Ma

KEY STAGE 3

TIER 4–6

Year 9 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 **may** use a calculator for any question in this test.
- You will need: pen, pencil, rubber, ruler and a calculator.
- Some formulae you might need are on page 2.
- 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 marking use only	Total marks	

Instructions

Answers

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

Calculators

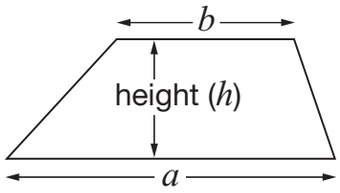
You **may** use a calculator to answer any question in this test.

Formulae

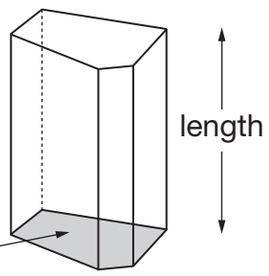
You might need to use these formulae

Trapezium

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



Prism



Volume = area of cross-section × length

1. Write the missing numbers.

962 + _____ = 1898

1 mark

_____ − 403 = 982

1 mark

51 × _____ = 2397

1 mark

_____ ÷ 23 = 828

1 mark

2. A shop charges to deliver food to people's homes.

The cost depends on the day of delivery.

Day of delivery	Cost
Tuesday or Wednesday	£3.99
Monday or Thursday	£4.99
Friday or Saturday	£5.99
Sunday	£6.99

July 2008						
Su	M	Tu	W	Th	F	Sa
		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		

(a) What is the cost of delivery on **18 July 2008**?

£ _____

1 mark

(b) Mrs Jones wants a delivery **every Thursday** in **July 2008**.

How much will that cost altogether?

£ _____

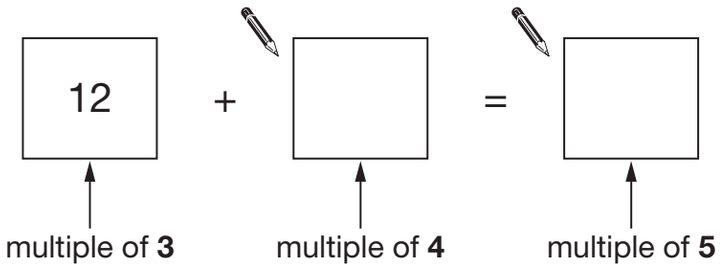
1 mark

(c) What is the cost of delivery on **5 August 2008**?

