Mathematics test

Paper 2
Calculator allowed

Please read this page, but do not open your booklet until your teacher tells you to start. Write your name and the name of your school in the spaces below.

First name _____

Last name _____

School _____

Remember

- The test is 1 hour long.

- You may use a calculator for any question in this test.

- You will need: pen, pencil, rubber, ruler, angle measurer or protractor and a calculator.

- This test starts with easier questions.

- Try to answer all the questions.

- Write all your answers and working on the test paper – do not use any rough paper. Marks may be awarded for working.

- Check your work carefully.

- Ask your teacher if you are not sure what to do.

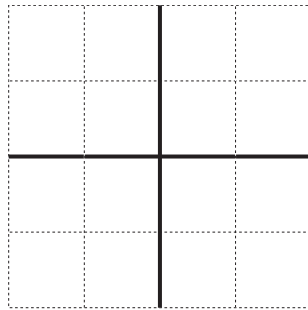| For marker's use only	Total marks	
	Borderline check	

Instructions

Answers

This means write down your answer or show your working and write down your answer.
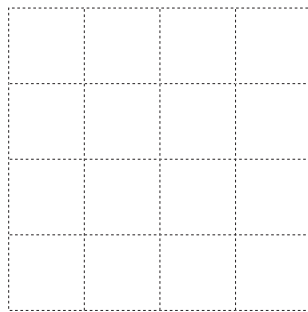
Calculators

You **may** use a calculator to answer any question in this test.
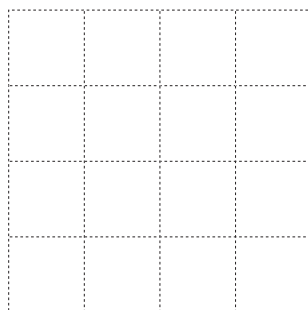
1.   The square grid below is divided into **quarters**.

(a) **Draw lines** on the square grid below to divide it into **quarters** in a **different way**.

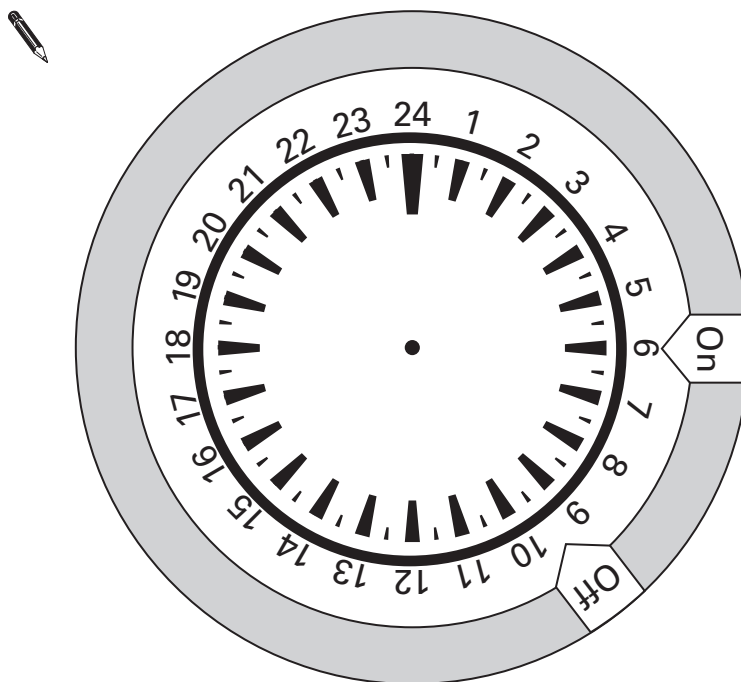(b) Now **draw lines** on the square grid below to divide it into **eighths**.

2.   The diagram shows a heating control.

The arrows show the times the heating turns on and turns off.

(a)   Look at the sentences below.

Write the missing times.

The heating turns **on** at .... and turns **off** at ....
                                                                                1 mark

Altogether the heating is on for .... hours in the morning.   . . . .
                                                                        1 mark

(b)   The heating turns on again in the evening.

It turns **on at 5pm** and stays on for **6 hours**.

