Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise 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.

Information

- The total mark for this paper is 80
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

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Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1   60% of the students at a school walk to school.

Work out the percentage of the students who do **not** walk to school.

....%

(Total for Question 1 is 1 mark)

2   Here is a list of numbers.

10   16   21   28   43

One of these numbers is a power of 2

Which number?

....

(Total for Question 2 is 1 mark)

3   The probability of an event is shown by the cross (✕) on the probability scale.
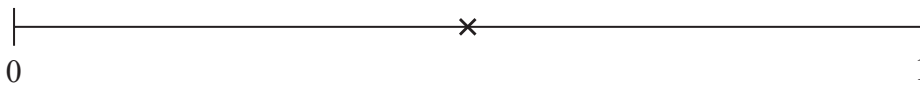
Write down an estimate for the probability of the event.

....

(Total for Question 3 is 1 mark)

4 Write $\frac{1}{5}$ as a decimal.

....

(Total for Question 4 is 1 mark)

5 Debra recorded the favourite colour of each of the 30 students in her class.

The incomplete table shows some information about her results.

Colour	Number of students
red	7
green	6
yellow	5
blue	10
other	

(a) Complete the table for Debra's results.

(1)

(b) What is the modal colour?

....

(1)

Mark asked each student in a different class to name their favourite colour.

For this class,
the number of students who said blue is three times the number of students who said green.

(c) Write down the ratio of
the number of students who said blue to the number of students who said green.

....

(1)

(Total for Question 5 is 3 marks)

6 Here is a list of numbers.

11	15	22	37	49	63	75

From the numbers in the list,

(a) write down an even number

....
(1)

(b) write down a multiple of 9

....
(1)

(c) write down a square number.

....
(1)

(Total for Question 6 is 3 marks)

7 Jaroslav puts some items into his rucksack.

The table shows the weight of each item.

Item	Weight
2 apples	120g each
2 bottles of water	524g each
camera	474g
map	86g
mobile phone	214g
umbrella	339g

The rucksack has a weight of 275 g.

Work out the total weight of the rucksack and all the items.
Give your answer in kilograms.

....kg

(Total for Question 7 is 3 marks)

8 Here are the first five numbers in a sequence.

<div align="center">47   41   35   29   23</div>

(a) Find the first negative number in the sequence.

....

(2)

Sarah says,

"–100 is **not** a number in this sequence."

(b) Is Sarah correct?
Explain why.

....

....

(1)

(Total for Question 8 is 3 marks)

9 Becky invests £5000 for 2 years in a bank account.
She gets simple interest at a rate of 3% per year.

Work out the total amount of interest Becky gets by the end of 2 years.

£...

(Total for Question 9 is 2 marks)

10 A teacher asks George to think of a number.

She then says,

"Add 10 to your number and multiply the answer by 3"

George thinks of the number 5

He writes down

$$5 + 10 \times 3 = 35$$

What should George have written down?

.... = ...

(Total for Question 10 is 2 marks)

11 Polly has a full 5 kg sack of rice.

She pours the rice from this sack into bags.
She fills as many bags as possible.

Each full bag contains 350 g of rice.

(a) How many bags did Polly fill from this sack of rice?

....

(3)

Polly assumes that the rice from two sacks will fill twice as many bags as the rice from one sack.

(b) Is Polly correct?

You must give a reason for your answer.

....

....

(1)

(Total for Question 11 is 4 marks)

12 A rule to change a UK shoe size to a European shoe size is

> multiply the UK shoe size by 1.25 and then add 32

European shoe sizes are given as whole numbers.

Katie's UK shoe size is 5

(a) Work out Katie's European shoe size.

....

(2)

Gustav's European shoe size is 42

(b) Work out Gustav's UK shoe size.

....