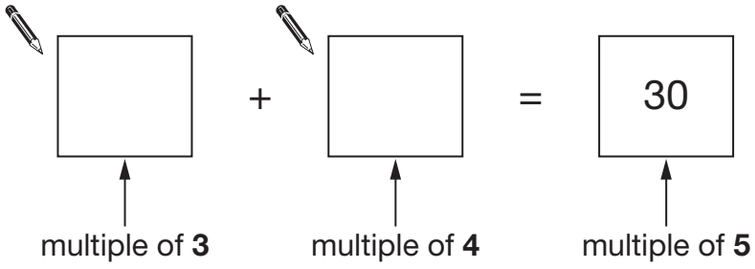
£ _____

1 mark

3. Write multiples to make these additions correct.

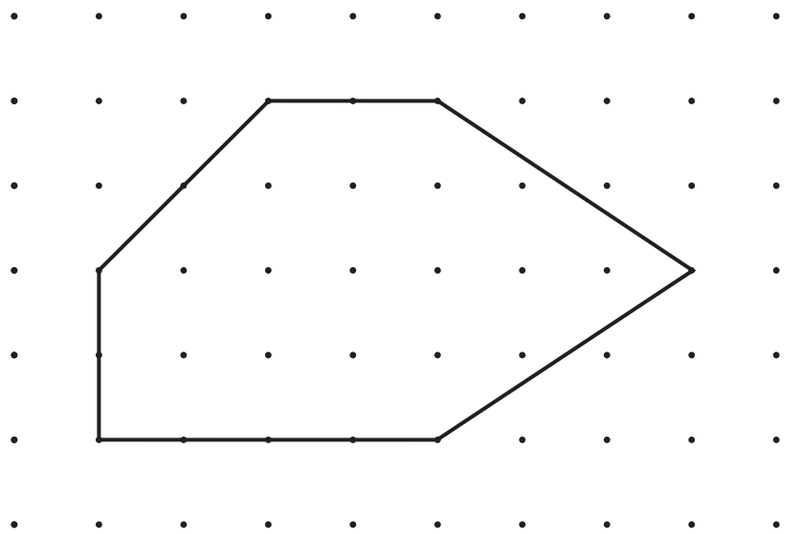


1 mark



1 mark

4. Here is a shape on a square grid.



Here are some statements about the shape.

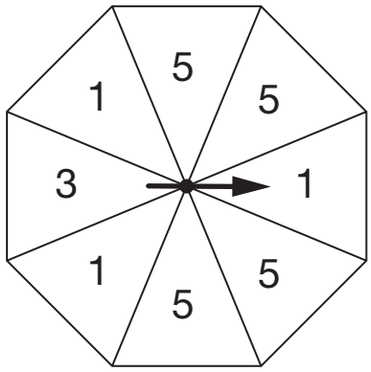
For each statement tick (✓) True or False.

	True	False
The shape has **no** right angles.	☐	☐
The shape has **four** obtuse angles.	☐	☐
The shape has **no** lines of symmetry.	☐	☐
The shape has **two pairs** of parallel sides.	☐	☐

2 marks

5. Tom has a fair spinner with 8 equal sections.

He is going to spin the pointer.



Draw lines to show how likely the following are.

One is done for you.

He will spin the **number 3**	certain
He will spin the **number 5**	likely
He will spin the **number 6**	even chance
He will spin a **number less than 7**	unlikely
	impossible

2 marks

6. Two websites sell the same type of radio.

	Website A	Website B
Cost of radio	£79.99	£76.76
Cost of postage	£3.49	£6.79

Sunil is going to buy the radio from one of the websites.

He also has to pay for postage.

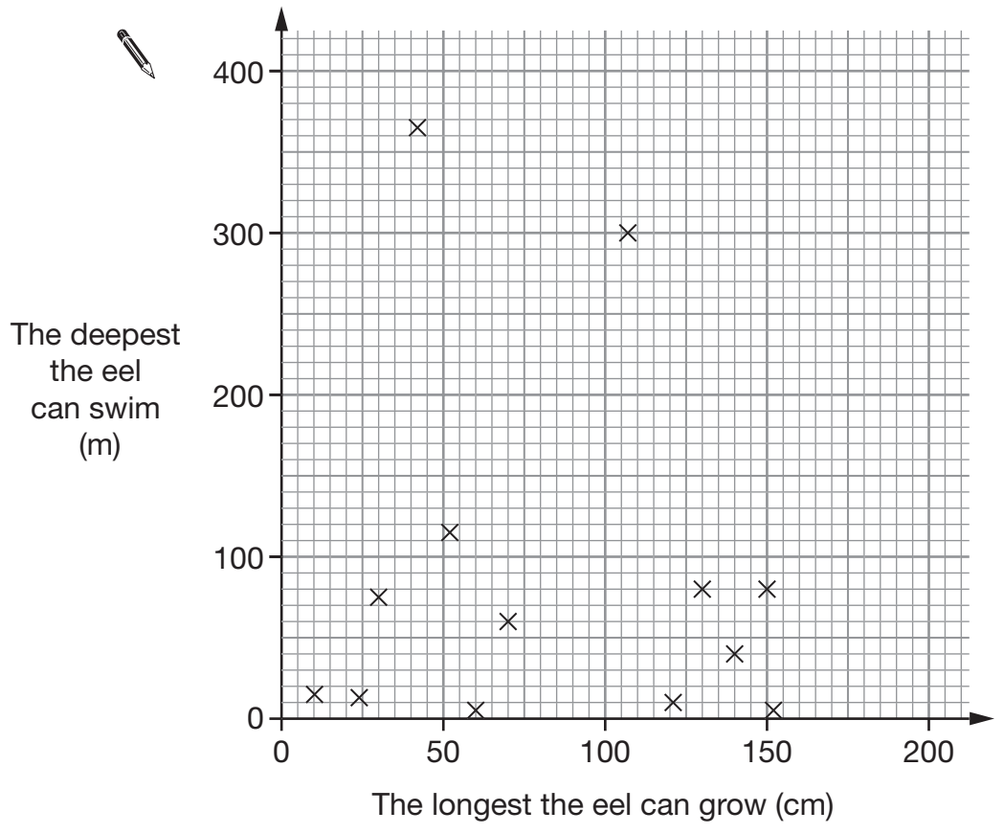
Which website is **cheaper** and by how much?

