

CANDIDATE
NAME

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CENTRE
NUMBER

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CANDIDATE
NUMBER

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MATHEMATICS

1112/02

Paper 2

April 2018

1 hour

Candidates answer on the Question Paper.

Additional Materials: Calculator
 Geometrical instruments
 Tracing paper (optional)

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black pen.

You may use an HB pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, glue or correction fluid.

DO NOT WRITE IN ANY BARCODES.

Answer **all** questions.

Calculator allowed.

You should show all your working in the booklet.

The number of marks is given in brackets [] at the end of each question or part question.

The total number of marks for this paper is 50.

1 Write a **negative** number in each box to make the calculation correct.

$$\square \times \square = 18$$

[1]

2 Complete these sentences.

The probability that a football team wins a match is 0.6 and the probability it does not win is

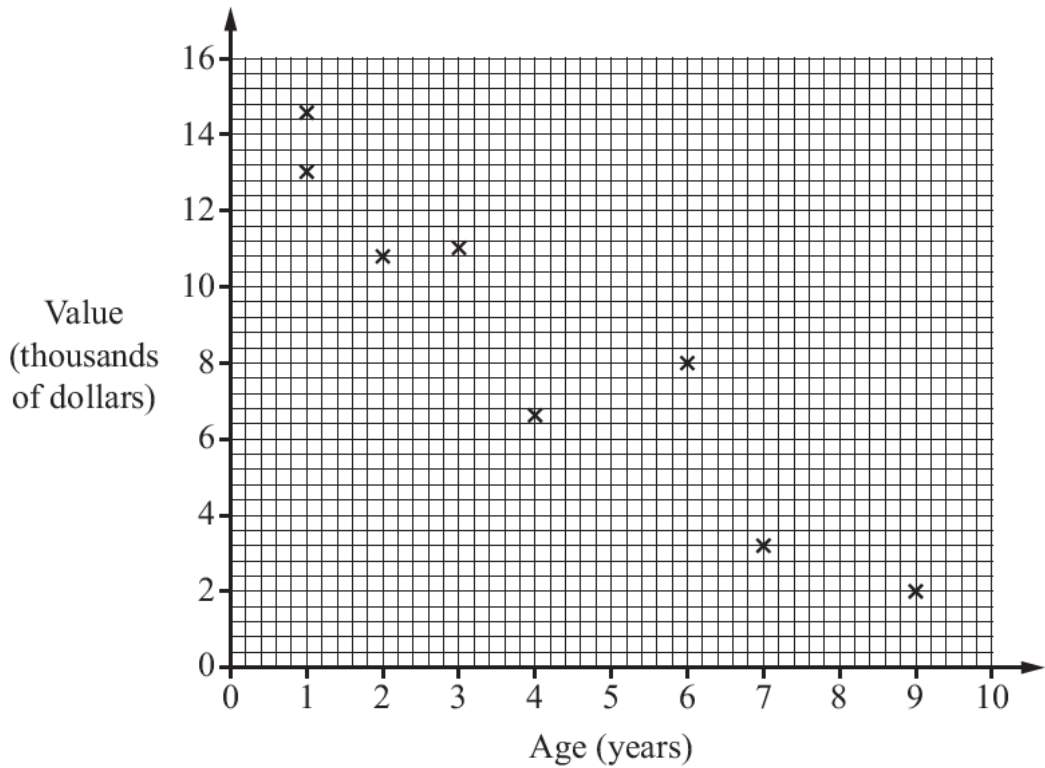
.....

The probability that a player scores a goal is and the probability that the player does not score a goal is $\frac{3}{8}$

The probability that a fan supports a team is 72% and the probability that the fan does not support the team is %.

[2]

3 The scatter graph shows the value (thousands of dollars) and the age (years) of eight cars.



A ninth car has a value of 11 thousand dollars and is 5 years old.

(a) Plot the information for the ninth car on the grid. [1]

(b) Find the median age of the nine cars.