                                                                        . . . .
On the diagram, **draw two arrows** to show this information.   . . . .
                                                                2 marks

3. In a theatre, tickets are three different prices.

Ticket in seating area **A**	£ 19.00
Ticket in seating area **B**	£ 29.00
Ticket in seating area **C**	£ 39.00

(a) How many tickets in area **A** can you buy with **£100**?

....

1 mark

(b) How many tickets in area **B** can you buy with **£200**?

....

1 mark

(c) Jo buys **two** tickets in area **C**.

She pays with **two £50 notes**.

How much change should she get?

£

1 mark

4.   Here is a list of six different units of measure.

litres	metres	kilograms

millilitres	millimetres	grams

(a) Which of the units from the list best completes each sentence below?

Write them down.

Use .... to measure the **mass** of an apple.

1 mark

Use .... to measure the **volume** of water in a full bath.

1 mark

(b) Choose one of the units from the list that you did **not** use in (a).

Write down the units then give an example of **what it could measure**.

Use .... to measure the ....

of ....

1 mark

5. The table shows information about the Paralympic Games.

Year	Number of countries that took part	Country where the games took place	Number of people that took part
1960	23	Italy	400
1980	42	Holland	2500
2000			

(a) More **countries** took part in 1980 than in 1960.

How many more?

. . . .

1 mark

(b) More **people** took part in 1980 than in 1960.

How many more?

. . . .

1 mark

(c) In the year 2000, the games took place in Australia.

81 **more countries** took part in 2000 than in 1980.

1324 **more people** took part in 2000 than in 1980.

Use this information to complete the table at the top of the page.

2 marks

6. A shop sells clothes at **half price** in a sale.
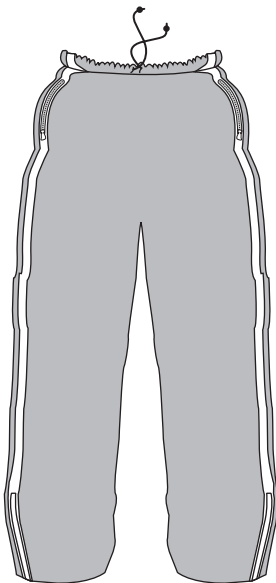
(a) Complete this label to show the sale price.
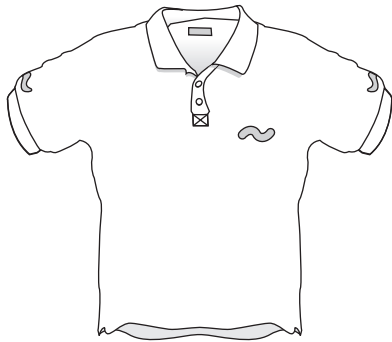
Half price sale

old price £ 5.68

sale price £ [   ]

1 mark

(b) Now complete this label to show the old price.

Half price sale

old price £ [   ]

sale price £ 6.99

1 mark

7. A newspaper printed this information about the number of teachers in England.

(a)

> ### Secondary school teachers
>
> In 1997 there were **176 050** teachers.
>
> By 2002 there were **11 810 more** teachers.

How many secondary school teachers were there in 2002?

....

1 mark

(b)

> ### Primary school teachers
>
> In 1997 there were **176 890** teachers.
>
> In 2002 there were **178 240** teachers.

There were **more** primary school teachers in 2002 than in 1997.

How many more?

....

1 mark

8. Each month **some people leave** a gym and **some people join** the gym.

The diagram shows how many leave and how many join.

