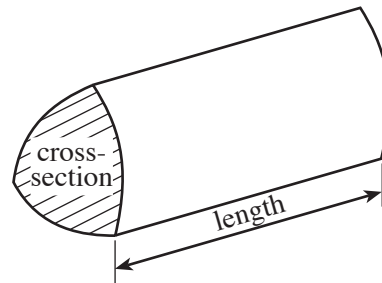
1. *(a)* (i) Stuart is making a patio outside his house.
He needs paving stones, sand, cement and post supports for a fence.
Complete the following bill.

[4]

Item	Cost
20 post supports @ £4.98 each	£ 99.60
62 paving stones @ £6.54 each	£
28 bags of cement @ £2.67 per bag	£
12 bags of sand @ £28.83 per bag	£
Total	£

(ii) He gets a discount of 10% for paying promptly. How much is Stuart's discount?

....

....

....
[2]

(b) Using only the numbers in the following list

27   15   24   56   64   7   8

write down

(i) a square number,

....

(ii) a multiple of 6,

....

(iii) a factor of 35.

....

[3]

2. *(a)* The following scale gives the speed of a car in m.p.h.

    (i) What speed is shown by the arrow A?

....
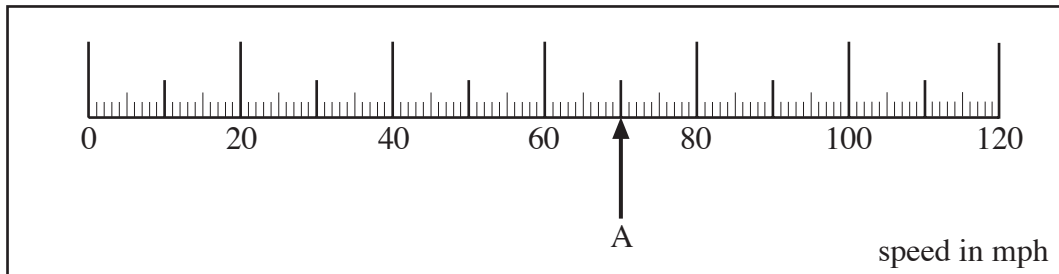
    (ii) Draw an arrow to show a speed of 55 m.p.h.

[2]
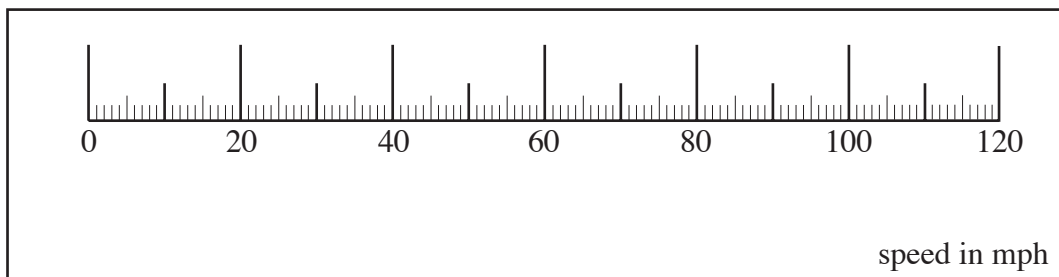
185-02

(b) A kitchen scale is used to weigh flour.

(i)
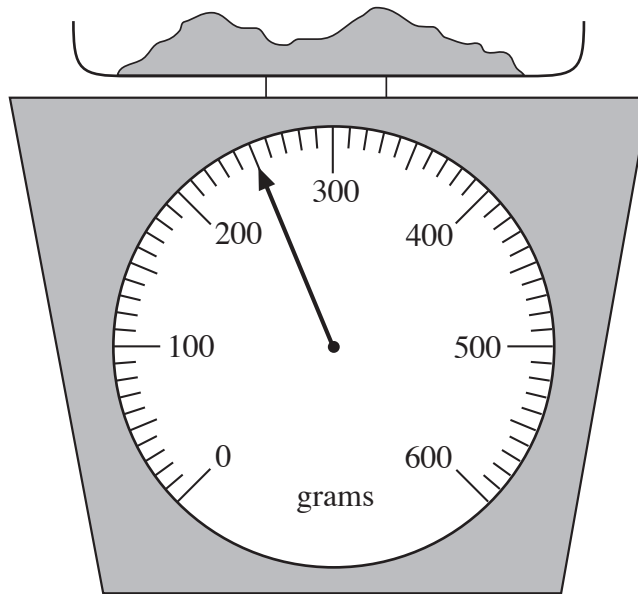
Write down the weight of the flour on the scale.