Website _____ is cheaper by _____

2 marks

1 mark

7. The graph shows information about **13 different types** of eel that live in the sea.



Use the graph to answer these questions.

(a) One type of eel is called a goldentail moray.

The longest it can grow is **70 cm**.

The deepest it can swim is **60 m**.

Put a ring around the point on the graph that represents this eel.

1 mark

(b) How many of these different types of eel can swim **deeper than 100 m**?

1 mark

8. A shop sells school uniform.

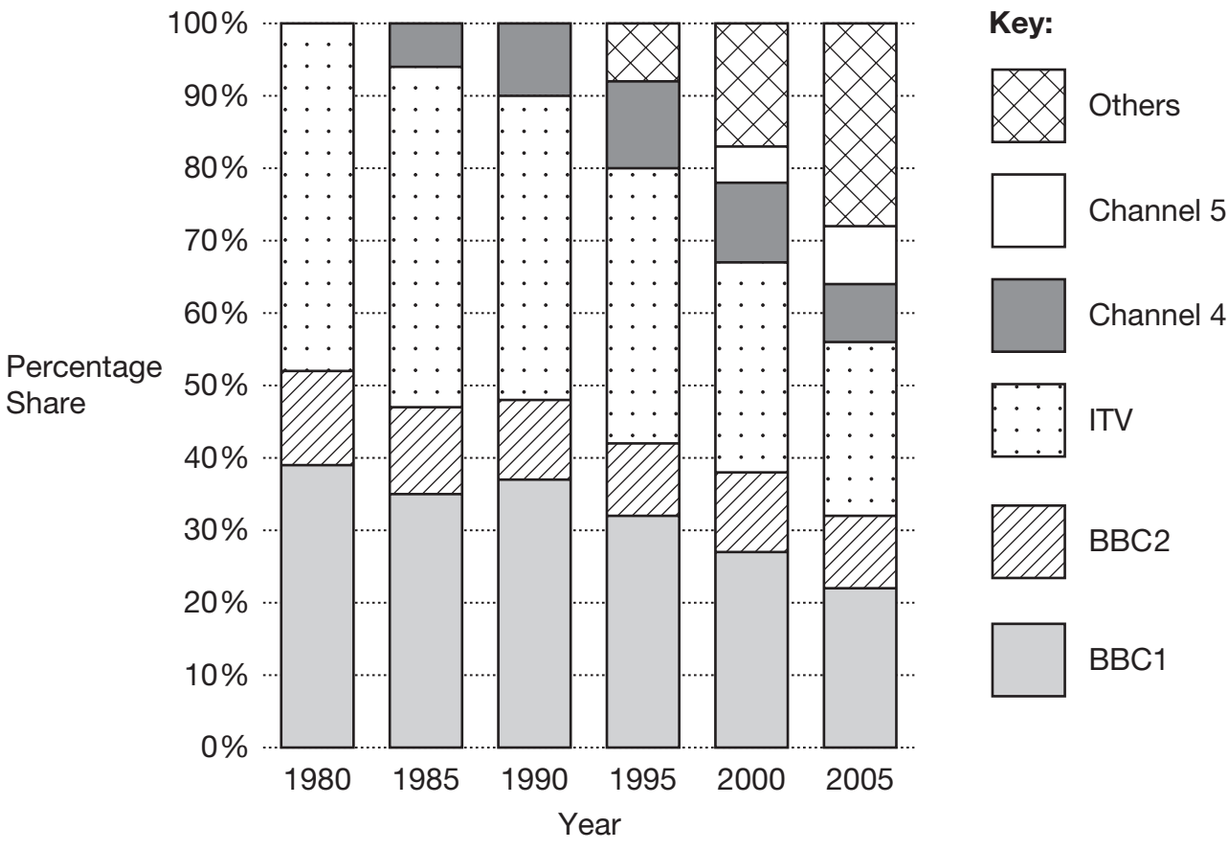
Two shirts and one jumper cost **£29**
One shirt and one jumper cost **£21**

