Paper Reference(s)

5523/04

Edexcel GCSE

Mathematics A – 1387

Paper 4 (Calculator)

Intermediate Tier

Monday 11 June 2007 – Morning

Time: 2 hours

Materials required for examination	**Items included with question papers**
Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.	Nil

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initials and signature.
Check that you have the correct question paper.
Answer ALL the questions. Write your answers in the spaces provided in this question paper.
You must NOT write on the formulae page. Anything you write on the formulae page will gain NO credit.
If you need more space to complete your answer to any question, use additional answer sheets.

Information for Candidates

The marks for individual questions and the parts of questions are shown in round brackets: e.g. **(2)**.
There are 25 questions in this question paper. The total mark for this paper is 100.
There are 24 pages in this question paper. Any blank pages are indicated.
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.

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 and attempt the next one.
Return at the end to those you have left out.

Turn over

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Area of trapezium $= \frac{1}{2}(a+b)h$

Volume of prism = area of cross section × length

Answer ALL TWENTY FIVE questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1. Jamie goes on holiday to Florida.
    The exchange rate is £1 = 1.70 dollars.

    He changes £900 into dollars.

    (a) How many dollars should he get?

    .... dollars

    (2)

    After his holiday Jamie changes 160 dollars back into pounds.
    The exchange rate is still £1 = 1.70 dollars.

    (b) How much money should he get?
         Give your answer to the nearest penny.

    £ ....

    (2) **Q1**

    (Total 4 marks)

M 2 5 7 6 5 A 0 3 2 4

2. (a) Use your calculator to work out $\dfrac{4.7}{9.4-3.5}$

Write down all the figures on your calculator display.

....

(2)

(b) Write these numbers in order of size.
Start with the smallest number.

$$0.82 \qquad \frac{4}{5} \qquad 85\% \qquad \frac{2}{3} \qquad \frac{7}{8}$$

....

(2)

(Total 4 marks)

3. The two-way table shows some information about students in Years 7, 8 and 9.

	Year 7	Year 8	Year 9	Total
Can swim		61	74	
Cannot swim	33			60
Total			84	250

Complete the two-way table.

(Total 3 marks)

4. (a) Complete the table of values for $y = 2x + 1$

x	-2	-1	0	1	2	3
y		-1	1			

(2)

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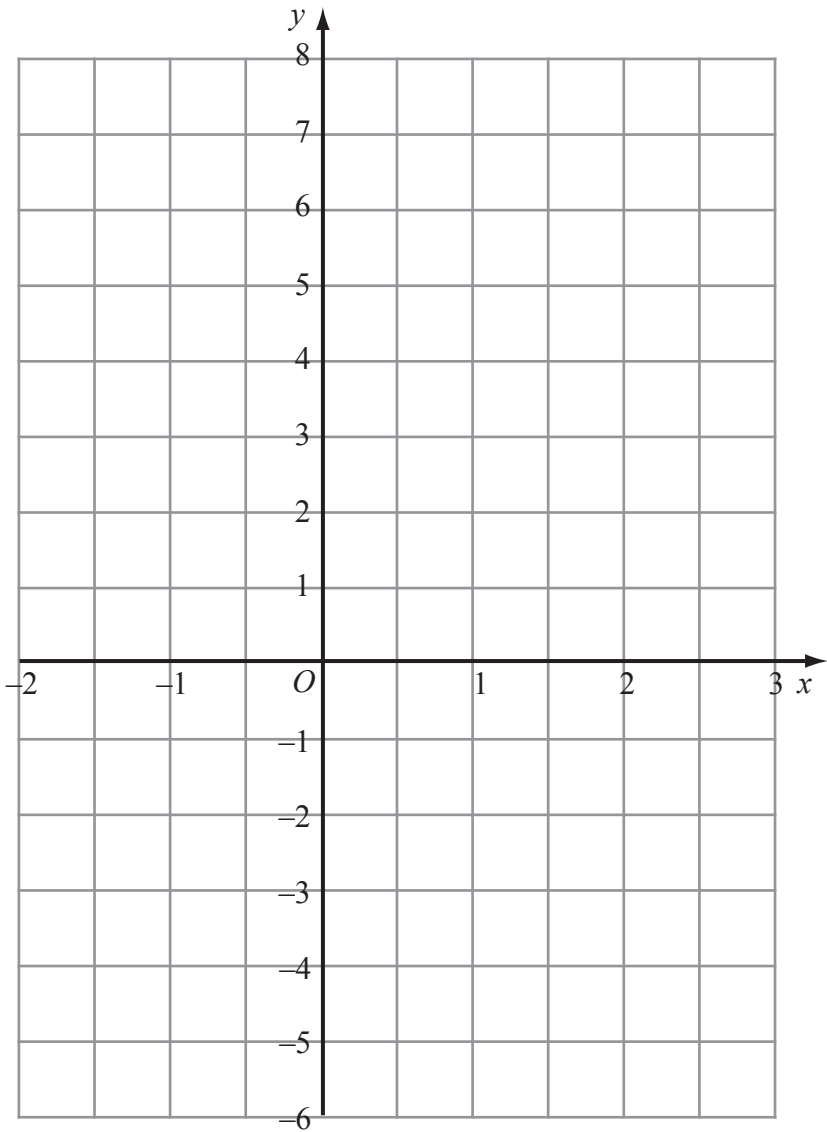
(2)