.... g

(ii) More flour is added until the weight of the flour is as shown on the scale below. How much more flour has been added?

....

....

[3]

Turn over.
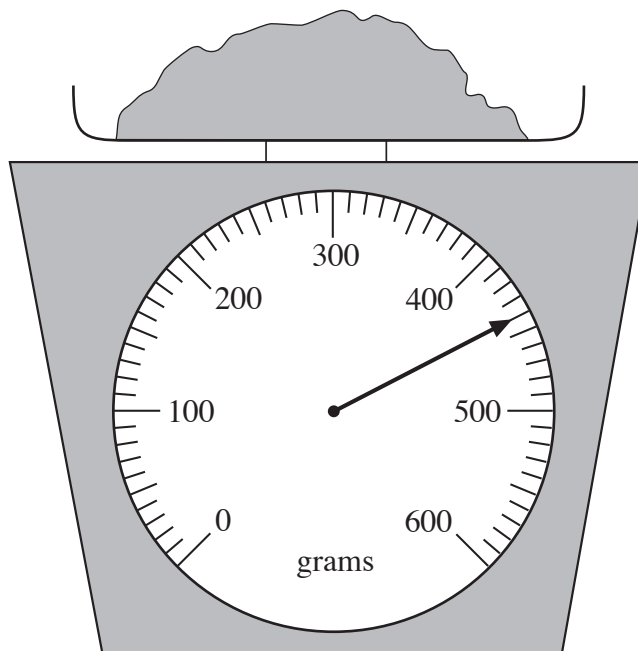
3. *(a)*
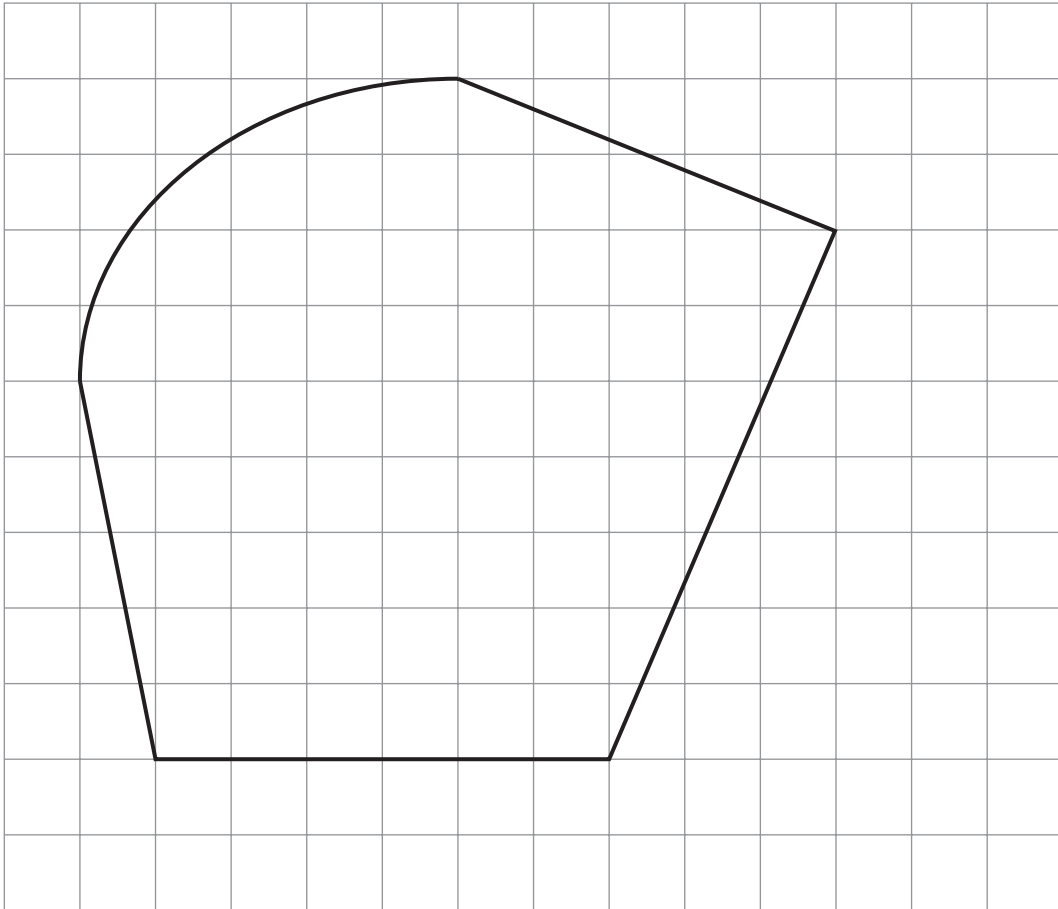
By counting squares, estimate the area of the above figure, which is drawn on a centimetre square grid.

