

**Ma**

KEY STAGE

**3**

LEVELS

**4–6**

# Year 7 mathematics test

## Paper 2

Calculator allowed

First name \_\_\_\_\_

Last name \_\_\_\_\_

Class \_\_\_\_\_

Date \_\_\_\_\_

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

### Remember

- The test is 1 hour long.
- You will need a pen, pencil, rubber, pair of compasses, ruler and calculator. You may find tracing paper useful.
- Some formulas you might need are on page 2.
- This test starts with easier questions.
- Try to answer all of the questions.
- Write all of 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 marking  
use only

Total marks	
-------------	--

## Instructions

### Answers



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



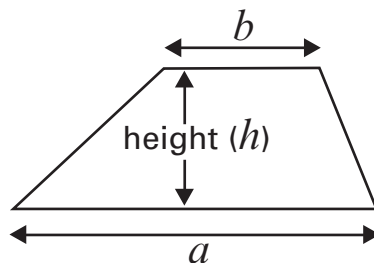
### Calculators

You **may** use a calculator to answer any question in this test.

## Formulas

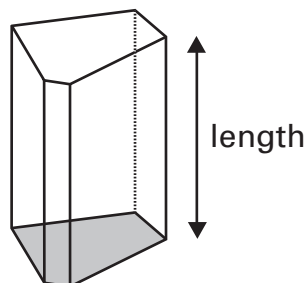
You might need to use these formulas.

### Trapezium



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

### Prism

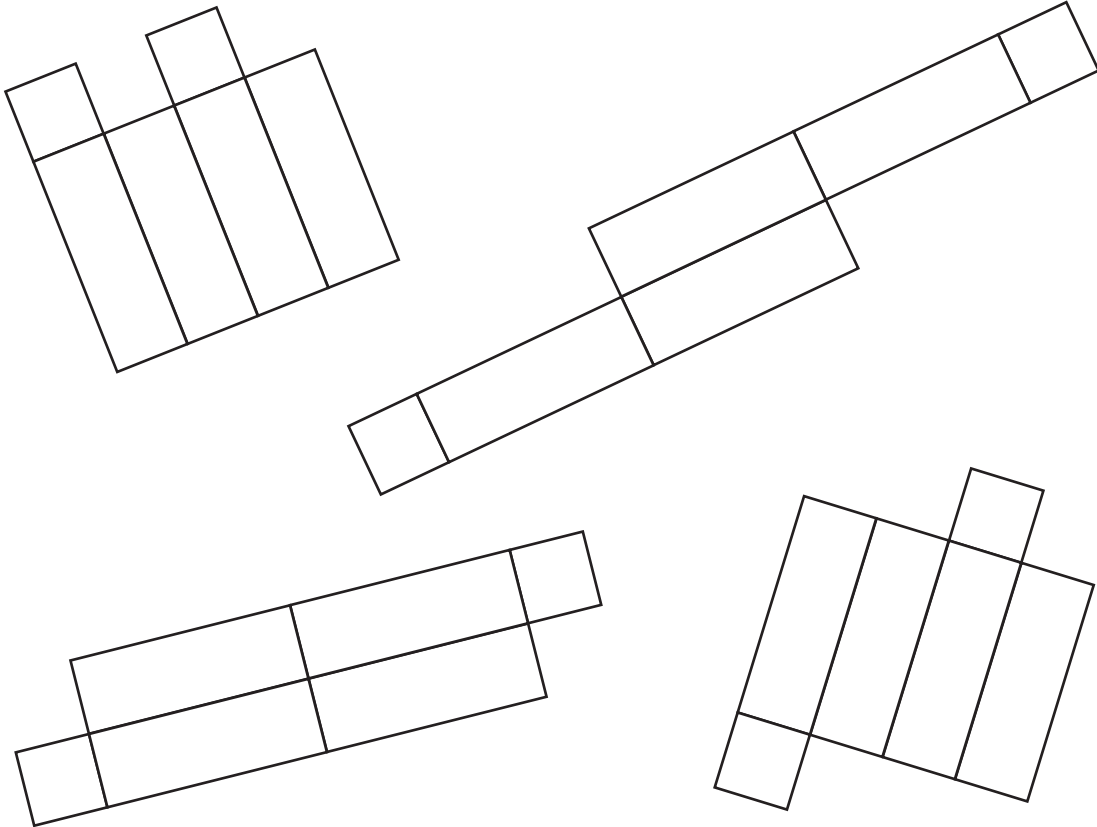


$$\text{Volume} = \text{area of cross-section} \times \text{length}$$

1

Which one of these is the net of a cuboid?

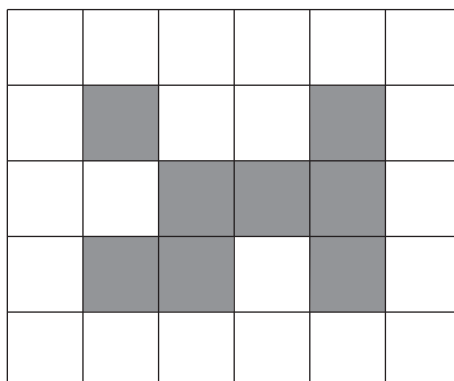
Put a ring around your answer.



1 mark

2

Shade **one more** square to make a shape with one line of symmetry.