	Jan	

Number of people leaving

Number of people joining
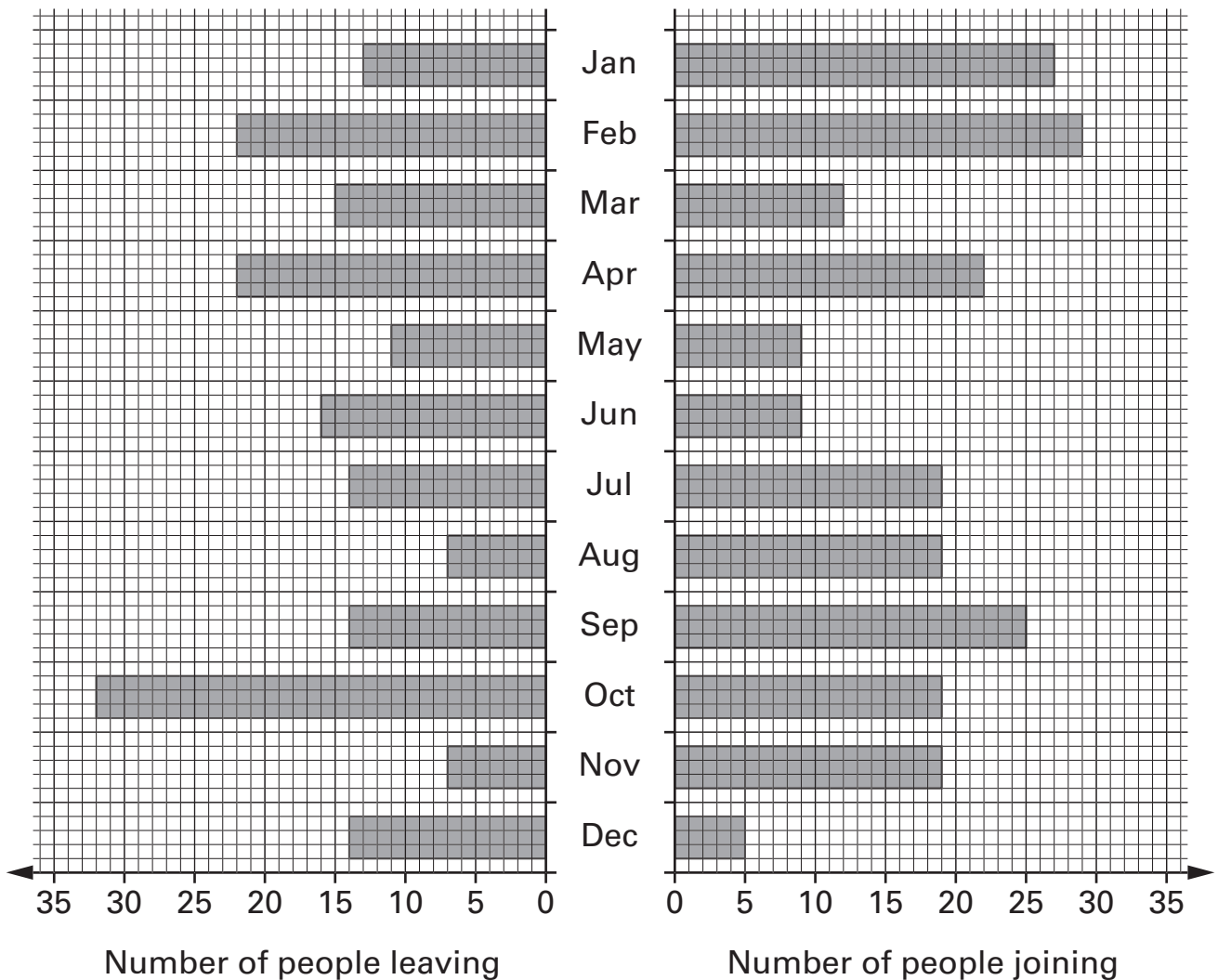
(a) In which month did the greatest number of people **leave** the gym?

....

1 mark

(b) In **September**, more people joined the gym than left the gym.

How many more?

....

1 mark

9. (a) Is **3** a factor of **30**?

☐ Yes ☐ No

Explain how you know.

. . . .
1 mark

(b) I am thinking of a number that is **greater than 3**

My number is a **factor of 30**

What could my number be?

Give an example.

. . . .

. . . .
1 mark

10.   Here is a sequence of shapes made with grey and white tiles.
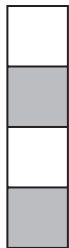
shape number 1	shape number 2	shape number 3	shape number 4
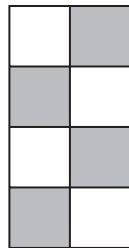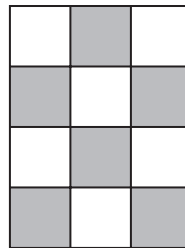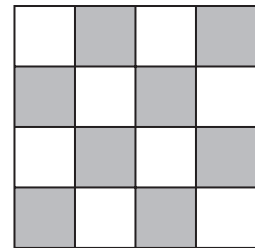
> The number of grey tiles   =   2 × the shape number
>
> The number of white tiles   =   2 × the shape number

(a) Altogether, how many tiles will be in shape number **5**?