Area = ... cm^2 [2]

(b) Draw lines connecting **each** of the following shapes to its correct name. One line has been drawn for you.

[3]

pentagon
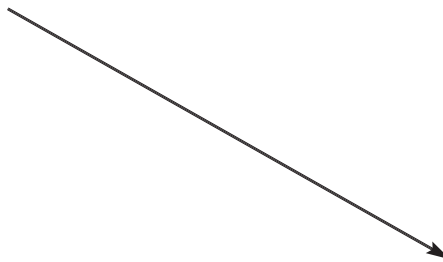
rectangle
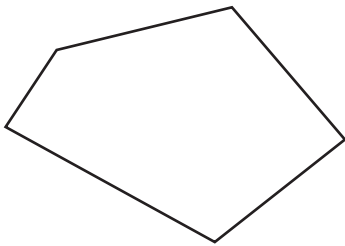
hexagon
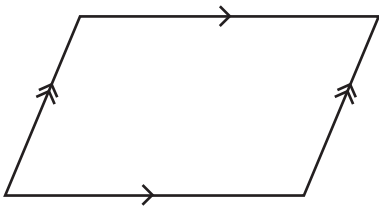
kite
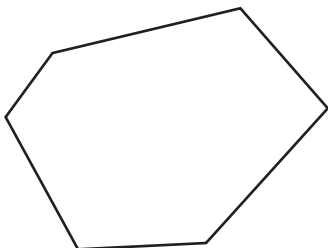
square

parallelogram

Turn over.

4. *(a)* (i) Draw a line through *C* that is parallel to *AB*.
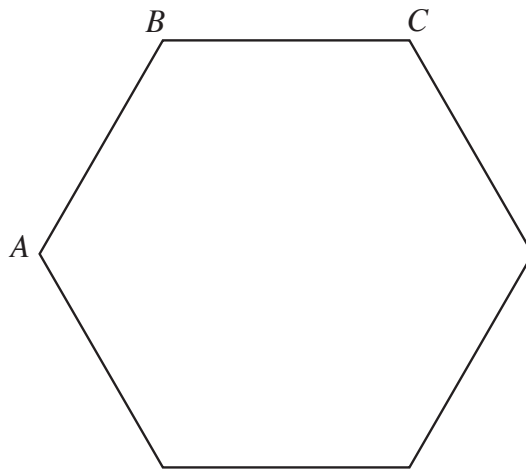
(ii) Draw a line through *R* that is perpendicular to *PQ*.
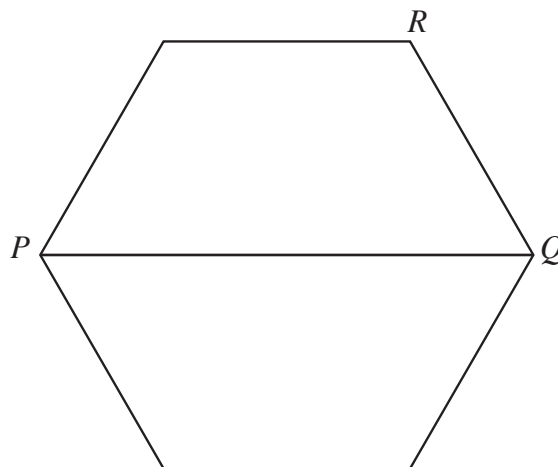
[2]

(b) Draw **all** the lines of symmetry on **each** of the following letters.