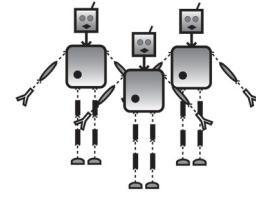
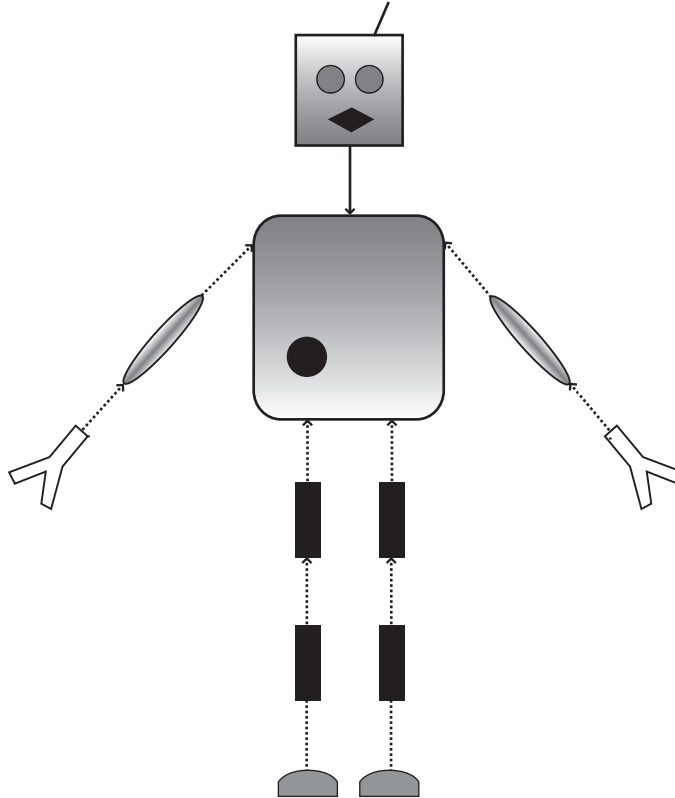


1 mark




3


Harry makes robots like this.



(a) Complete these formulas to show what Harry needs.

The first is done for you.

Number of  = number of robots  $\times 2$

 Number of  = number of robots .....

Number of  = number of robots .....

.....  
1 mark

(b) Harry has 49 robot feet  and plenty of all the other parts.

How many robots can he build?



.....

.....  
1 mark

4

The table shows information about the 5 fastest rollercoasters in the UK in 2005.

Rollercoaster	Top speed		Height		Length	
	Rank	(mph)	Rank	(m)	Rank	(m)
Big One	1st	74	1st	65	2nd	1675
Oblivion	2nd	68	×	20	×	373
Jubilee	3rd	63	2nd	51	5th	891
Rita	4th	61	×	21	×	640
Millennium	5th	56	3rd	46	×	834

**Key:**

× not in top five



- (a) Which of these rollercoasters were ranked in the top 5 for speed, height and length?

Put rings around them.



Big One      Oblivion      Jubilee      Rita      Millennium

1 mark

- (b) Mel says:

‘The UK’s longest rollercoaster is 1455 metres long.’

Is Mel correct?

Tick (✓) Yes, No or Cannot tell.


☐

Yes

☐

No

☐

Cannot tell

Explain your answer.



1 mark

☐

5

Lucy and Kali are playing a game.



I'm thinking of a number  
between 1 and 2

Is it 1.5?



1.5 is too small.



Is it 1.6?



1.6 is too big.



What number should Kali try next?

Is it ..... ?

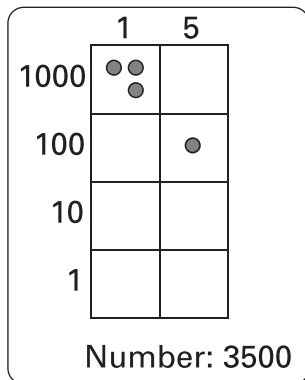
1 mark



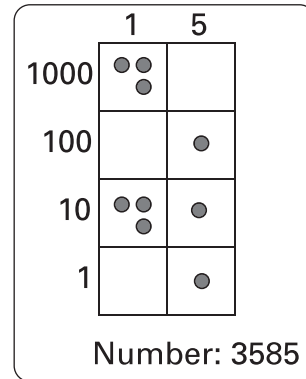
6

These grids show numbers.

This grid shows the number 3500

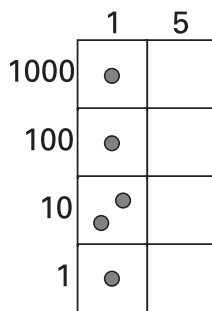


This grid shows the number 3585



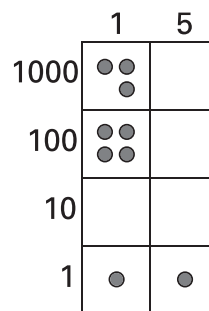
What do these grids show?

(a)



Number: .....

(b)

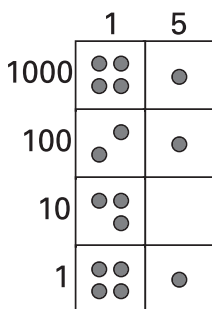


Number: .....

.....  
1 mark

.....  
1 mark


(c)



Number: .....

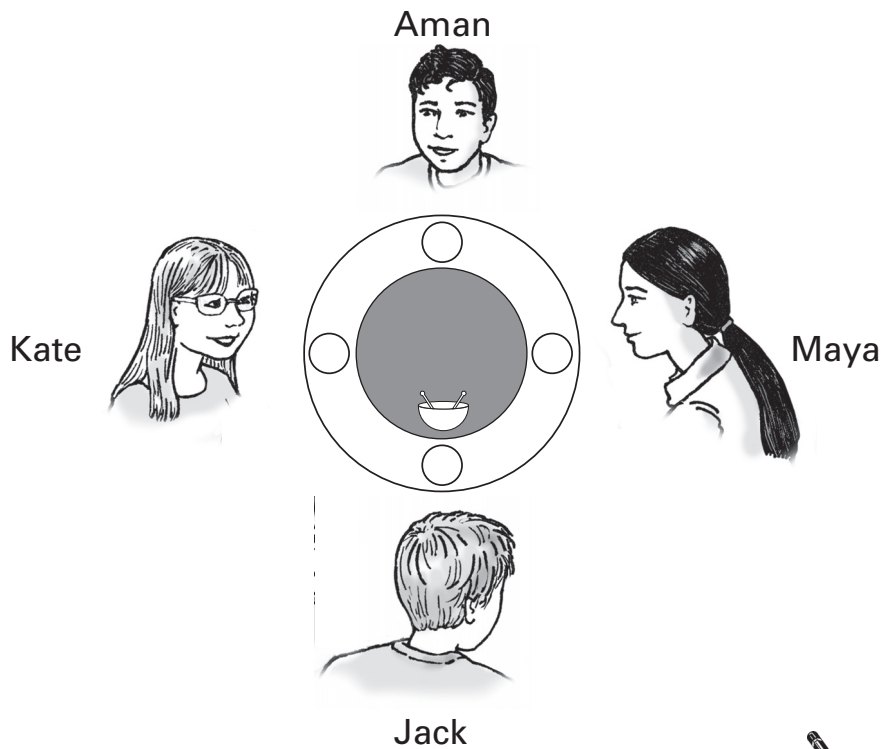
.....  
1 mark



- 7 Jack and his friends eat some rice in a restaurant. Their table has a big grey tray in the middle. The tray can be turned to share the rice. 