(c) Use your graph to find

(i) the value of y when $x = -1.5$

$y = $ ....

(ii) the value of x when $y = 6$

$x = $ ....

(2)

(Total 6 marks)

5.

54°

Diagram **NOT**
accurately drawn

x   *y*

B   *C*   *D*

A
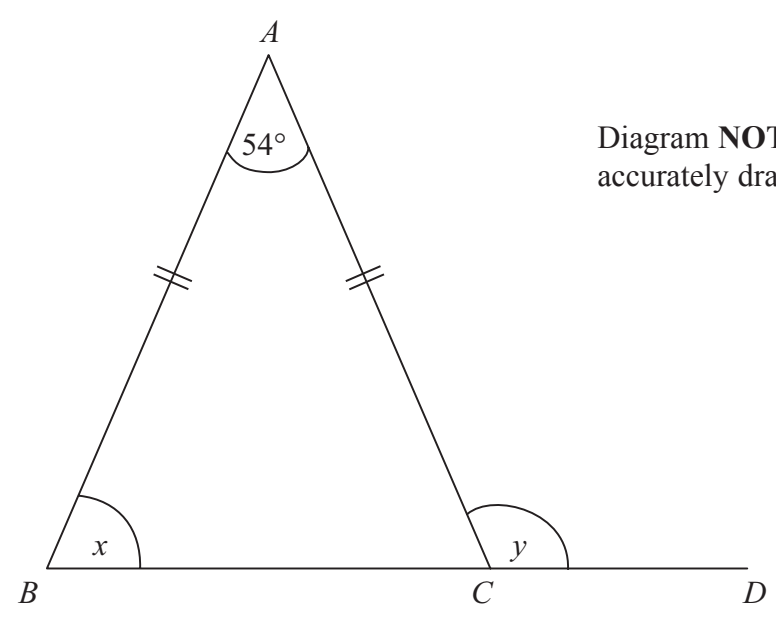
ABC is an isosceles triangle.
BCD is a straight line.
AB = *AC*.
Angle *A* = 54°.

(a) (i) Work out the size of the angle marked *x*.

.... °

   (ii) Give a reason for your answer.

   ....

   ....

(3)

(b) Work out the size of the angle marked *y*.

.... °
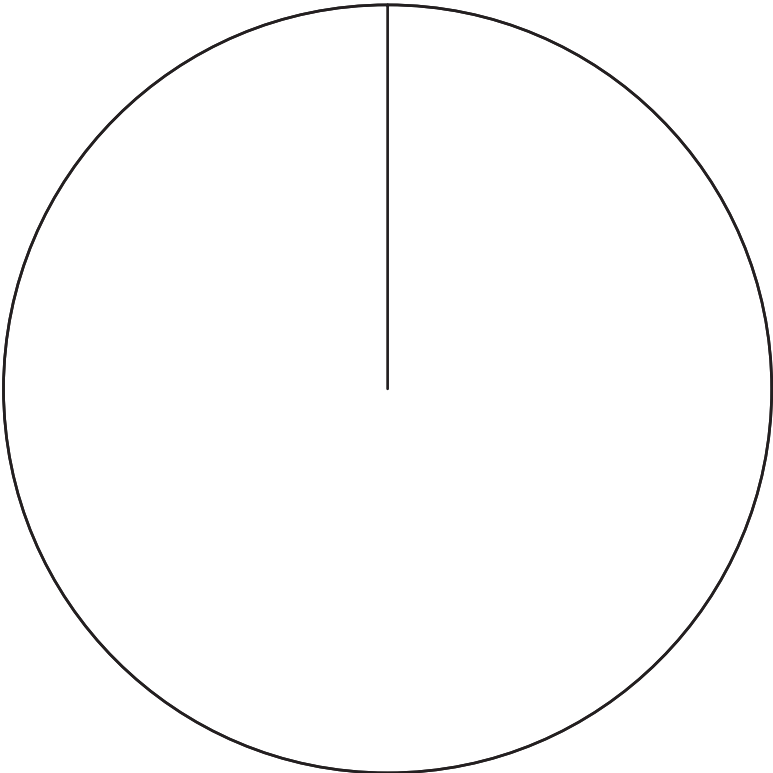
(1)