..... years [1]

(c) Describe the relationship between the value of a car and its age.

.....
 [1]

4 Mia's house has increased in value by \$12 000 in 15 months.

- (a) Work out the **rate** of increase in the value of Mia's house.
Give your answer in dollars per month.

\$ per month [1]

(b) Oliver's house has increased in value by \$10 200 in 12 months.

Tick (✓) to show whose house has increased in value at a greater rate.

Mia's house

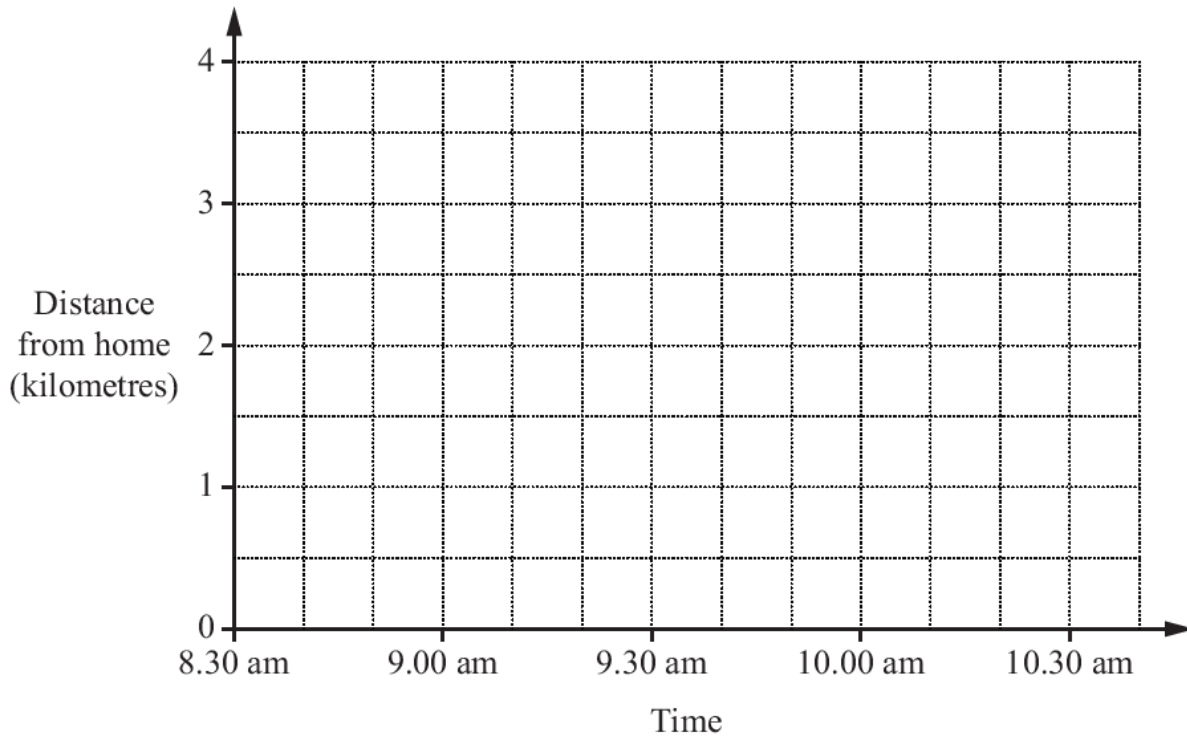
Oliver's house

Show how you worked out your answer.

[1]

- 5 Angelique leaves home at 8.30 am.
 She walks at a constant speed to a shop which is 3 kilometres from her home.
 She arrives at the shop at 9.10 am and stays there for 15 minutes.
 She then walks at a constant speed back home, arriving there at 10.10 am.

Draw a travel graph to show Angelique's journey.



[2]

- 6 A candle loses 22.4 cm of height when it burns for 7 hours.