(a) Jack wants to turn the tray so that the rice gets to Maya.

How many degrees could Jack turn the tray?



..... °

1 mark

(b) Give a different number of degrees Jack could turn the tray so that the rice gets to Maya.



..... °

1 mark

- 8 Some of these numbers **round to 15** to the nearest whole number.

Put a ring around each of them.



14.45      14.54      14.55      15.44      15.45      15.54


.....  
2 marks



9

Draw lines to match the numbers where the digit **5** represents the same value.

The first is done for you.



451	5.21
5710	58
85	705082
90.75	512030
7580000	0.153

A line connects the box containing '451' to the box containing '58'.


.....  
2 marks

10

Look at these statements.

Write a number to complete each statement.

The first is done for you.

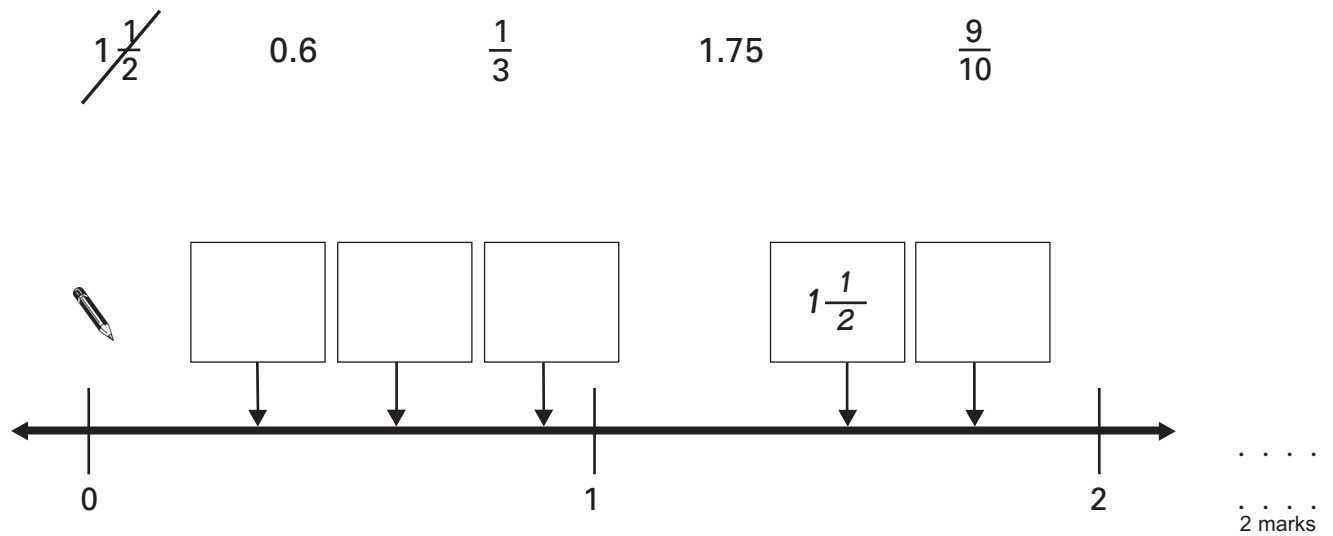


$7 < \dots\dots\dots^{10}\dots\dots < 11$   
 $7 < \dots\dots\dots < 8.5$   
 $7 < \dots\dots\dots < 7.5$   
 $7 < \dots\dots\dots < 7.05$

.....  
2 marks



- 11 Put these numbers on the number line.  
The first is done for you.



- 12 This table shows the number of films made in the UK from 1950 to 1959.

Year	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Number of films made	125	114	117	138	150	110	108	138	121	122

- (a) In which year was the 1000<sup>th</sup> film made?

Use the information in the table to work out your answer.



.....  
1 mark

- (b) What is the range of the number of films made?