.... tiles

1 mark

(b) Altogether, how many tiles will be in shape number **15**?

.... tiles

1 mark

(c) Write the missing number below.

> The **total** number of tiles   = ... × the shape number

1 mark

11. A meal in a restaurant costs the same for each person.

For **11** people the total cost is **£253**
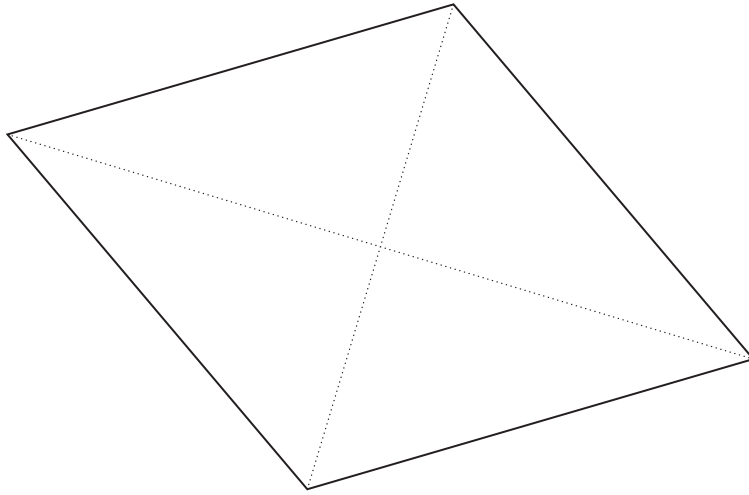
What is the total cost for 12 people?

£ [   ]

. . . .
. . . .
2 marks

12. Here is a rhombus.

The dotted lines are the **diagonals** of the rhombus.

(a) Measure **accurately** the lengths of the diagonals.

🖉 [   ] cm and [   ] cm

. . . . .
1 mark

(b) To find the area of the rhombus:

> Multiply the lengths of the diagonals together,
>
> then divide the answer by 2

What is the area of the rhombus?

🖉 [   ]

. . . . .
1 mark

. . . . .
1 mark

13. A survey showed these results about the number of mobile phones used in the UK.
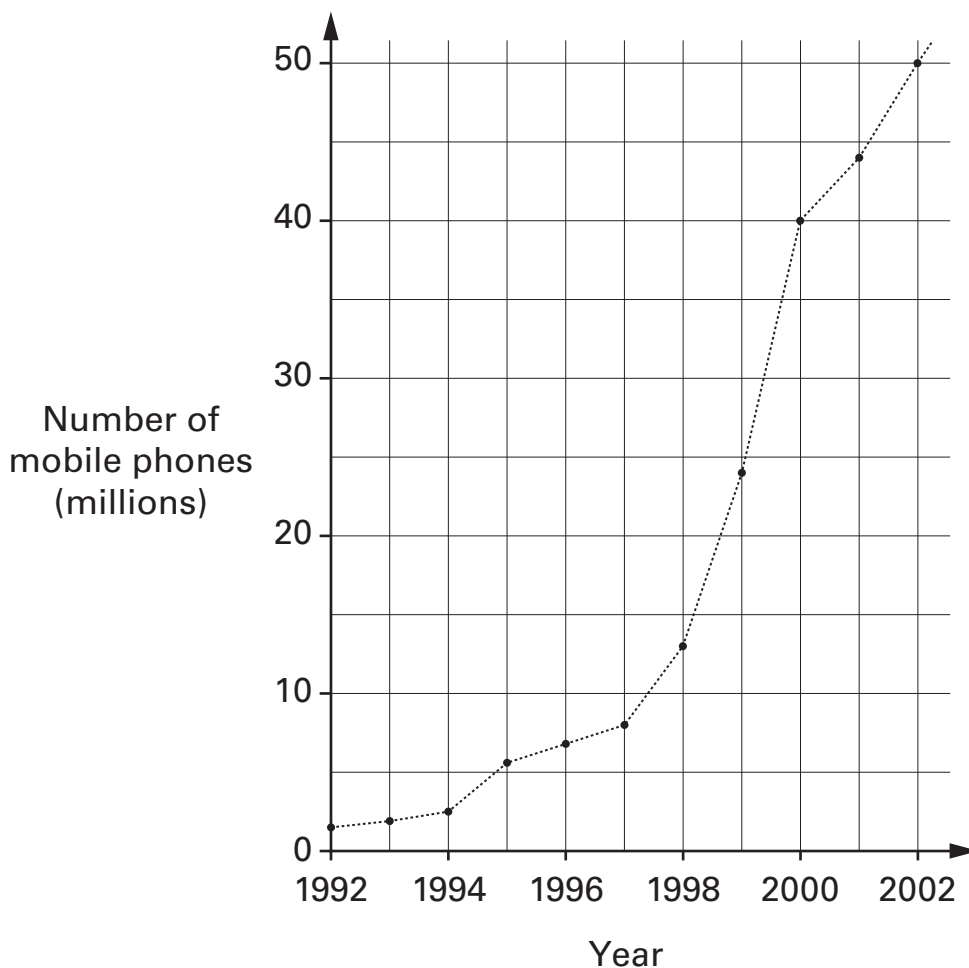
Use the graph to write the missing numbers below.