(2)

(Total for Question 12 is 4 marks)

S 5 7 4 9 3 A 0 9 2 4

13 Judith and Simon are organising different parties at a hotel.

This graph can be used to find the cost, in pounds (£), for different numbers of people.
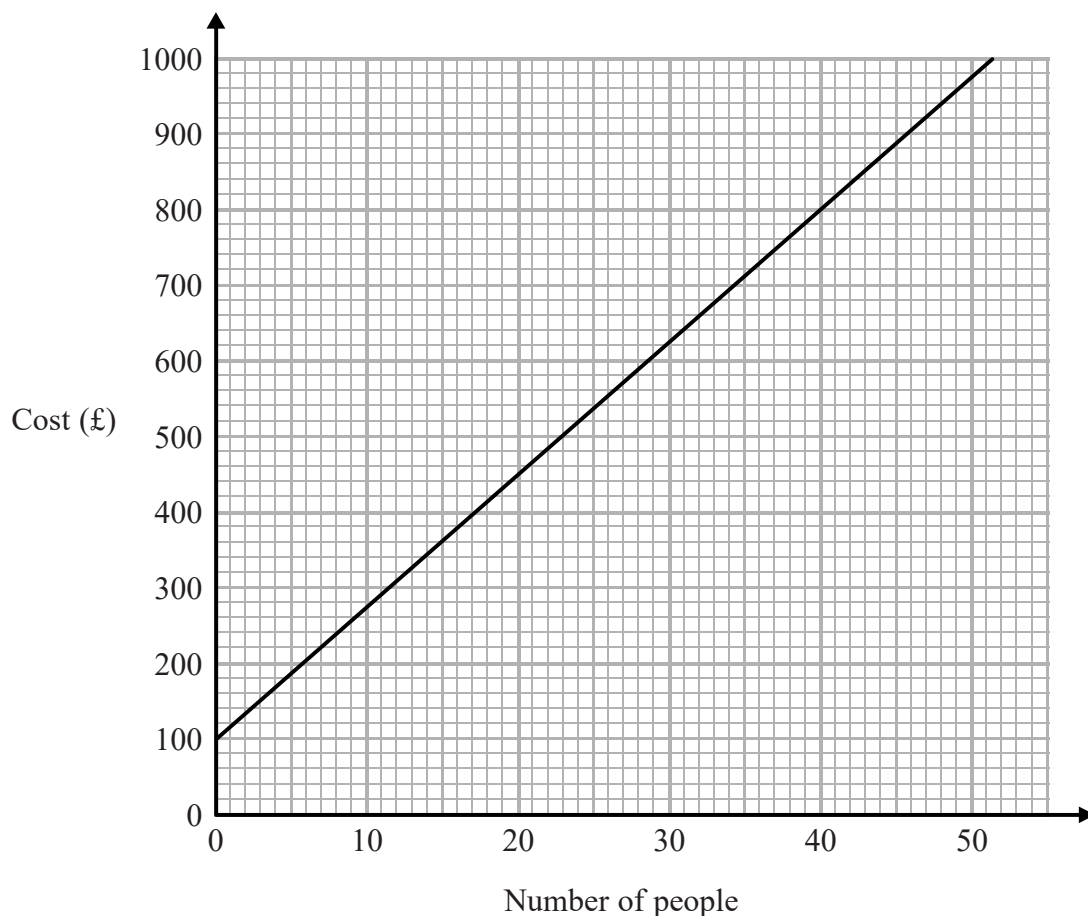
Judith has £700 to spend on a party.

(a) Find the greatest number of people she can have at her party.

....

(1)

Simon is organising a party for 20 people.

(b) Use the graph to find the cost.

£...

(1)

More than 20 people want to go to Simon's party.

(c) Work out the cost for each extra person.

£..

(2)

(Total for Question 13 is 4 marks)

14 (a) Write £4.20 : £1.40 : £7 in its simplest form.

....