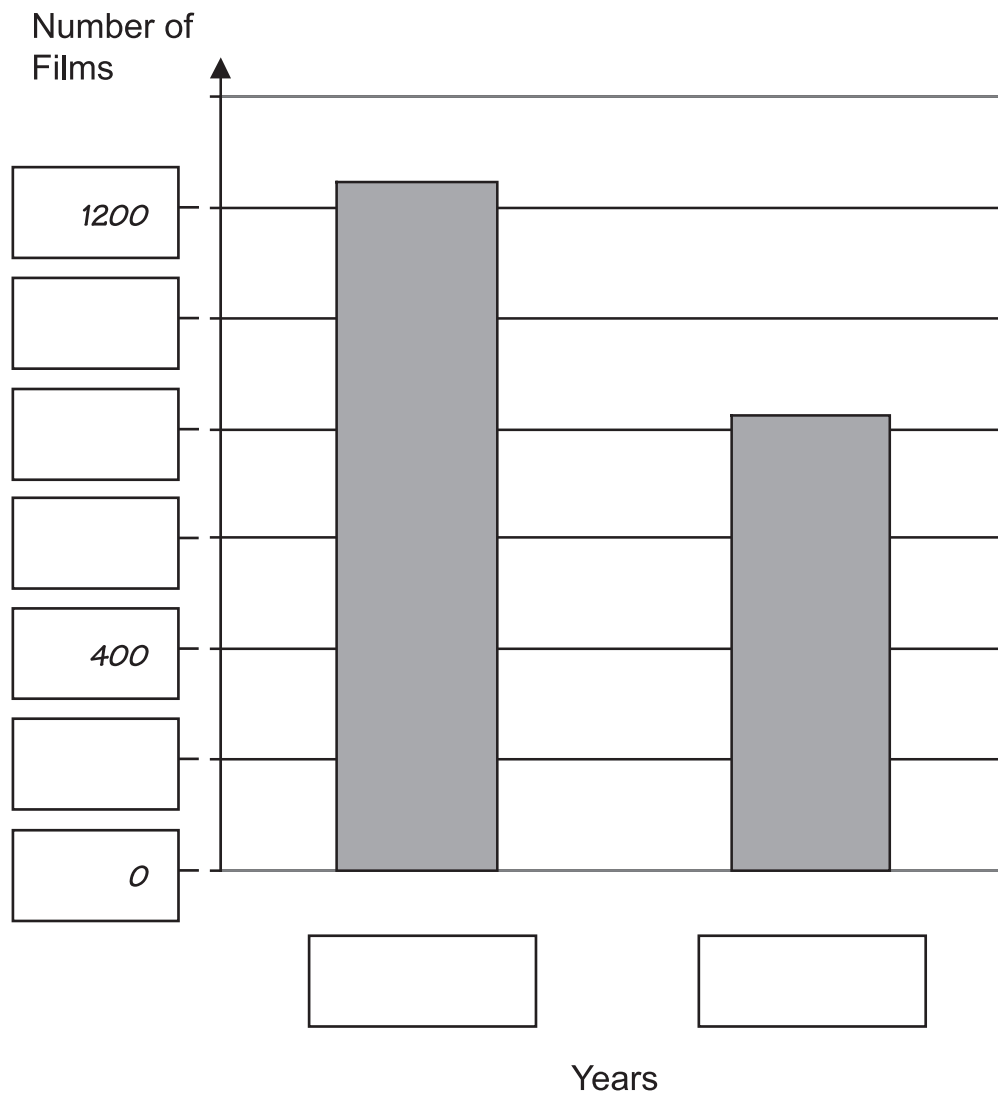
.....  
1 mark

- (c) This table shows the number of films made in the UK from 1990 to 1999.

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Number of films made	60	59	47	67	84	78	128	116	88	100

The bar chart shows the total number of films made in the UK from 1950 to 1959 and from 1990 to 1999.

Fill in the boxes to complete the bar chart.



1 mark

1 mark



13

Ben plays a number game with a shape.

He puts the shape on the number square and adds up the numbers inside it.

The shape must not go outside the grid.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

For example

35	
45	46
55	

The total is 181

- (a) Ben moves the shape one place to the left.

What is the total?



.....

1 mark

- (b) What is the **least** total Ben can make with the shape without going outside the grid?



..... if he does not rotate the shape



..... if he rotates the shape

1 mark

14



This special pack of apricots has 50% extra free.  
Fill in the missing number on the table.



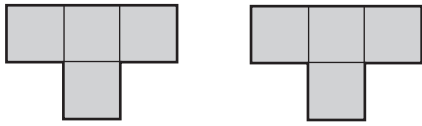
	Weight of the pack	Mean number of apricots
Ordinary pack	450 grams	10
Special pack	..... grams	15

1 mark

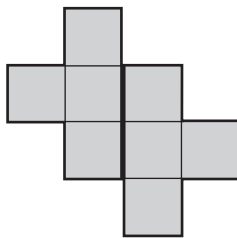


15

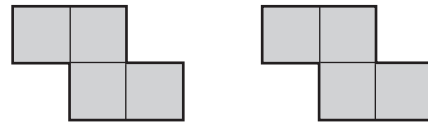
Tom has two T-shapes made out of four squares.



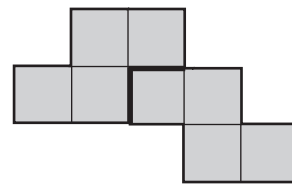
He can fit them together to make this new shape:



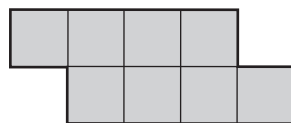
Zara has two Z-shapes made out of four squares.



She can fit them together to make this new shape:



- (a) Draw lines to show how Tom can fit his two T-shapes together to make this new shape.



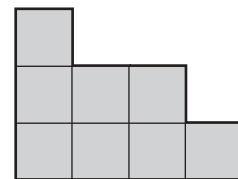
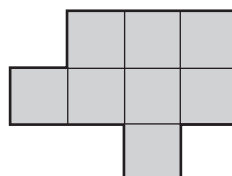
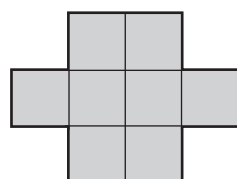
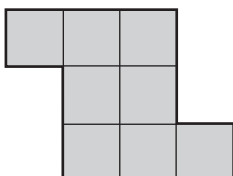
1 mark

- (b) Tom and Zara can both make one of these shapes.

Which shape can Tom and Zara both make?



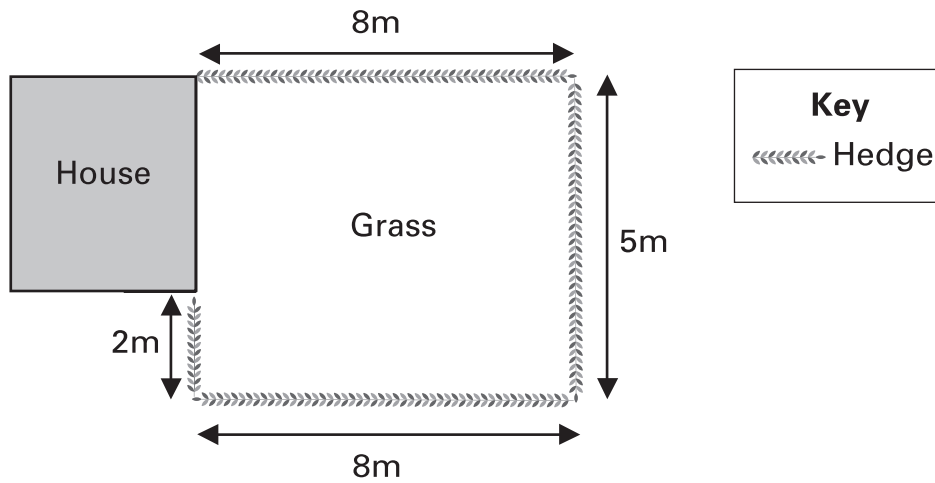
Put a ring around it.



1 mark



16

Here is a plan of Ricky's house and garden.



A gardener cuts the hedge and the grass.

The poster shows how much she charges.

Gardening	
Cutting the hedge: 50 pence for each metre of hedge	
Cutting grass: 20 pence for each square metre	

How much must Ricky pay?