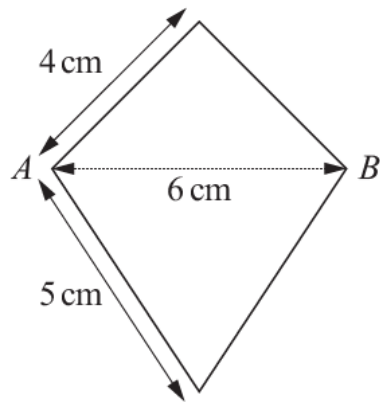


An identical candle burns for 4 hours.

Work out how much height the candle loses.

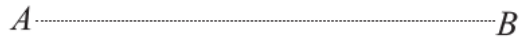
..... cm [2]

7 The diagram shows a sketch of a kite.



NOT TO
SCALE

Use a ruler and compasses to construct the kite in the space below.
The diagonal AB has been drawn for you.
Leave in your construction lines.



[2]

- 8 Saki has 1865 apples.
She packs them into crates.
Each crate can hold 48 apples.

Work out the largest number of crates that she can fill **completely**.

..... crates [2]

- 9 (a) Carlos has some toy bricks.
Each brick is either red or blue.
The ratio of red bricks to blue bricks is 3 : 4

Draw a ring around the fraction of the bricks that are **blue**.

$$\frac{1}{3} \quad \frac{3}{4} \quad \frac{4}{3} \quad \frac{4}{7}$$

[1]

- (b) Gabriella also has some toy bricks.
Her bricks are either yellow or green.
The ratio of yellow to green bricks is 4 : 1
She has 50 bricks altogether.

Work out how many **green** bricks Gabriella has.

..... [1]

- 10** A hotel has 250 rooms.
175 rooms are occupied.

Calculate the percentage of the rooms that are occupied.

.....% [2]

- 11** Find the n th term of each sequence.
The first one has been done for you.

Sequence	n th term
3, 6, 9, 12, ...	$3n$
6, 12, 18, 24,
5, 8, 11, 14,

[2]

- 12** Here are some number cards.

6
10
5
11
7

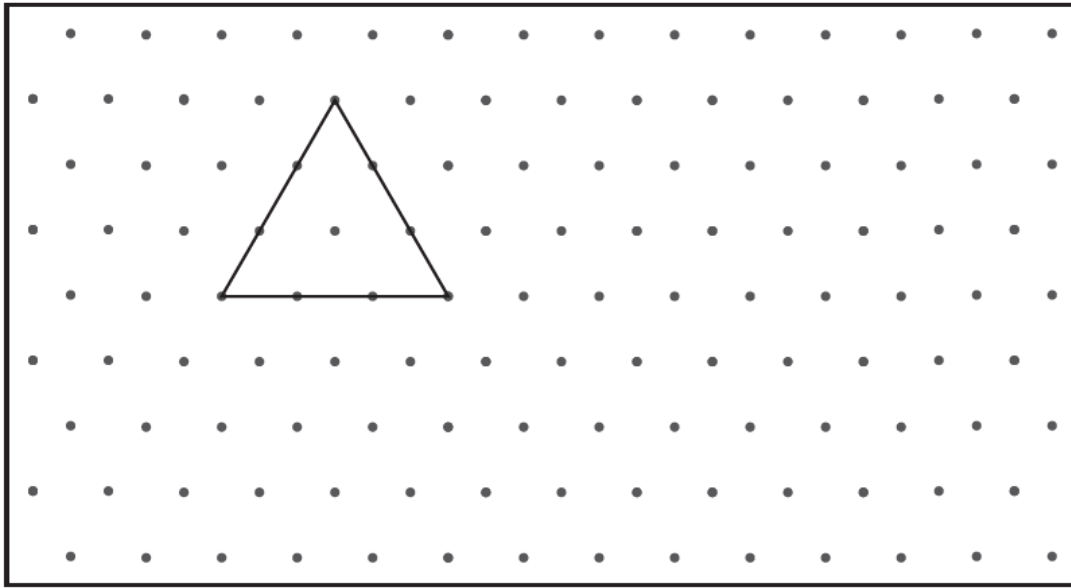
Use two of the cards to make a fraction which is less than $\frac{1}{2}$

$$\frac{\square}{\square}$$

[1]

13 The diagram shows a triangle on a grid.

On the grid, draw 6 more of the same triangle to show how it tessellates.