[2]
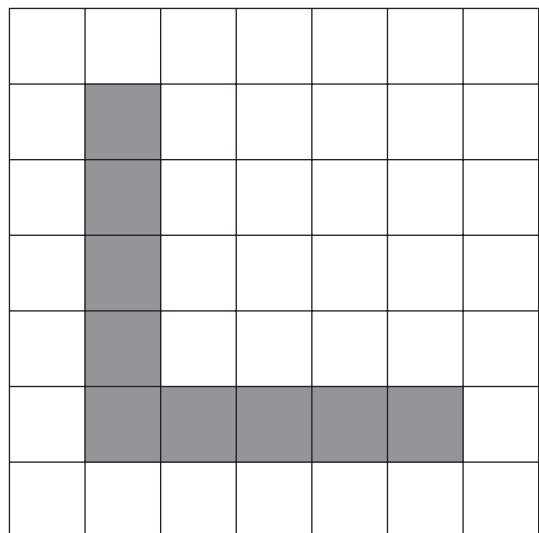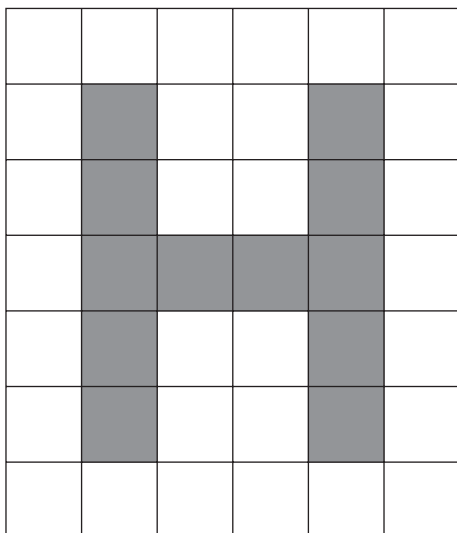
5. *(a)* Choose the best word from those given below to describe the chance of **each** of the following events occurring.

impossible   unlikely   an even chance   likely   certain

(i)   At least one of the months in the next 14 months will be June.

....

(ii)   A score of 5 is obtained when the spinner shown below is spun once.

....
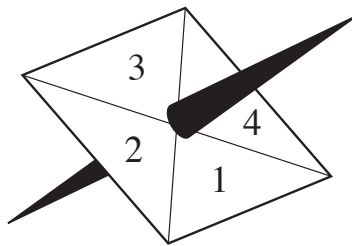
(iii)   An odd number score is obtained when the spinner shown above is spun once.

....

(iv)   Winning a raffle when you have bought five of the 300 tickets sold.

....

[4]

(b) The diagram below is one row in a pictogram. It represents 200 buses.

Complete the following.

The symbol represents .... buses.

[1]

Turn over.

6. *(a)* Simplify **each** of the following expressions.

    (i) $p + 4p + 3p$

....

    (ii) $7x - 5y - 3x$

....

[2]

(b) Describe, **in words**, the rule for continuing **each** of the following sequences.

    (i)   36,   31,   26,   21, ...

    Rule: ....

....

    (i)   3,   9,   27,   81, ...

    Rule: ....

....

[2]

(c) Given that $P = 3W + 2T$, find the value of P when $W = 20$ and $T = 4$.

....

....

[2]

(d) Solve the equations

    (i) $8x = 48$,

....

....

    (ii) $x + 7 = 15$.

....

....

[2]

7. The picture is of a block of flats with a man standing in the doorway.
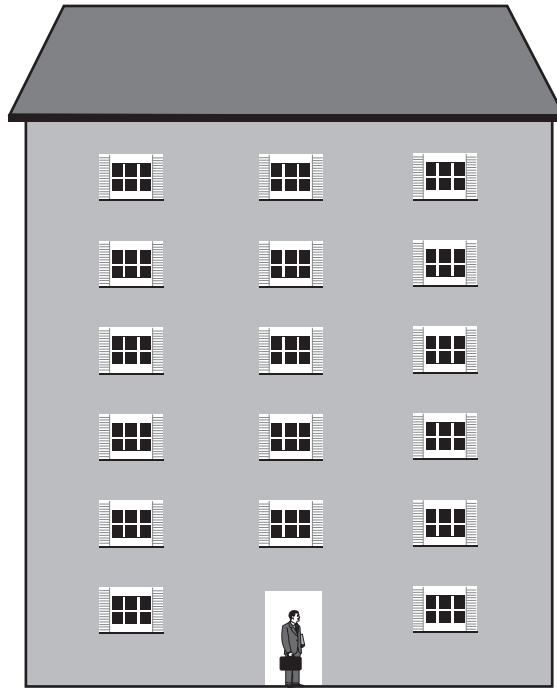
Estimate the height of the building (to the highest point).

....

....

....

....

....

....

....

....

[4]

Turn over.