How much does **one jumper** cost?

£

2 marks

9. The chart shows the popularity of different television channels.



Complete the missing information.

In **1980**, only three television channels were available. The most popular was _____ .

1 mark

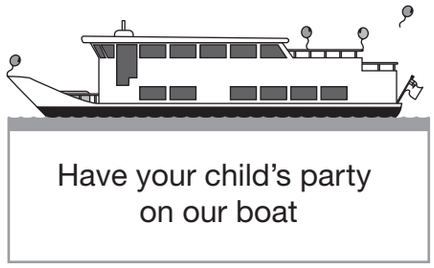
In **2005**, the biggest percentage share is for _____ .

1 mark

The percentage share for _____ remained **almost the same** at about _____ % each year.

1 mark

10. A boat can be hired for children's parties.



The formula below shows the cost.

Cost = £13.50 × the number of children + £23

(a) What is the cost of a party for **8 children**?

£

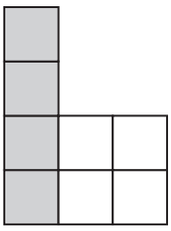
1 mark

(b) A different children's party cost **£225.50**

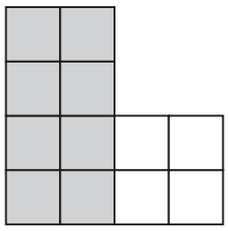
How many children were at the party?

2 marks

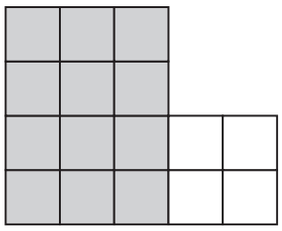
11. I make a sequence of shapes using grey and white tiles.



shape number 1



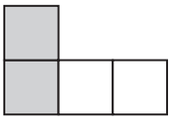
shape number 2



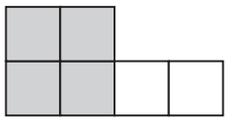
shape number 3

The total number of tiles in shape number n is $\mathbf{4}\boldsymbol{n} + \mathbf{4}$

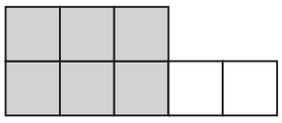
(a) I remove **half the tiles** to make the sequence of shapes below.



shape number 1



shape number 2



shape number 3

Complete the sentence.

The total number of tiles in shape number n is _____

1 mark

(b) Then I remove **half the tiles** again.

shape number 1

shape number 2

shape number 3

Complete the sentence.

The total number of tiles in shape number n is _____

1 mark

12. The table shows information about six types of bird that can be seen in Britain.

The birds are listed in order of size from biggest to smallest.

Name of bird	Size of bird	When it can be seen		Average egg length
		Summer	Winter	
Mistle Thrush	↑ Biggest	✓	✓	31 mm
Fieldfare			✓	29 mm
Blackbird		✓	✓	29 mm
Ring Ouzel		✓		30 mm
Song Thrush		✓	✓	27 mm
Redwing	↓ Smallest		✓	26 mm

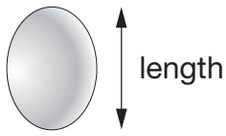
Use the table to answer these questions.