[1]

14 Chen has 1.6 kilograms of flour.

He uses one quarter of the flour to make a cake.

He uses a further 325 grams of the flour to make some biscuits.

Calculate how much flour Chen has left.

Give your answer in **grams**.

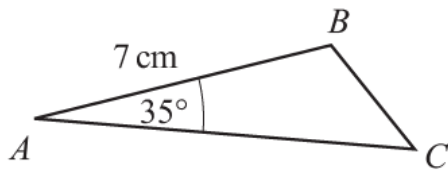
..... g [2]

15 A train travels at 300 kilometres per hour.

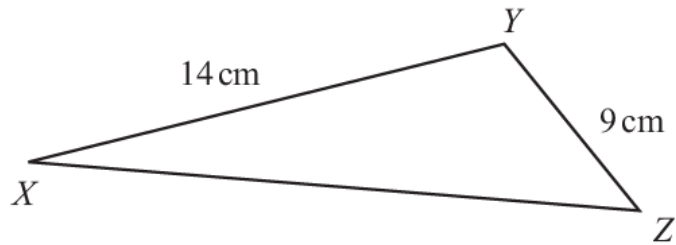
Work out how far the train travels in 25 minutes.

..... km [1]

16 Triangle ABC is enlarged by a scale factor of 2 to give triangle XYZ .



NOT TO
SCALE



(a) Side YZ is 9 cm .

Find the length of side BC .

..... cm [1]

(b) Angle BAC is 35°

Find angle YXZ .

..... $^\circ$ [1]

17 Write these masses in order of size, starting with the smallest.

0.14 kg

1200 g

0.08 kg

45 g

.....
smallest

.....

.....

.....
largest

[1]

18 The values of x and y are directly proportional.

Complete the table by filling in the missing number.

x	4	
y	72	63

[1]

19 * and ● are both positive whole numbers smaller than 20

$$*^2 - \bullet^3 = 10^2$$

Work out the value of * and the value of ●

* =

● = [1]