8. Ashley plays cricket for the school team. His scores in seven matches were:

<div style="text-align:center">46   40   12   51   35   26   14</div>

(a) Find his mean score for these matches.

....

....

....

....
[3]

(b) Find the median of these scores.

....

....

....

....
[2]

9. *(a)* Martin buys 4 notebooks at 78p each.
He pays with a £5 note.
How much change should he get?

....

....

....

....
[2]

(b) Find $\frac{5}{6}$ of 84.

....

....

....

....
[2]

10.
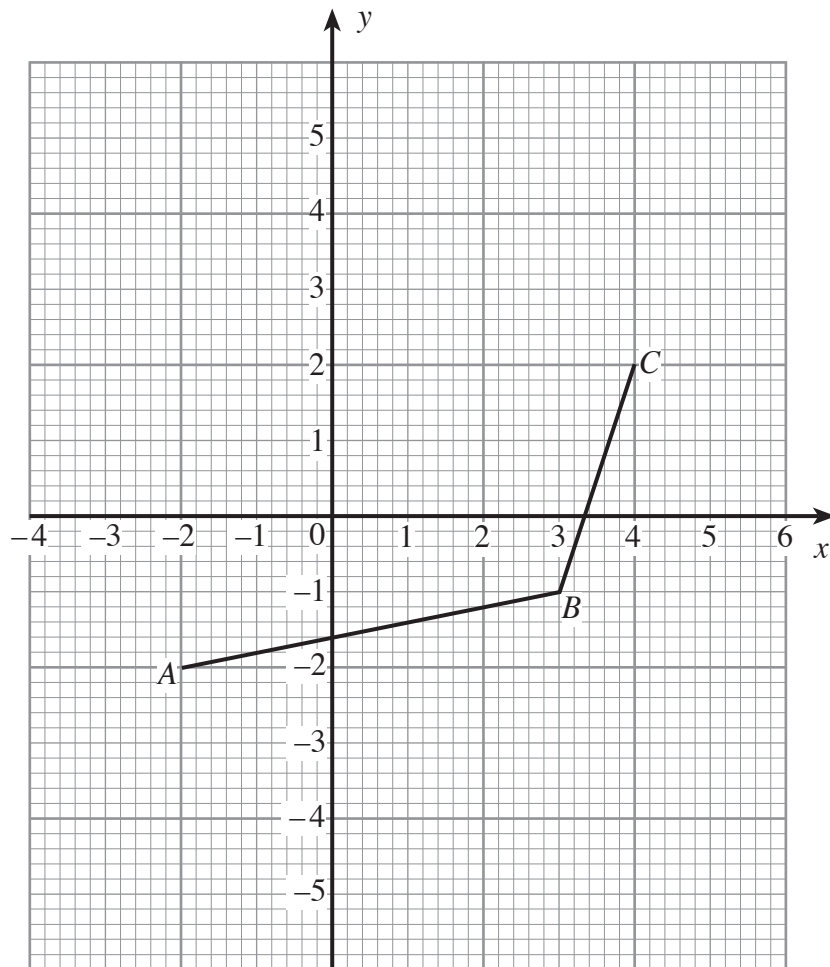
(a) Write down the coordinates of the point *C*.

Coordinates of *C* are (........................., ...)

[1]

(b) The point *T* has coordinates (–3, 2). Plot and label the point *T*.

[1]

(c) The point *D* is such that *ABCD* is a parallelogram. Write down the coordinates of *D*.

Coordinates of *D* are (........................., ...)

[1]

Turn over.

11. *(a)* Louise hires a chainsaw for a number of days. The hire charges are:
£5.20 for the first day,
£3.15 for each additional day.
Her total bill was £24.10.
For how many days did she hire the chainsaw?

....

....

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....

[3]

(b) Calculate 26% of 79.

....

....

....

....

[2]

12. Draw, on the grid below, an enlargement of the given shape, using a scale factor of 3.

[2]