In **1992**, there were about ………… million mobile phones.

Ten years later, there were about ………… million mobile phones.

From **1998 to 1999**, the number of mobile phones

increased by about ………… million.

14. Arrange **all** the numbers **1**, **2**, **3**, **4** and **5** into two groups, so that

> **doubling** the **sum** of the first group gives
> the **sum** of the second group.

There are three different ways the numbers can be arranged.

The first one is done for you.

First group

Second group

5

1 , 2 , 3 , 4

First group

Second group

..... , ...

..... , ... , ...

First group

Second group

..... , ...

..... , ... , ...

2 marks

15.   In this question, all the grids are square grids.

(a) On the grid, draw a
     triangle with no right angles.
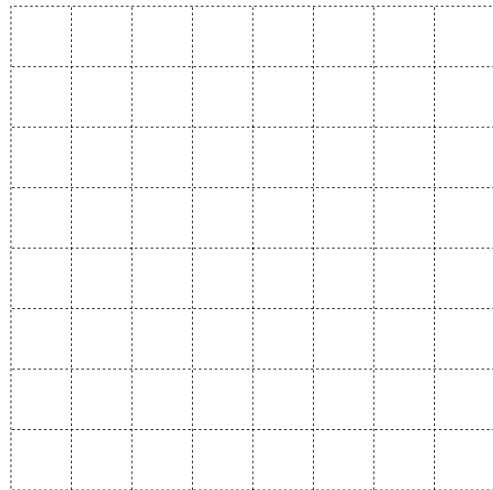
1 mark

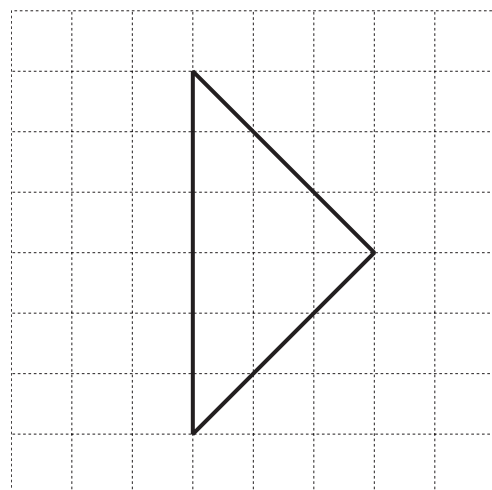(b) On the grid, draw a
     quadrilateral with no right angles.
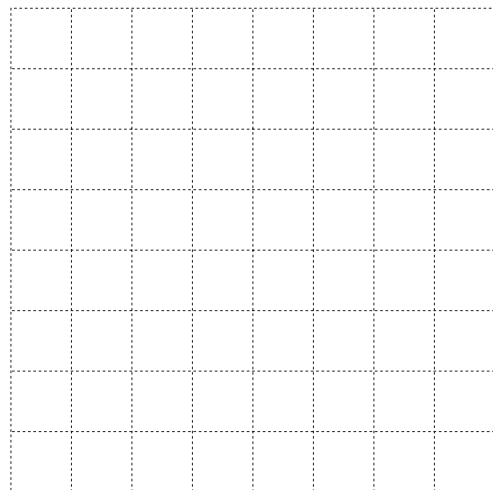
1 mark