(Total 4 marks)

Q5

6. Ali asked 120 students at his school "What is your favourite flavour of crisp?"
The table shows his results.

Flavour of crisp	Frequency	Angle
Plain	15	
Cheese & Onion	40	
Salt & Vinegar	55	
Beef	10	

Draw an accurate pie chart to show these results.

Q6

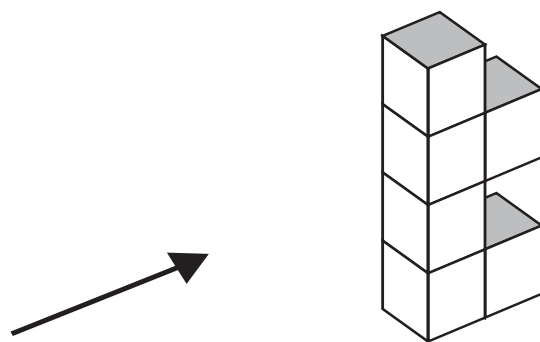(Total 4 marks)

M 2 5 7 6 5 A 0 7 2 4

7. Tom the plumber charges £35 for each hour he works at a job, plus £50
The amount Tom charges, in pounds, can be worked out using this rule.

> Multiply the number of hours
> he works by 35
>
> Add 50 to your answer

Tom charged a customer £260 for a job.

(a) How many hours did Tom work?

.... hours

(3)

Tom works *h* hours at a job.
He charges *P* pounds.

(b) Write down a formula for *P* in terms of *h*.

....
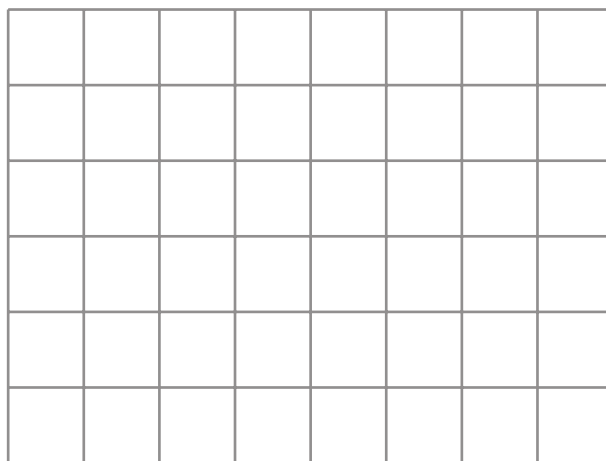
(3)

(Total 6 marks)

Q7

8. The diagram shows a solid object made of 6 identical cubes.
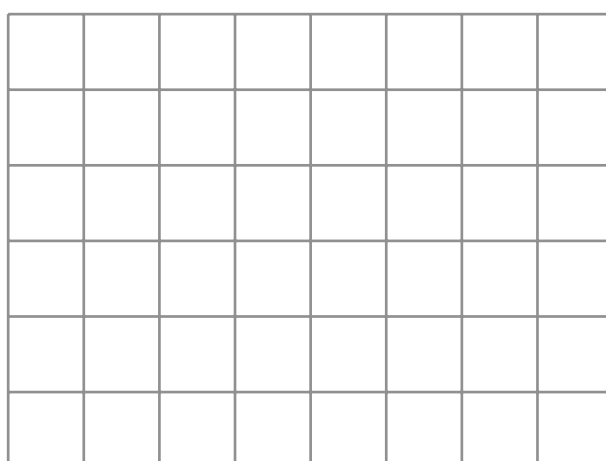
(a) On the grid below, draw the side elevation of the solid object from the direction of the arrow.