Turn over.
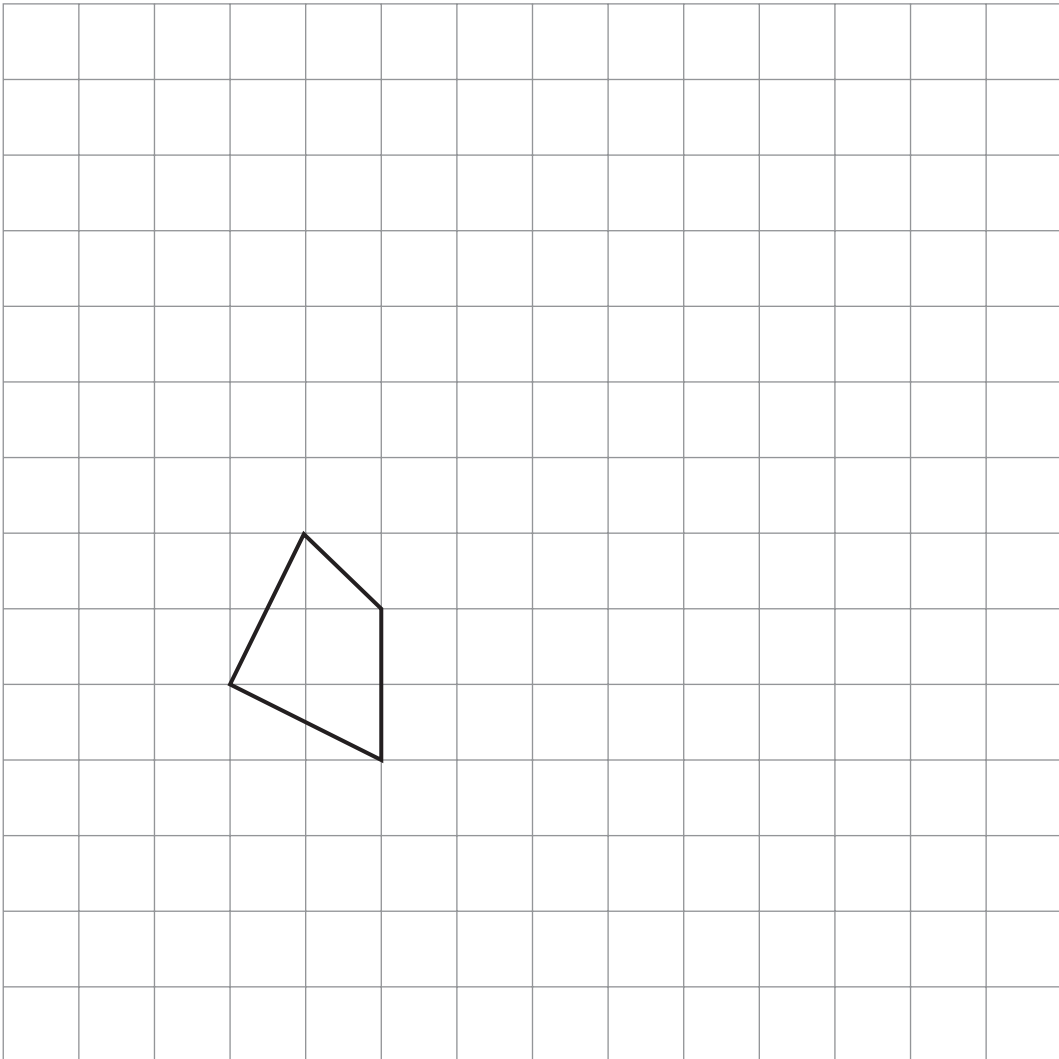
13. *(a)* Find the size of the angle marked *x*.

....

....

....
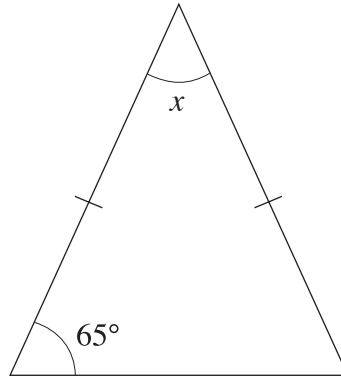
$x = $ .... °

[2]

(b) Find the size of the angle marked *y*.

....

....

....
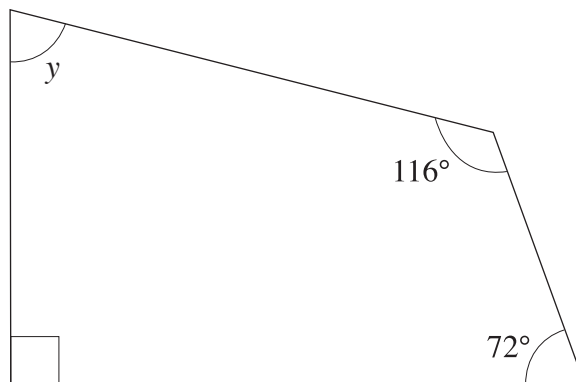
$y = $ .... °

[2]

14. *(a)* Write down the next two numbers in the sequence:

43,   39,   33,   25,   15, ..., ...