(2)

(b) Write a number on the dotted line to complete the statement 6 : 4 = ... : 1

(1)

(Total for Question 14 is 3 marks)

15
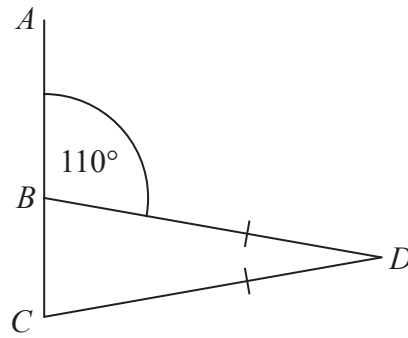
ABC is a straight line.
BD = *CD*
Angle *ABD* = 110°

Show that angle *BDC* = 40°

Give a reason for each stage of your working.

(Total for Question 15 is 4 marks)

16 In a tin of baked beans,

weight of beans : weight of tomatoes : weight of other ingredients = 3 : 2 : 1

There are 150 g of tomatoes in the tin.

Work out the weight of the beans.

....g

(Total for Question 16 is 2 marks)

Turn over ▶

17 Riddington and Greenwick are two small villages.

The population of Riddington has increased from 80 people to 120 people.
The population of Greenwick has decreased from 200 people to 120 people.

Show that Riddington has had the greater percentage change in its population.
You must show all your working.

(Total for Question 17 is 3 marks)

18 Andy flies from the UK to Japan.
His plane ticket costs £554

Andy then flies from Japan to Australia.
His plane ticket costs 70 140 Japanese Yen.
The exchange rate is £1 = 140 Japanese Yen.

Leila flies from the UK to Australia.
Her plane ticket costs 1860 Australian dollars.
The exchange rate is 1 Australian dollar = £0.62

Who pays more to fly from the UK to Australia, Andy or Leila?
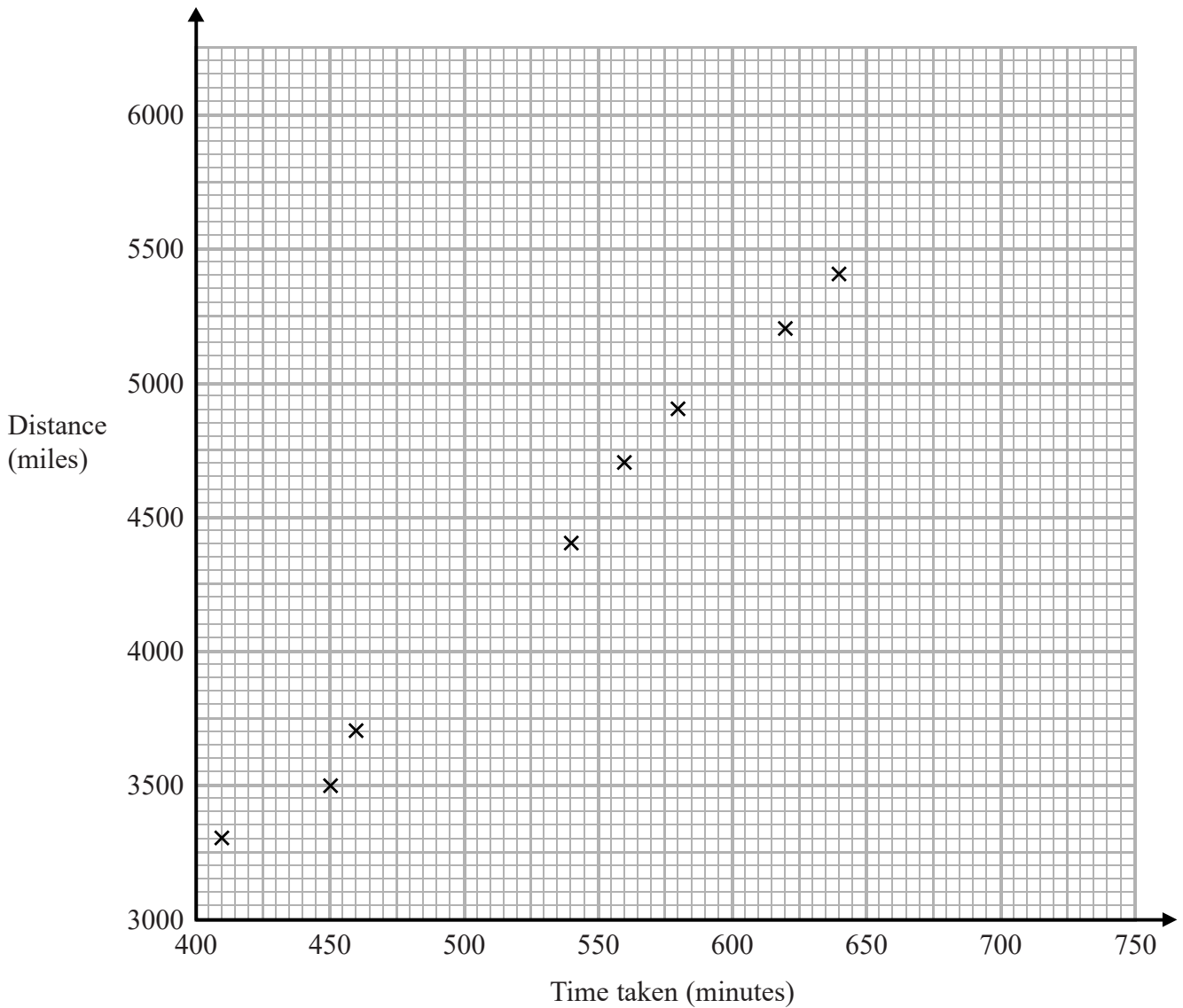You must show clearly how you get your answer.