(a) What is the name of the **smallest** bird that can be seen in **summer**?

1 mark

(b) Fred says:

In this table, the **bigger birds always have bigger egg lengths** than the smaller birds.



Is he correct?

☐ Yes ☐ No

Explain your answer.

1 mark

13. People pay to visit a garden.

Tickets:	
Age 16 and over	£3.60
Under 16	£2.25

145 people pay.

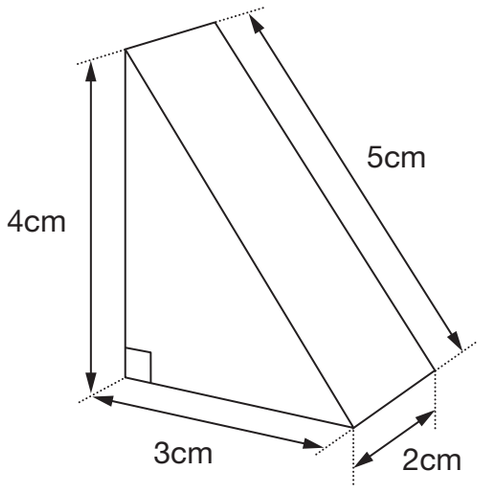
39 of them are **under 16**

How much ticket money is paid altogether?

£

2 marks

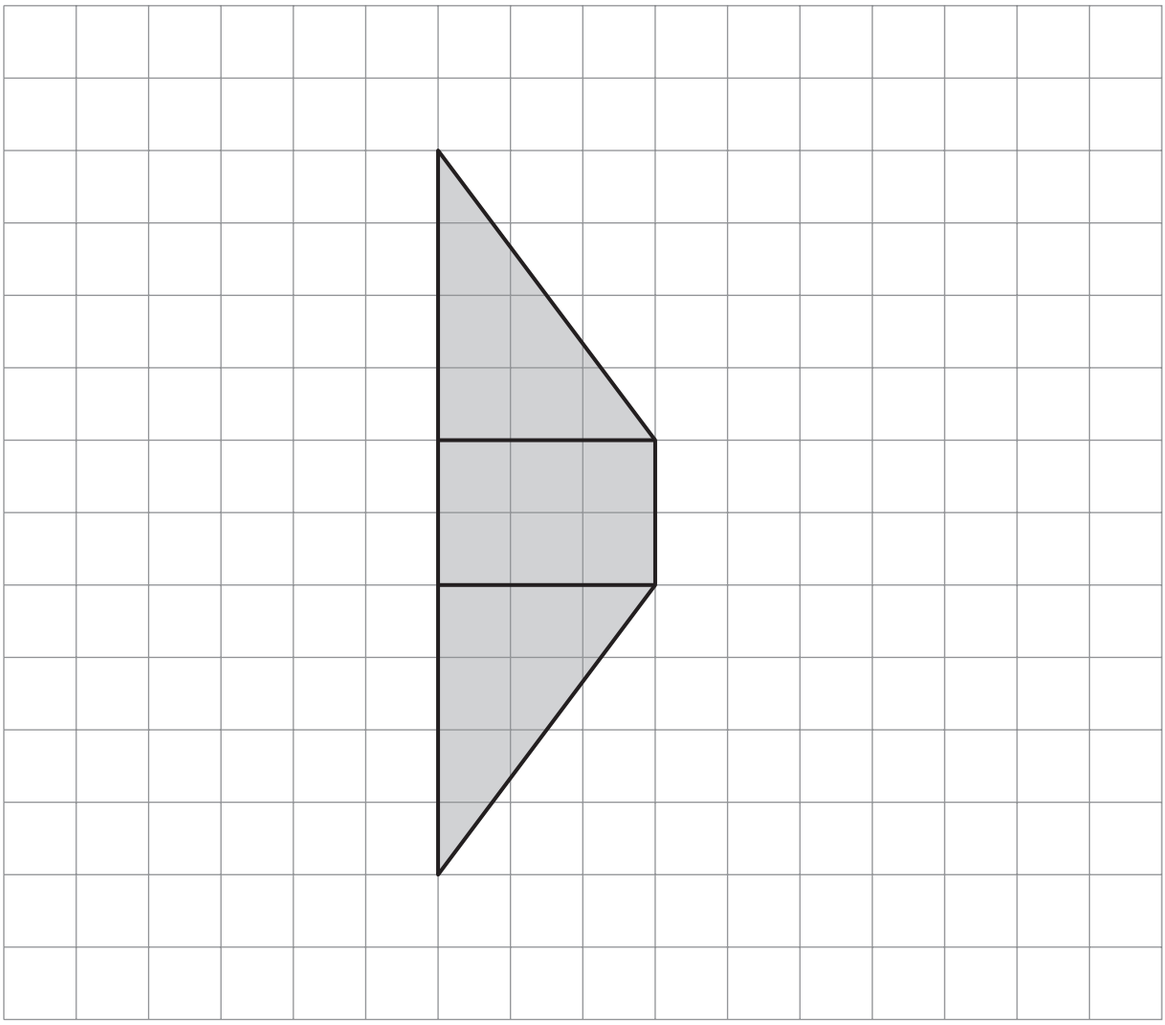
14. The diagram shows a prism.