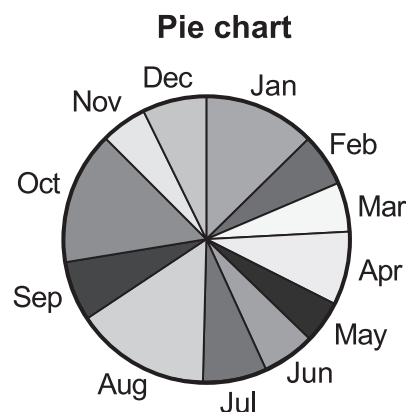
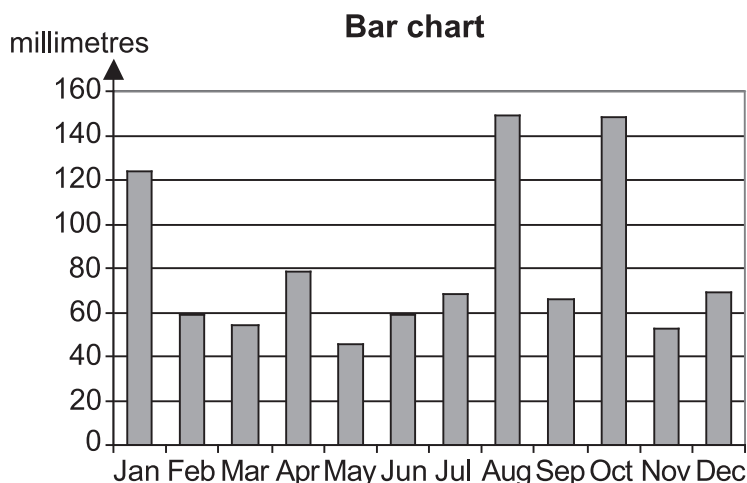
£ .....

.....  
.....  
.....  
3 marks



17 These charts show how much it rained in the UK in 2004.

They show the same information in different ways.



Which chart is better for showing the following information?

Put a tick (✓) in one box for each statement.



	Bar chart	Pie chart
It rained more in February than in March.		
It rained least in May.		
Nearly a quarter of the rain fell in August and September.		
The average monthly rainfall was about 80mm.		
About the same amount of rain fell between January and July as between August and December.		

.....

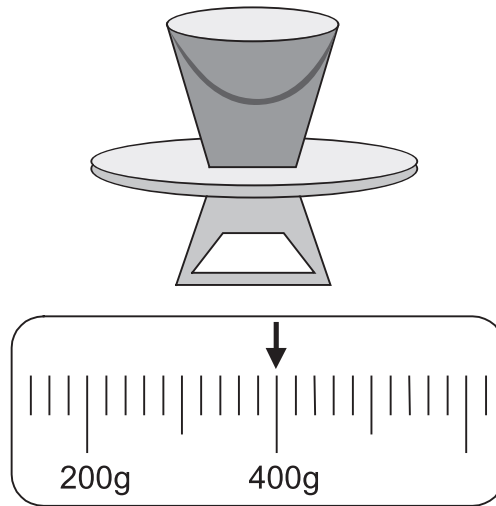
2 marks



18

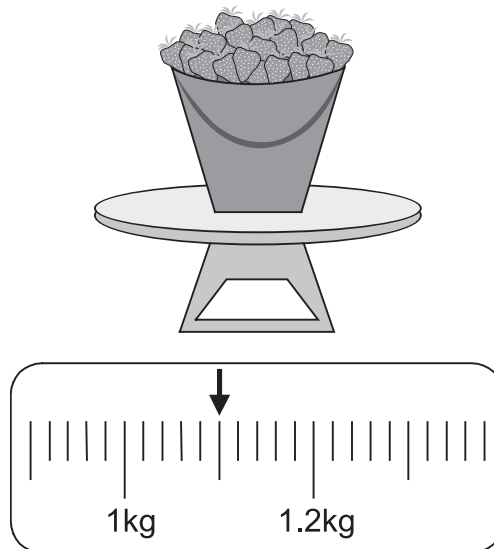
Alisha weighed a small bucket.

It weighed 400g



Then Alisha picked some strawberries, and filled the bucket.

She weighed it again.



How much did the strawberries weigh?

Remember to write the units.



.....  
.....  
2 marks



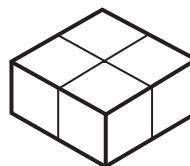
- 19 (a) Rita has these three shapes.



Volume:  
 $1\text{ cm}^3$



Volume:  
 $3\text{ cm}^3$



Volume:  
 $4\text{ cm}^3$

not drawn  
to scale

Rita can put her shapes together.

List all the possible volumes that Rita can make with **two** of her shapes.

One is done for you.



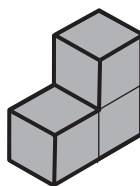
..... $5\text{ cm}^3$ , ..... $\text{cm}^3$ , ..... $\text{cm}^3$

.....  
1 mark

- (b) Jasmine has three shapes.



Shape 1

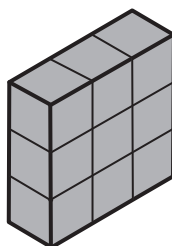


Shape 2

?

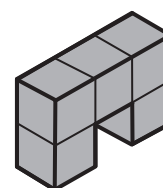
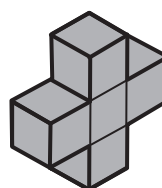
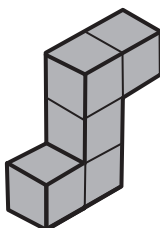
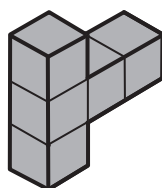
Shape 3

She puts all her shapes together to make this cuboid.



Which one of these shapes could have been Jasmine's third shape?

Put a ring around it.



.....  
1 mark

20

A youth club plans a camping trip.

It costs £84 per person.

The club sells greeting cards.

They get £1.50 from each card they sell.

- (a) How many cards must each person sell to get £84?



.....

1 mark

- (b) The table shows how many cards the club sold.

Monday	Tuesday	Wednesday	Thursday	Friday
100	150	55	75	130

How much money did the club get from the cards they sold?



£ .....

1 mark

- (c) The club raises some more money.

They have £2 450 altogether.

How many people can go on the trip with that money?



.....