(2)

(b) On the grid below, draw the plan of the solid object.
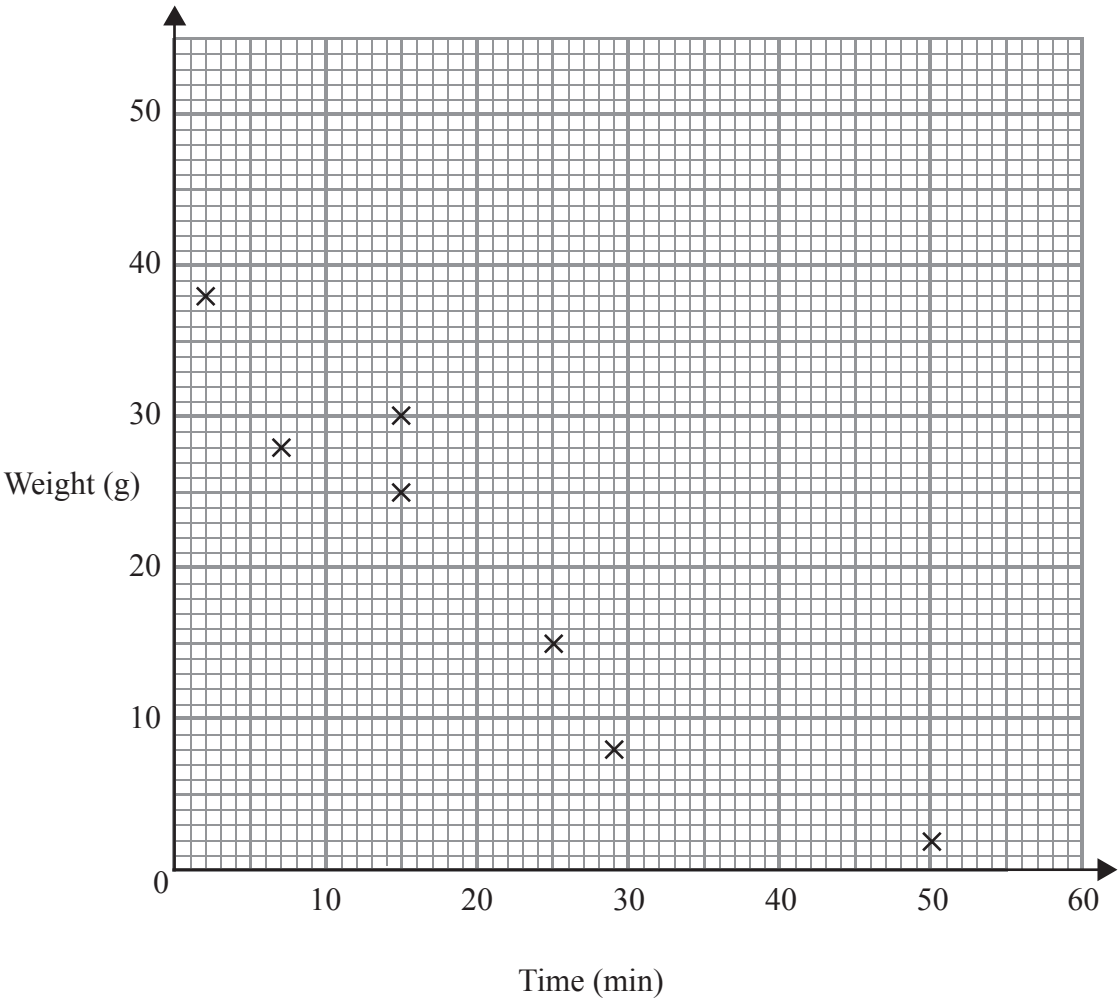
(2) Q8

(Total 4 marks)

Turn over

9. Identical candles were lit.
The table shows, for ten of these candles, the number of minutes each candle burnt before it went out and the weight left of each candle when it went out.

Time (min)	29	15	25	50	2	15	7	30	35	35
Weight (g)	8	25	15	2	38	30	28	20	15	12

(a) Complete the scatter graph. The first 7 points have been plotted for you.

Weight (g)

Time (min)

(1)

(b) Describe the **correlation** between the time and the weight.

....

(1)

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

(1)

A candle burnt for 20 minutes.

(d) (i) Use your line of best fit to estimate the weight of this candle when it went out.

.... g

Another candle had a weight of 10 g when it went out.

(ii) Use your line of best fit to estimate the number of minutes this candle burnt before it went out.

.... min

(2)

Q9

(Total 5 marks)

10. Here is a list of the ingredients needed to make scones for **4** people.

> **Scones**
>
> Ingredients for **4** people
>
> 200 g   of flour
>   2   eggs
> 50 g   of currants
> 100 m*l* of milk

Work out how much of each ingredient is needed to make scones for **6** people.