[2]

(b) Calculate $3{\cdot}5^2 + \sqrt{4{\cdot}6}$.

....

....

[1]

(c) Solve $\dfrac{x}{4} = 9$.

....

....

[1]

15. *(a)* Before her holiday, Melanie changed £800 into euros (€), when the rate of exchange was £1 = €1.49. How many euros did she get?

....

....

....

....

[2]

(b) Melanie buys a present for €96.85. Using the same rate of exchange, find the value of the present in pounds.

....

....

....

....

[2]

Turn over.

16. Year 11 pupils in a comprehensive school were asked to vote for Andrew, Beryl or Cheryl.

The two pie charts below were drawn by Harry to illustrate the results for the boys and girls separately.

Boys   Girls
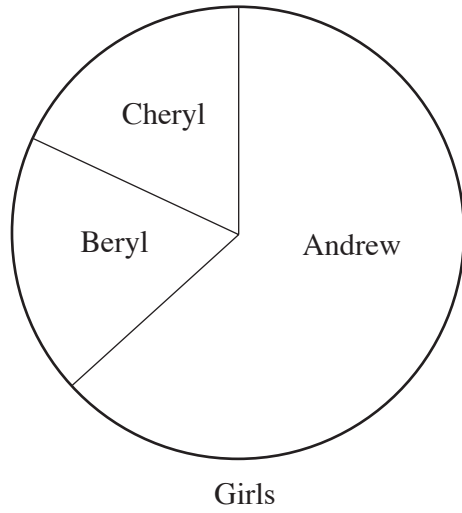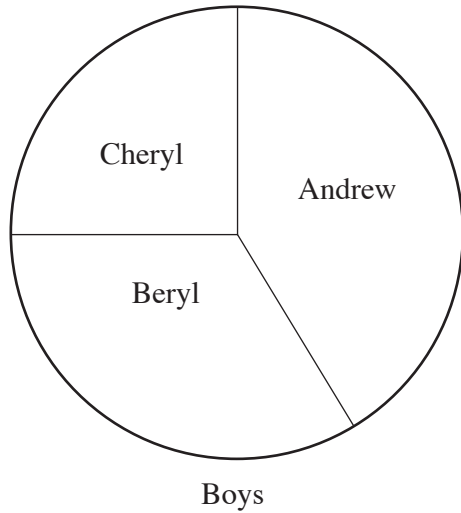
(a) Estimate the percentage of the boys who voted for Cheryl.

.... %

[1]

(b) Can you tell from the pie charts whether more girls than boys voted for Andrew?
Put a circle around your choice.

Yes / No

Explain the reasoning for your answer.

....

....

....

....

....

[2]

17. Mr. and Mrs. Hughes received their electricity bill. The details were as follows.

Present meter reading   7362
Previous meter reading   4854

Charge per unit   10.25p per unit

Service Charge   15.7p per day for 92 days

VAT   5%

Showing all your working, find the total cost of the electricity including VAT.

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....

[5]

Turn over.

18. Solve the equation

$$6x - 7 = 2x + 11.$$

....

....

....

....

....

[3]

19. A trapezium *ABCD* is such that *AB* is parallel to *DC*, *AB* = 32·4 cm, *DC* = 45·6 cm and the perpendicular distance between the parallel sides is 7·2 cm. Calculate the area of the trapezium, clearly stating the units of your answer.

Diagram not drawn to scale.

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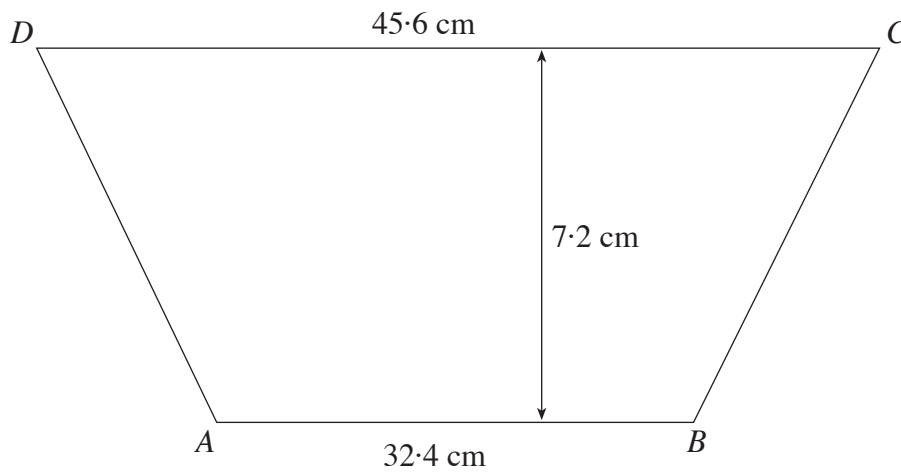
[3]