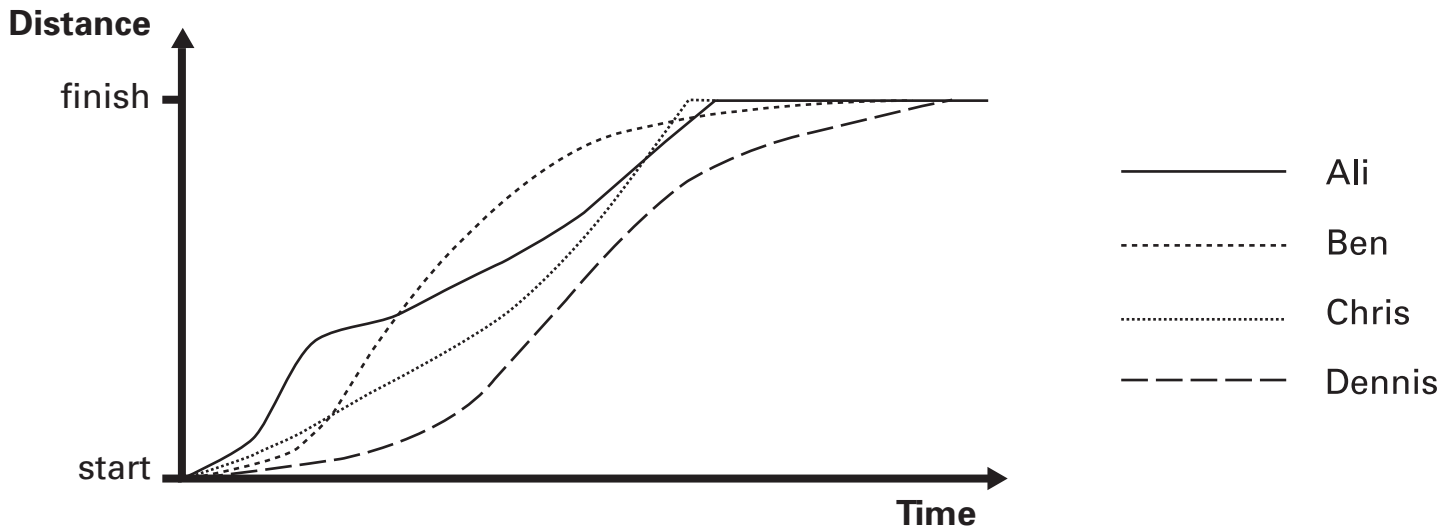
1 mark



21

Ali, Ben, Chris and Dennis ran a race.

The distance–time graph shows what happened.



(a) Who started the race most slowly?



..... 1 mark

(b) Who won the race?



..... 1 mark

(c) Ali says:

‘My speed was the same all the time.’

Is Ali correct?

Tick (✓) Yes or No.


☐

Yes

☐

No

Explain your answer.



..... 1 mark

- 22 Jewellery made of gold has some gold and some other metals.  
Pure gold is called 24 carat gold.  
The table shows the fraction of gold in different carats of gold.



(a) Fill in the gaps.

Amount of gold (Carats)	Gold	Amount of other metals
24 carat (pure)	$\frac{24}{24}$	none
1 carat	$\frac{1}{24}$	$\frac{23}{24}$
18 carat	$\frac{18}{24}$	$\frac{6}{24}$
..... carat	$\frac{9}{24}$	$\frac{15}{24}$
20 carat	.....	.....

.....  
.....  
2 marks

- (b) Lian has an 18 carat gold ring.  
It weighs 4 grams.

How many grams of gold are there in Lian's ring?



..... grams

.....  
1 mark



23

Here is a property that every rectangle and every kite has:

They each have **four sides**.

- (a) Give another property that every rectangle and every kite has.



1 mark

- (b) Give a property of the rectangle that is not a property of the kite.



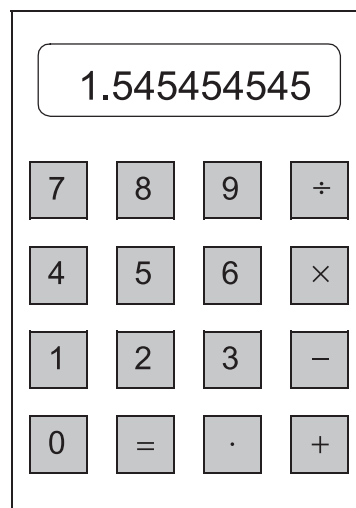
1 mark

24

Josh puts a whole number into a calculator.

He divides the number by 154

This is what the calculator shows:



What whole number did Josh put into the calculator?

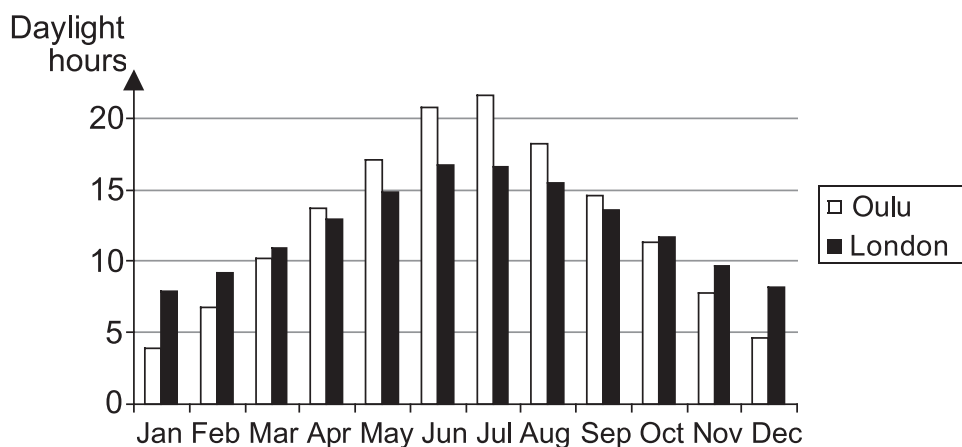


.....

1 mark

- 25 (a) Oulu is a city near the Arctic circle.

The bar chart shows the number of daylight hours in Oulu and in London on the first day of each month.



On the first day of which months are there more daylight hours in London than in Oulu?