(Total for Question 18 is 4 marks)

19 Oliver records the distance from London to each of eight cities in the USA.
He also records the time taken to fly from London to each of these cities.

The scatter graph shows this information.

Chicago is a city in the USA.
Chicago is 4000 miles from London.

(a) (i) By drawing a line of best fit, find an estimate for the time taken to fly from London to Chicago.

....minutes

(2)

(ii) Why is your answer to part (i) only an estimate?

....

....

(1)

(b) (i) Calculate the gradient of your line of best fit.

....

(2)

(ii) Give an interpretation of the gradient of your line of best fit.

....

....

(1)

(Total for Question 19 is 6 marks)

Turn over ▶

20
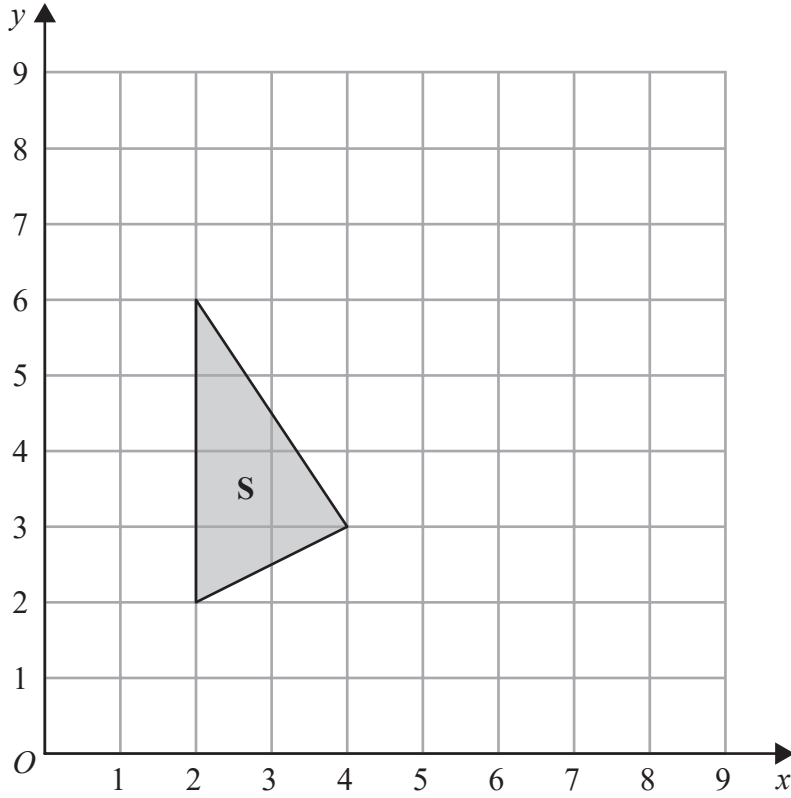
(a) Rotate shape **S** 90° clockwise, centre (5, 4)
Label your image **T**.