.... g of flour

.... eggs

.... g of currants

.... m*l* of milk

Q10

(Total 3 marks)

11. (a) Solve $6x - 7 = 38$

$x =$ ....

(2)

(b) Solve $4(5y - 2) = 40$

$y =$ ....

(3)

(Total 5 marks)

12.

70
mph

120
k/h

Great Britain   Spain

The motorway speed limit in Great Britain is 70 miles per hour.
The motorway speed limit in Spain is 120 kilometres per hour.

Which of these speed limits is the lowest speed?
You must show working to explain your answer.

....

(Total 3 marks)
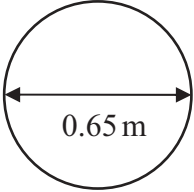
13. The diameter of a wheel on Harry's bicycle is 0.65 m.

(a) Calculate the circumference of the wheel.
     Give your answer correct to 2 decimal places.

Diagram **NOT**
accurately drawn

0.65 m

.... m

(2)

Harry cycles 1000 metres.

(b) Calculate the number of turns the wheel makes.

....

(2)   Q13

(Total 4 marks)

14. A concert ticket costs £45 plus a booking charge of 15%.

Work out the total cost of a concert ticket.

£ Q14

(Total 3 marks)

15. A shop sells CDs and DVDs.
In one week the number of CDs sold and the number of DVDs sold were in the ratio 3:5
The total number of CDs and DVDs sold in the week was 728

Work out the number of CDs sold.

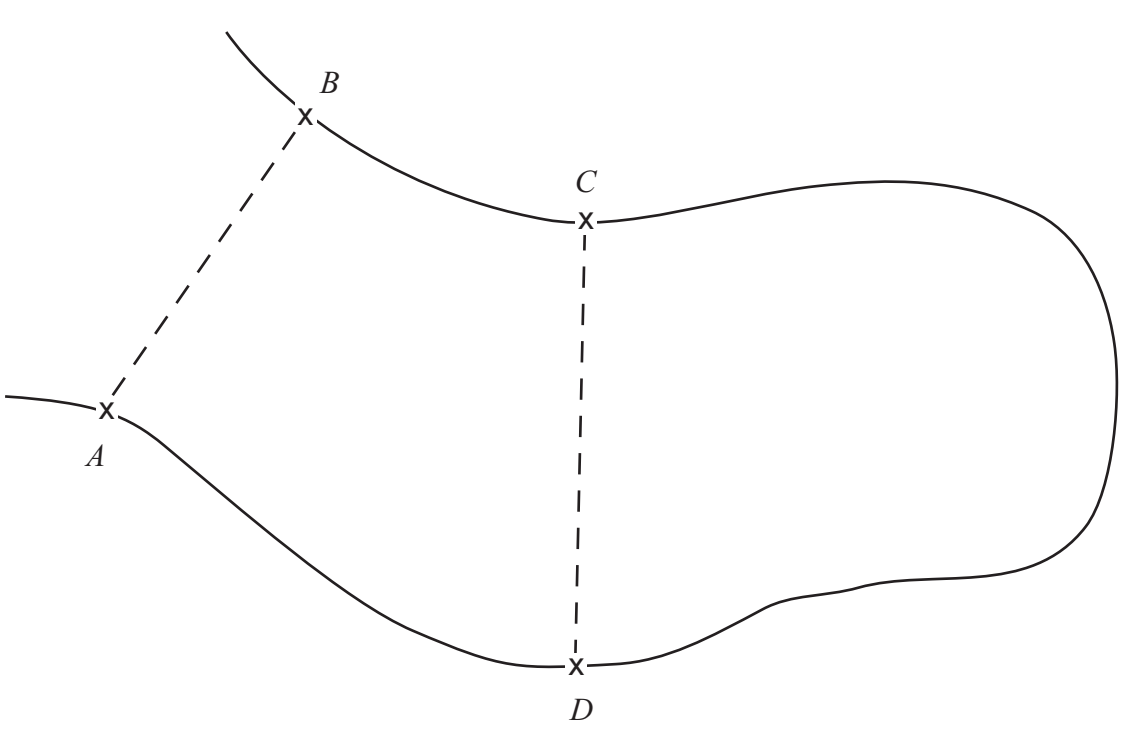.................................. Q15

(Total 2 marks)

16. The equation

$$x^3 - x = 30$$

has a solution between 3 and 4
Use a trial and improvement method to find this solution.
Give your answer correct to 1 decimal place.
You must show **all** your working.