Not drawn accurately

The centimetre square grid below shows part of the net for the prism.

Complete the **net accurately**.



1 mark

1 mark

15. (a) Dave says:

> 30 is the **only** multiple of 3 that ends in a zero.

Is he correct?

☐ Yes ☐ No

Explain your answer.

1 mark

(b) Ali says:

> 30 is the **only** number that is divisible by both 5 and 2

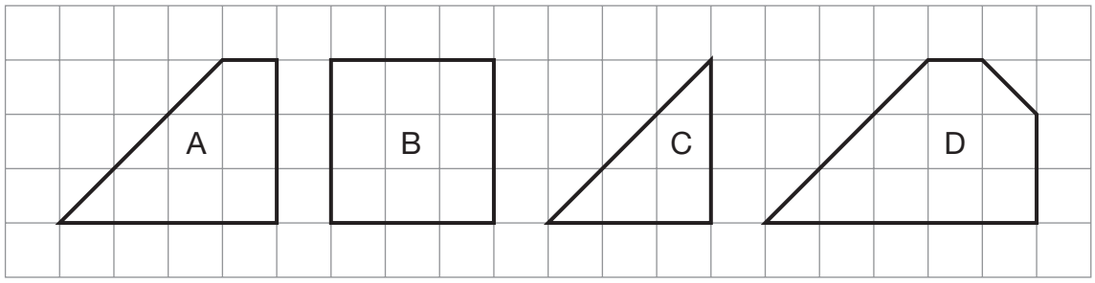
Is she correct?

☐ Yes ☐ No

Explain your answer.

1 mark

16. Each shape on this square grid has angles that are 45°, 90° or 135°



Complete the table.

	A	B	C	D
Number of 45° angles	1			
Number of 90° angles	2			
Number of 135° angles	1			

2 marks

17. (a) Write a number that is **bigger than** $5\frac{2}{3}$ but **smaller than 6**

1 mark

(b) Now write a number that is **bigger than 5.6** but **smaller than** $5\frac{2}{3}$

1 mark

18. The shaded rectangle is **twice as long** as it is wide.

The **perimeter** of the rectangle is **30cm**.

Not drawn accurately

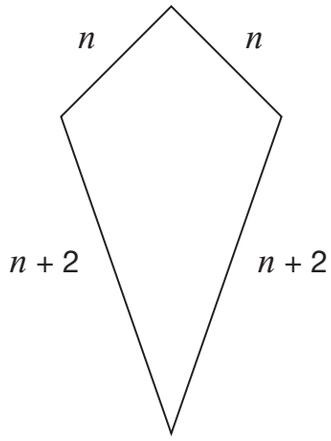
What is the **area** of the rectangle?