(c) **How many right angles**
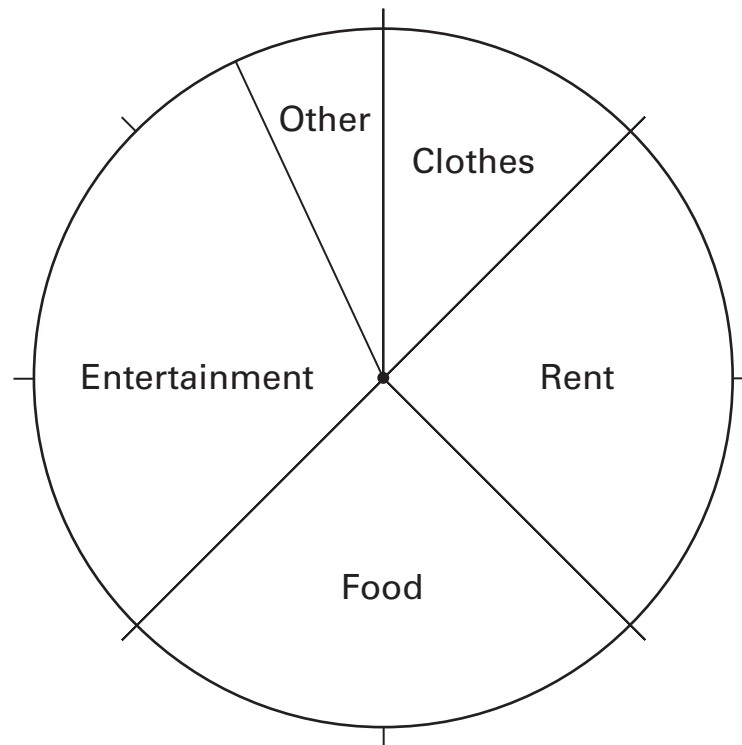   does the shape on this grid have?

     Number of right angles: . . . .

1 mark

16.   Look at this information.

In 1976, a man earned £16 each week.

The pie chart shows how he spent his money.

(a) How much did the man spend on **food** each week?
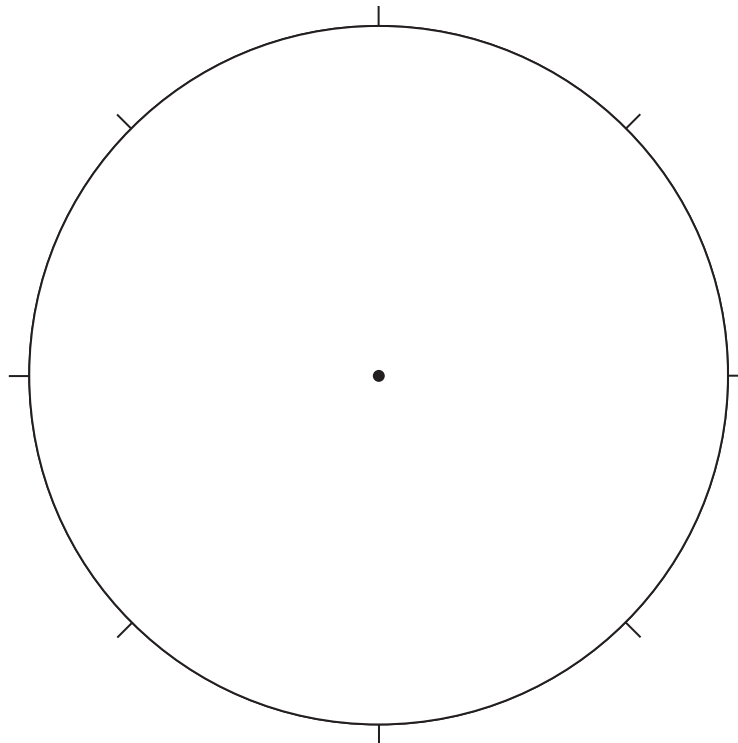
£

1 mark

(b) Now look at this information.

> **In 2002, a man earned £400 each week.**

The table shows how he spent his money.

Rent	£200
Food	£100
Entertainment	£50
Other	£50

Complete the pie chart below to show how the man spent his money.