20. A business declares that, in each year, its office equipment depreciates at the rate of 18% of its value at the beginning of that year. Find, to the nearest £100, the value of its office equipment at the end of 3 years of depreciation, if its value at the beginning of the period was £35 000.

....

....

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....

....

....

....

....

[4]

Turn over.

21. The duration, in minutes, of each of 150 phone calls was recorded. The table shows a grouped frequency distribution of the results.

Duration of phone call in minutes (t)	Number of phone calls
$0 < t \leqslant 5$	36
$5 < t \leqslant 10$	58
$10 < t \leqslant 15$	26
$15 < t \leqslant 20$	18
$20 < t \leqslant 25$	10
$25 < t \leqslant 30$	2

(a) On the graph paper below, draw a grouped frequency diagram for the data.

[3]
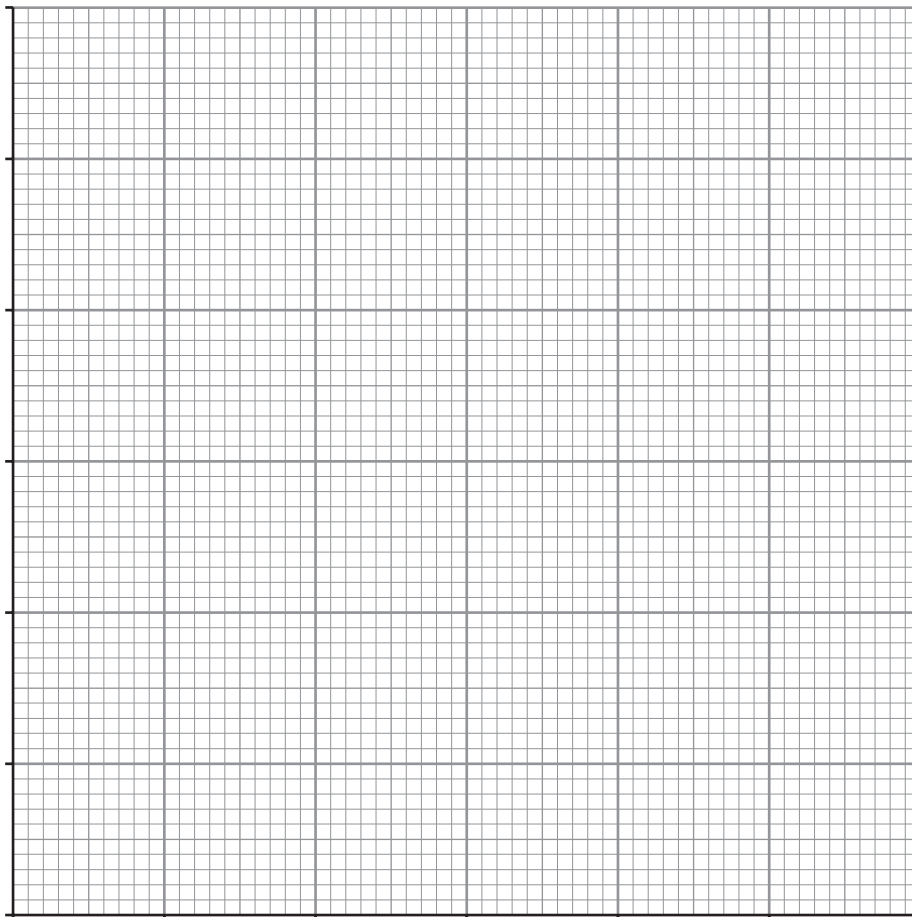
(b) Find an estimate for the mean duration of a phone call.

....

....

....

....

....

....

....

[4]

22. A solution to the equation

$$x^3 + 3x - 8 = 0$$

lies between 1·5 and 1·6.

Use the method of trial and improvement to find this solution correct to two decimal places.

....

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....

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....

....

[4]