(b) Describe fully the single transformation that will map shape **T** onto shape **S**.

....

(Total for Question 20 is 3 marks)

21 Here are two rectangles.

$2x - 3$

$4x$

| A | 2.5

| B | 7
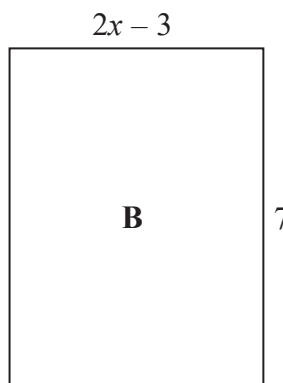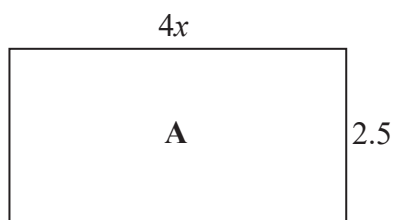
All measurements are in centimetres.

The area of rectangle **A** is equal to the area of rectangle **B**.

Work out the perimeter of rectangle **B**.

....cm

(Total for Question 21 is 5 marks)

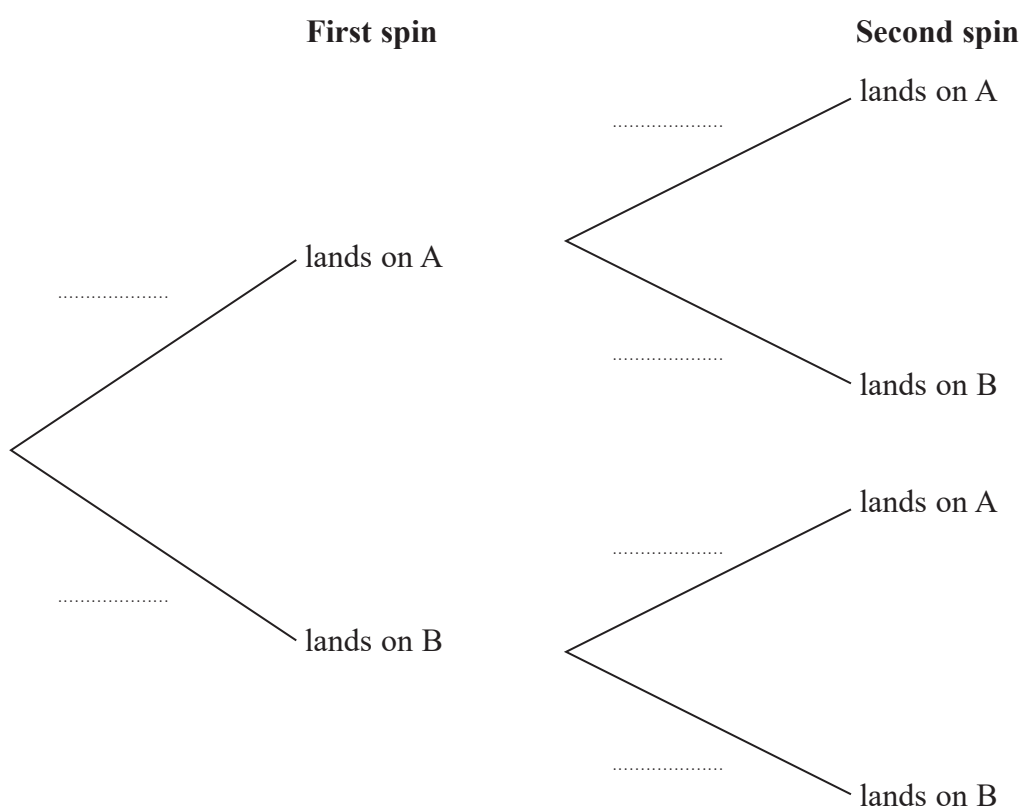**22** The diagram shows a fair 4-sided spinner.
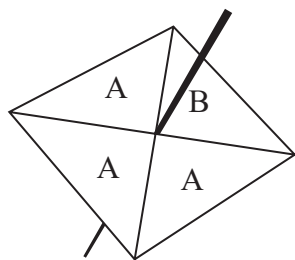
Hasmeet is going to spin the spinner twice.