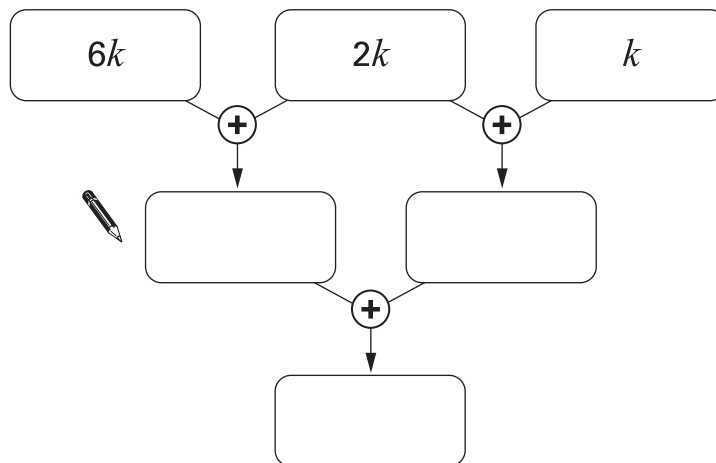Remember to **label** each sector of the pie chart.
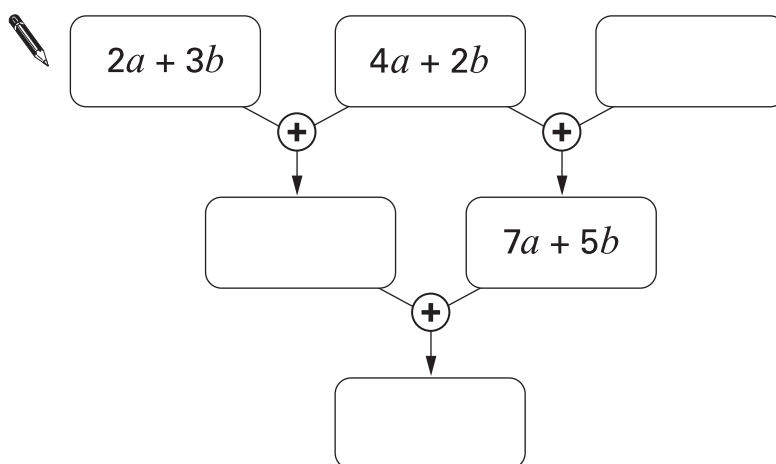
. . . .
. . . .
2 marks

17. Look at this algebra grid.

2*a*	3*a*	4*a*

5*a*   7*a*

12*a*
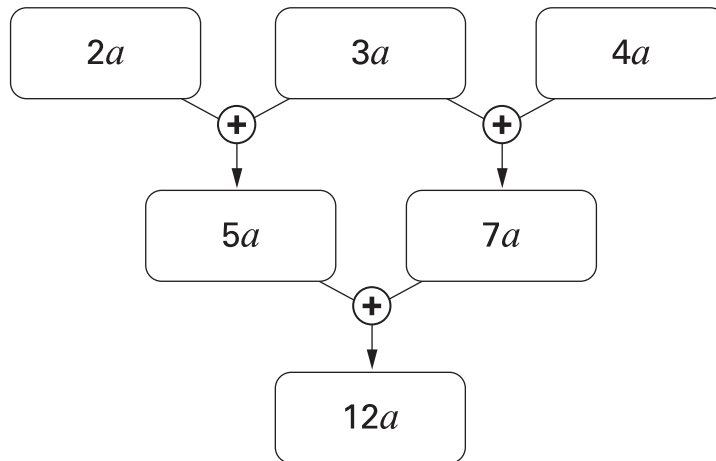
Complete the algebra grids below, simplifying each expression.

6*k*	2*k*	*k*

1 mark

2*a* + 3*b*   4*a* + 2*b*

7*a* + 5*b*

2 marks

18.   Two shops sell packs of pens.

Supermarket	Village shop
Pack of 5 pens	Pack of 6 pens
£6.25	£7.20

I want to buy **30 pens**.