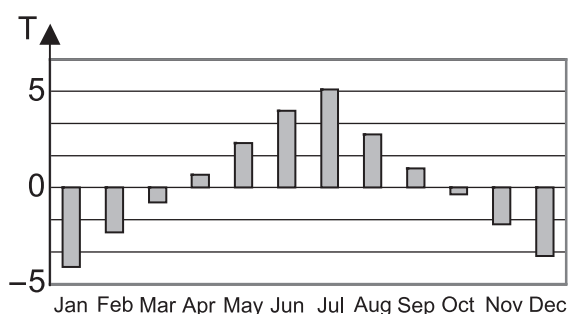
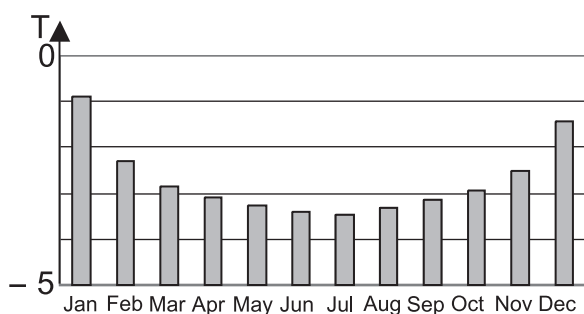
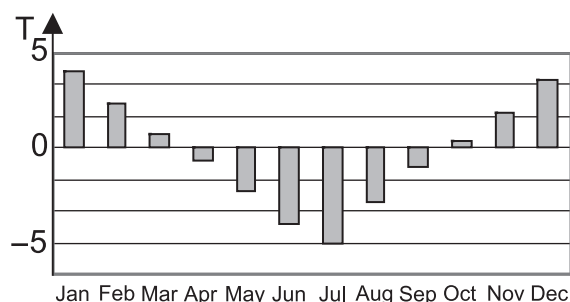
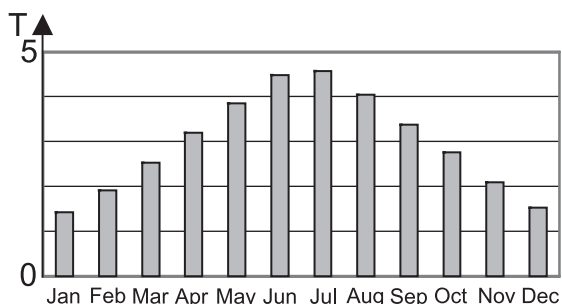
.....

1 mark

- (b) Joe uses this formula:

$$T = \text{number of daylight hours in Oulu} - \text{number of daylight hours in London}$$

He draws a bar chart to show the values of T  
Put a ring around Joe's bar chart.

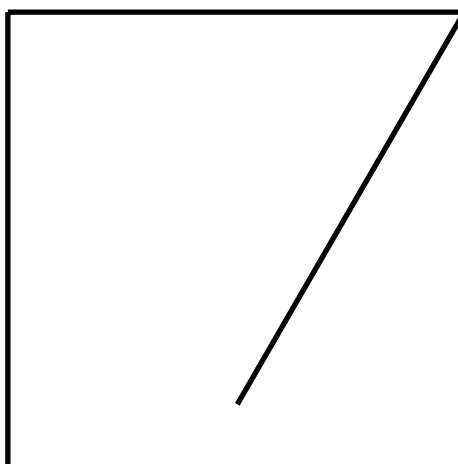


1 mark



- 26 Use a straight edge and a pair of compasses to complete this pentagon so that it has five sides of equal length.

You must leave in your construction lines.



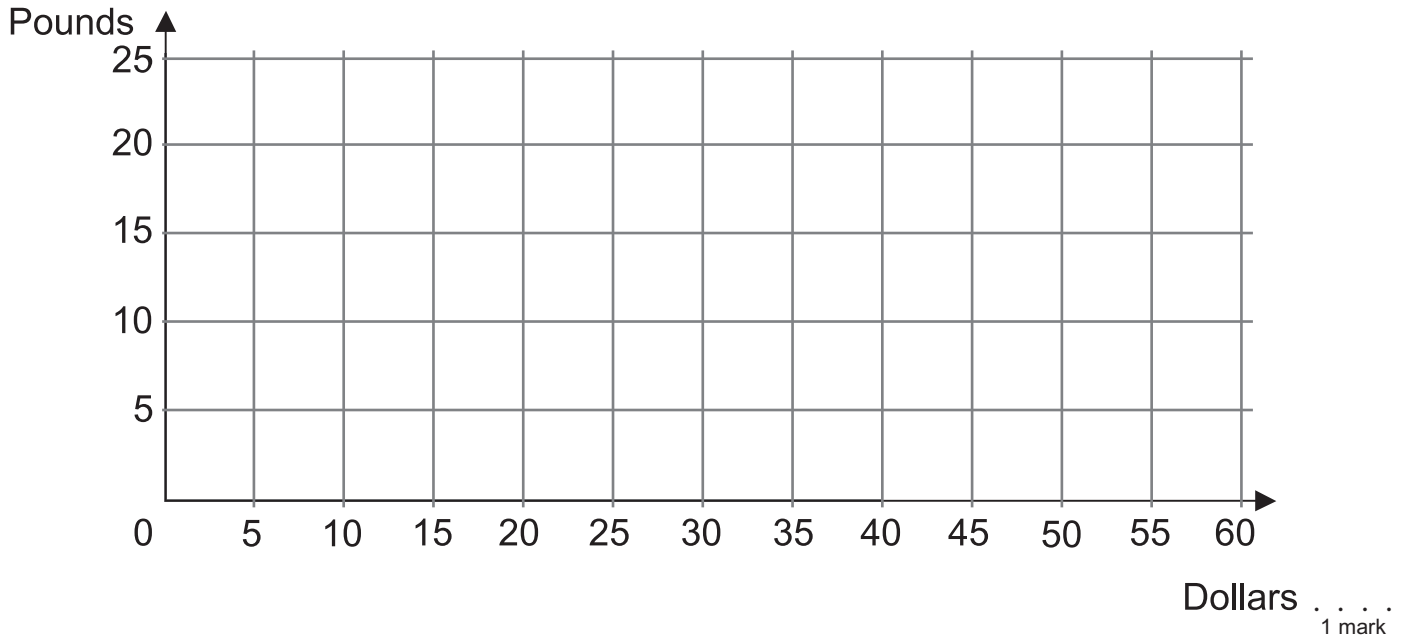
. . . . .