(a) Complete the probability tree diagram.

First spin **Second spin**

.... lands on A

lands on A

.... lands on B

lands on A

....

.... lands on B

lands on B

....

lands on B

(2)

(b) Work out the probability that the spinner will land on A on the first spin and will land on B on the second spin.

....

(2)

(Total for Question 22 is 4 marks)

23 $S = \pi^2(b^2 - a^2)$

$a = 8, b = 10$

Calculate the value of S.
Give your answer correct to 3 significant figures.

....

(Total for Question 23 is 2 marks)

24 Only blue vans and white vans are made in a factory.

The ratio of the number of blue vans to the number of white vans is 4 : 3

(a) Write down the fraction of vans that are blue.

....

(1)

For blue vans,

the number of small vans : the number of large vans = 3 : 5

(b) Work out the fraction of the number of vans made in the factory that are blue and large.

....

(3)

(Total for Question 24 is 4 marks)

25 Linda recorded the temperature, in °C, at 9 am on each of 30 days.

The table shows information about her results.

Temperature (T °C)	Number of days
$10 < T \leqslant 12$	3
$12 < T \leqslant 14$	8
$14 < T \leqslant 16$	14
$16 < T \leqslant 18$	4
$18 < T \leqslant 20$	1

Calculate an estimate for the mean temperature.
Give your answer correct to 1 decimal place.

.... °C

(Total for Question 25 is 3 marks)

26 The diagram shows a square *ABCD* of side 8 cm inside a circle, centre *O*.
The vertices of the square lie on the circle.
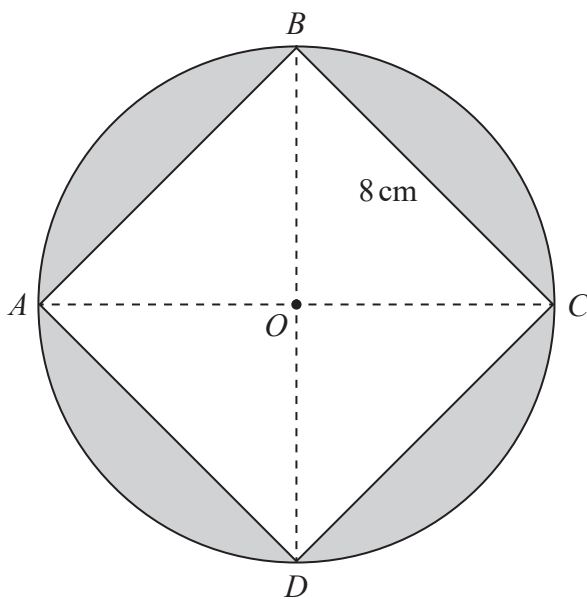
Work out the total area of the four shaded segments.

Give your answer correct to 3 significant figures.

....cm²

(Total for Question 26 is 5 marks)

TOTAL FOR PAPER IS 80 MARKS

S 5 7 4 9 3 A 0 2 3 2 4

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