In which shop are the pens cheaper?
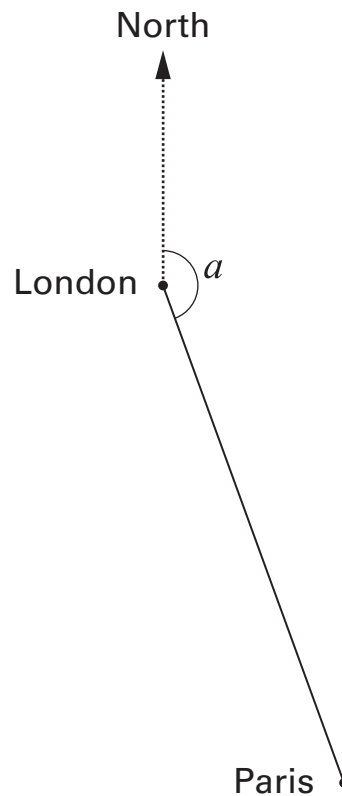
You **must** show your working.

Tick (✓) your answer.

☐ Supermarket   ☐ Village shop

2 marks

19.   The scale drawing shows the positions of London and Paris.

North

London a

Paris

(a)   From London to Paris, the angle from north is angle a

Measure accurately angle a

a = ... $^\circ$

1 mark

(b)   On the scale drawing, **1cm represents 50km**.

What is the distance, in km, from London to Paris?

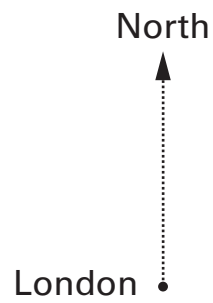. . . . . km

1 mark

(c) A newspaper printed this information about London and Madrid.

> From London to Madrid, the angle from north is **195° clockwise**.
>
> Madrid is **1300 km** from London.

Show this information on a scale drawing.

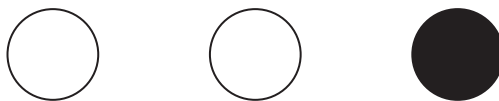Use the scale **1cm represents 200 km**.

The position of London is shown for you.

North

↑

London •

20. (a) Aidan puts 2 white counters and 1 black counter in a bag.

He is going to take one counter without looking.

What is the **probability** that the counter will be **black**?

1 mark

(b) Aidan puts the counter back in the bag and then puts **more black** counters in the bag.

He is going to take one counter without looking.

The **probability** that the counter will be black is now $\frac{2}{3}$

How many more black counters did Aidan put in the bag?

. . . .

1 mark

21. Work out the number of boys and girls in each class below.

(a) In class 8M, there are **27 pupils**.

There are **twice as many boys** as girls.

Number of boys	Number of girls
....	....

1 mark

(b) In class 8K, there are **28 pupils**.

There are **two more boys** than girls.

Number of boys	Number of girls
....	....

1 mark

(c) In class 8T, there are **9 boys**.

The ratio of boys to girls is **1 : 2**
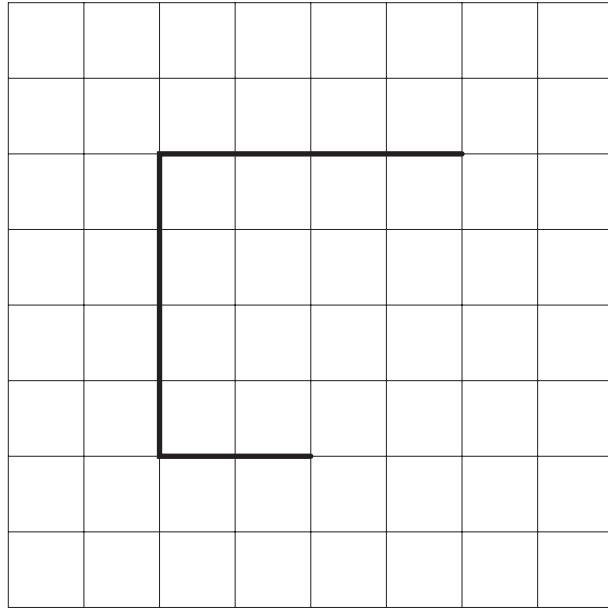
Number of boys	Number of girls
....	....

1 mark

22. Here are three lines on a centimetre square grid.

Draw two more lines on the grid to make a **pentagon** that has an **area** of **14 cm^2**

1 mark

23. Use your calculator to work out the answers.

$(48 + 57) \times (61 - 19) = \ldots\ldots\ldots\ldots$

1 mark

$$\frac{48 + 57}{61 - 19} = \ldots\ldots\ldots\ldots$$

1 mark

END OF TEST