. . . . .  
2 marks



27 In April 2006, one pound was worth three New Zealand dollars.

(a) Draw a graph to convert dollars into pounds.



(b) Write a formula to convert dollars ( $d$ ) into pounds ( $p$ ).



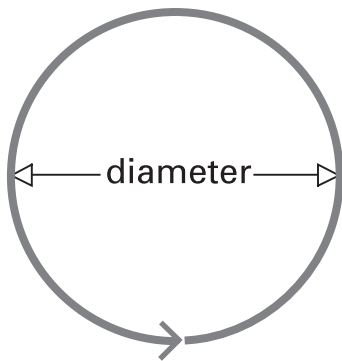
$p = \dots\dots\dots$  1 mark



28

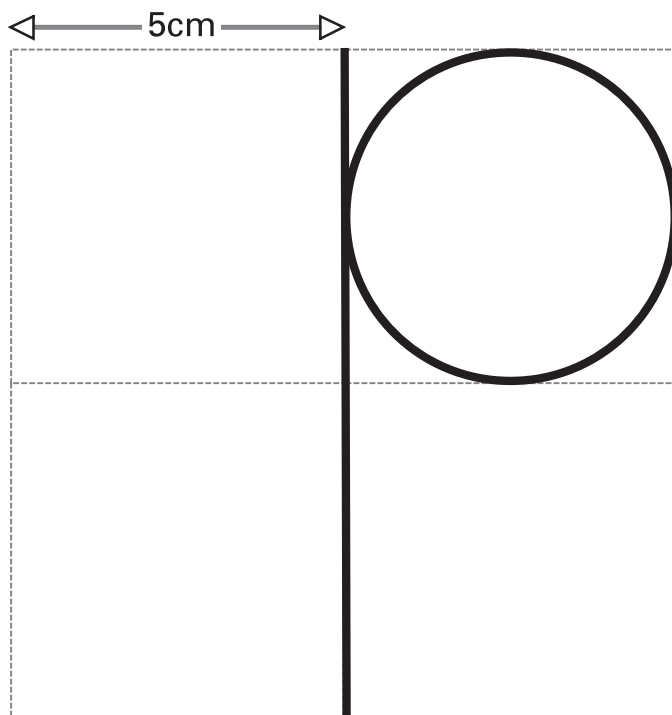
Paul uses the rule:

The distance all the way round a circle is the diameter multiplied by 3.14



He makes a letter P from wire.

He puts it on a square grid.



not drawn  
to scale

What is the total length of the wire?



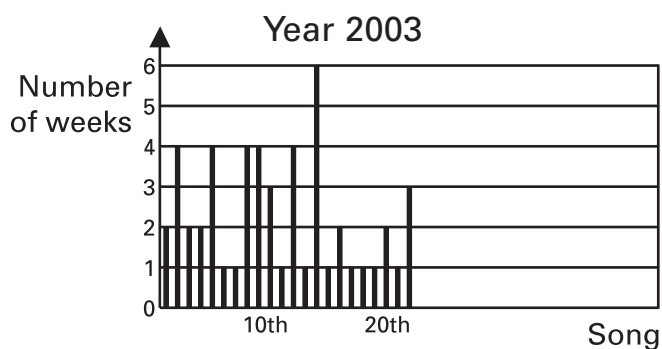
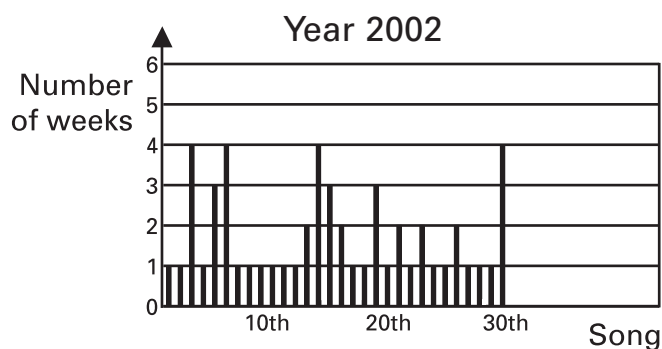
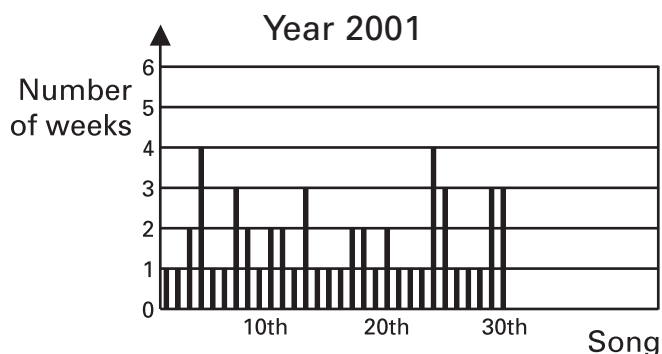
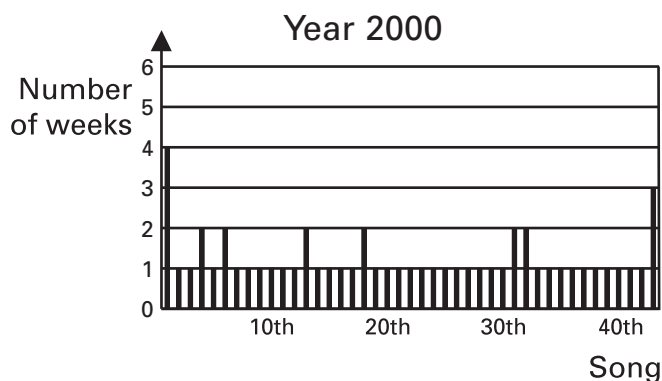
..... cm

.....  
.....  
2 marks

29

The bar charts show how many weeks each hit song stayed at *Number One* in the years 2000 to 2003.

In the year 2000, the first hit song stayed at *Number One* for 4 weeks.



- (a) In which year did the second hit song stay at *Number One* for 4 weeks? Put a ring around your answer.



2000

2001

2002

2003

- (b) Which year had the greatest number of hit songs? Put a ring around your answer.



2000

2001

2002

2003

- (c) Which year had the longest running hit song? Put a ring around your answer.



2000

2001

2002

2003

.....  
2 marks