_____ cm^2

2 marks

19. The diagram shows a kite.

The side lengths are in centimetres.



Not drawn accurately

(a) When $n = 9$, what is the perimeter of the kite?

_____ cm

1 mark

(b) When the perimeter of the kite is **100 cm**, what is the value of n?

$n =$ _____

2 marks

20. I have a fair six-sided dice, numbered **4**, **9**, **12**, **16**, **20** and **24**

I am going to roll the dice.

(a) What is the probability of rolling a **multiple of 4**?

1 mark

(b) What is the probability of rolling a **square number**?

1 mark

21. The price of a coat is £65

In a sale the price is **reduced** by **15%**

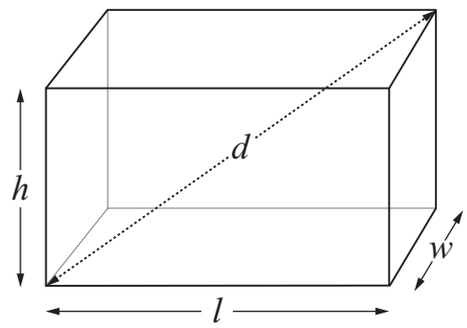
What is the sale price of the coat?

£ _____

2 marks

22. A cuboid has length, l, width, w, and height, h

The distance between opposite corners is d



Look at the formula.

$$d^2 = l^2 + w^2 + h^2$$

Use the formula to find the value of d when $l = 6$, $w = 2$ and $h = 3$

$d =$ _____

2 marks

23. (a) Is it possible to draw a triangle with **angles** 150°, 10° and 10°?

☐ Yes ☐ No

Explain your answer.

1 mark

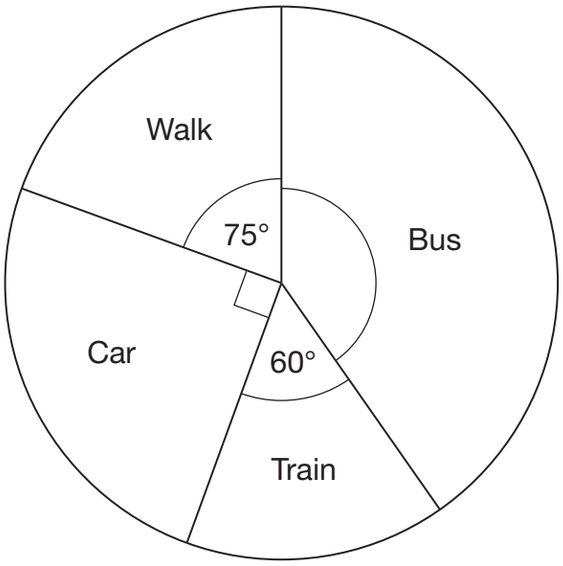
(b) Is it possible to draw a triangle with **sides** 150 cm, 10 cm and 10 cm?

☐ Yes ☐ No

Explain your answer.

1 mark

24. The pie chart shows how pupils in class 9A travelled to school one morning.



Not drawn accurately

5 pupils in class 9A **walked** to school.

Work out how many pupils in class 9A travelled by **bus**.

_____ pupils

2 marks

25. (a) Every day a machine makes **500 000** drawing pins and puts them into boxes.

The machine needs **150** drawing pins to fill a box.

How many boxes can be filled with the 500 000 drawing pins?

_____ boxes

1 mark

(b) Each drawing pin is made from **0.23g** of metal.

How many drawing pins can be made from **1kg** of metal?

_____ drawing pins

2 marks

26. Here are some exchange rates.

£1	=	2.03	American dollars
£1	=	2.15	Canadian dollars

Use the exchange rates to answer this question.

How many **more Canadian** dollars than American dollars would you get for £250?

dollars

2 marks

QCDA/10/4339 (Pupil pack)
QCDA/10/4333 (Teacher pack)
112009