$x = $ ....

(Total 4 marks)

17.

Diagram **NOT** accurately drawn

34 cm

diagonal

45 cm

A rectangular television screen has a width of 45 cm and a height of 34 cm.

Work out the length of the diagonal of the screen.
Give your answer correct to the nearest centimetre.

.... cm

(Total 4 marks)

18. James invested £2000 for three years in an Internet Savings Account.
He is paid 5.5% per annum **compound** interest.

Work out the **total interest** earned after three years.

£ ....

(Total 3 marks)

19. The map shows part of a lake.

In a competition for radio controlled boats, a competitor has to steer a boat so that
   its path between *AB* and *CD* is a straight line
   this path is always the same distance from *A* as from *B*

On the map, draw the path the boat should take.

(Total 2 marks)

Turn over

20. The table gives some information about the time taken by a group of 100 students to complete an IQ test.

Time (*t* seconds)	Frequency	
$60 < t \leqslant 70$	12	
$70 < t \leqslant 80$	22	
$80 < t \leqslant 90$	23	
$90 < t \leqslant 100$	24	
$100 < t \leqslant 110$	19	

(a) Write down the modal class interval.

....
(1)

(b) Calculate an estimate for the mean time taken by the students.

.... seconds
(4)

(Total 5 marks)

21. The diagram shows two quadrilaterals that are mathematically **similar**.
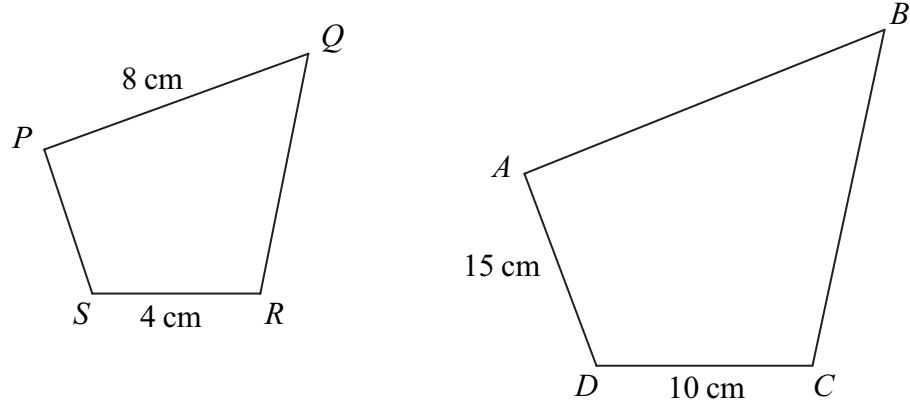

Diagram **NOT** accurately drawn

In quadrilateral *PQRS*, *PQ* = 8 cm, *SR* = 4 cm.
In quadrilateral *ABCD*, *AD* = 15 cm, *DC* = 10 cm.
Angle *PSR* = angle *ADC*.
Angle *SPQ* = angle *DAB*.

(a) Calculate the length of *AB*.

.... cm

(2)

(b) Calculate the length of *PS*.

.... cm

(2)

(Total 4 marks)

Q21

22. (a) Expand and simplify $(x + 3)(x - 4)$

....
(2)

(b) Factorise $x^2 + 7x + 10$

....
(2)

(c) $p = 3t + 4(q - t)$

Find the value of q when $p = 6$ and $t = 5$

$q =$ ....
(3)

(Total 7 marks)

Q22

23. In 2003 the population of Great Britain was 6.0×10^7
In 2003 the population of India was 9.9×10^8

(a) Work out the difference between the population of India and the population of Great Britain in 2003.
Give your answer in standard form.

....
(2)

In 1933 the population of Great Britain was 4.5×10^7

(b) Calculate the percentage increase in the population of Great Britain from 1933 to 2003.
Give your answer correct to one decimal place.

.... %
(3)

(Total 5 marks)

24. Martin is organising a summer fair.
He needs bread buns and burgers for the barbecue.

Bread buns are sold in packs. Each pack contains 40 bread buns.
Burgers are sold in packs. Each pack contains 24 burgers.
Martin buys exactly the same number of bread buns as burgers.

What is the least number of each pack that Martin buys?

.... packs of bread buns

.... packs of burgers

(Total 3 marks)

25. The mean of eight numbers is 41
The mean of two of the numbers is 29

What is the mean of the other six numbers?

.... **Q25**

(Total 3 marks)

TOTAL FOR PAPER: 100 MARKS

END

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