20 The cost of a visit by a plumber is in two parts.

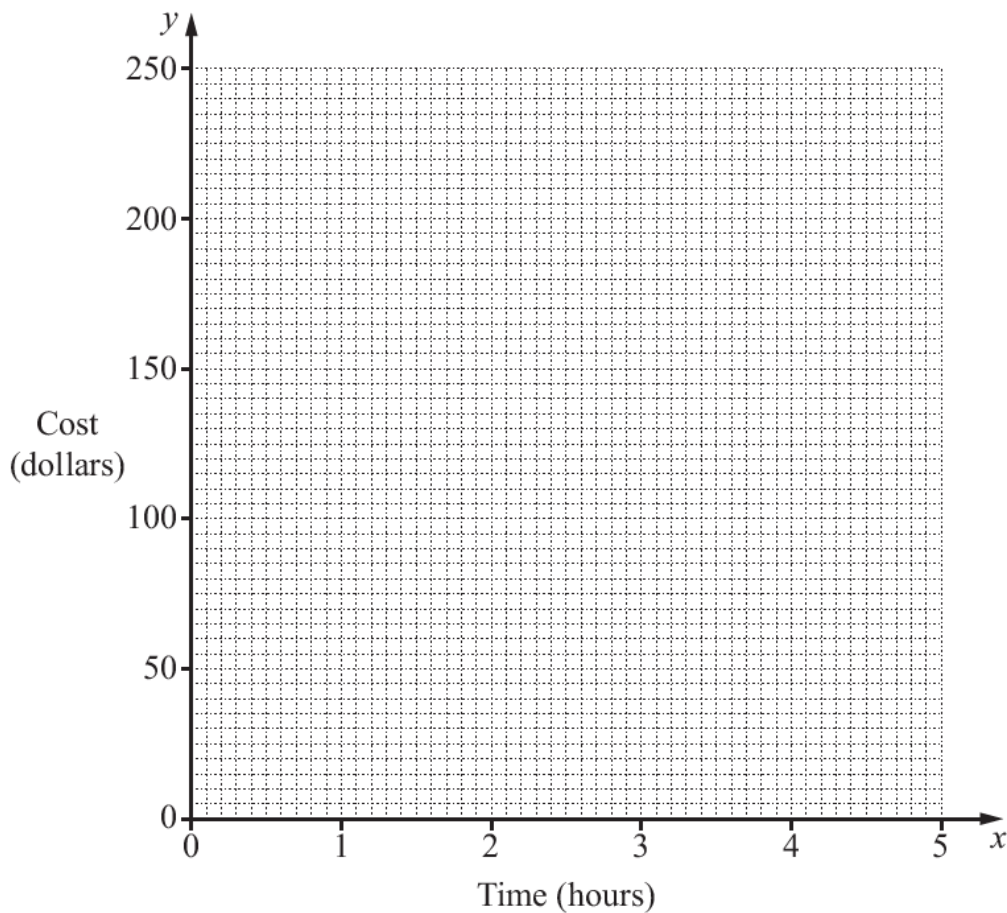
A charge of 70 dollars
and
30 dollars for each hour of the visit.

(a) Complete this formula for the cost, y dollars, of a visit that lasts x hours.

$$y = \boxed{} x + \boxed{}$$

[1]

(b) Draw a graph to show the costs of visits lasting up to 5 hours.



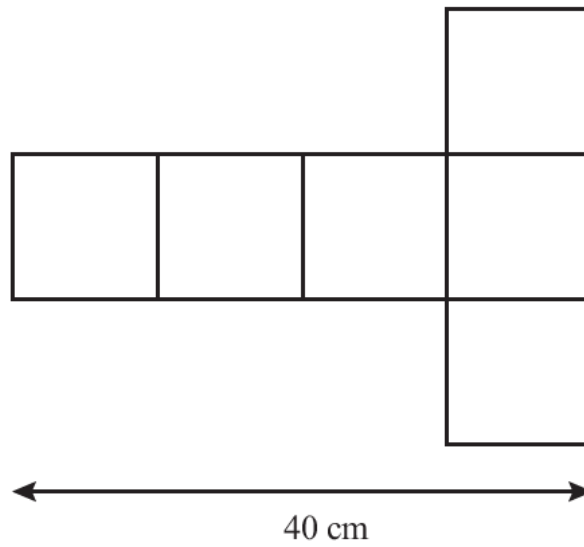
[1]

(c) A visit costs 115 dollars.

Use your graph to estimate the length of the visit, in hours.

..... hours [1]

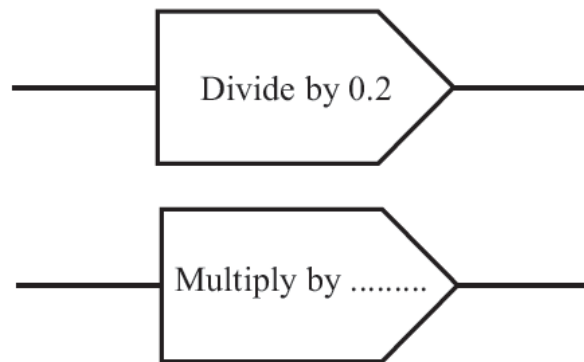
21 Here is a drawing of the net of a cube.



Work out the surface area of the cube.

..... cm^2 [2]

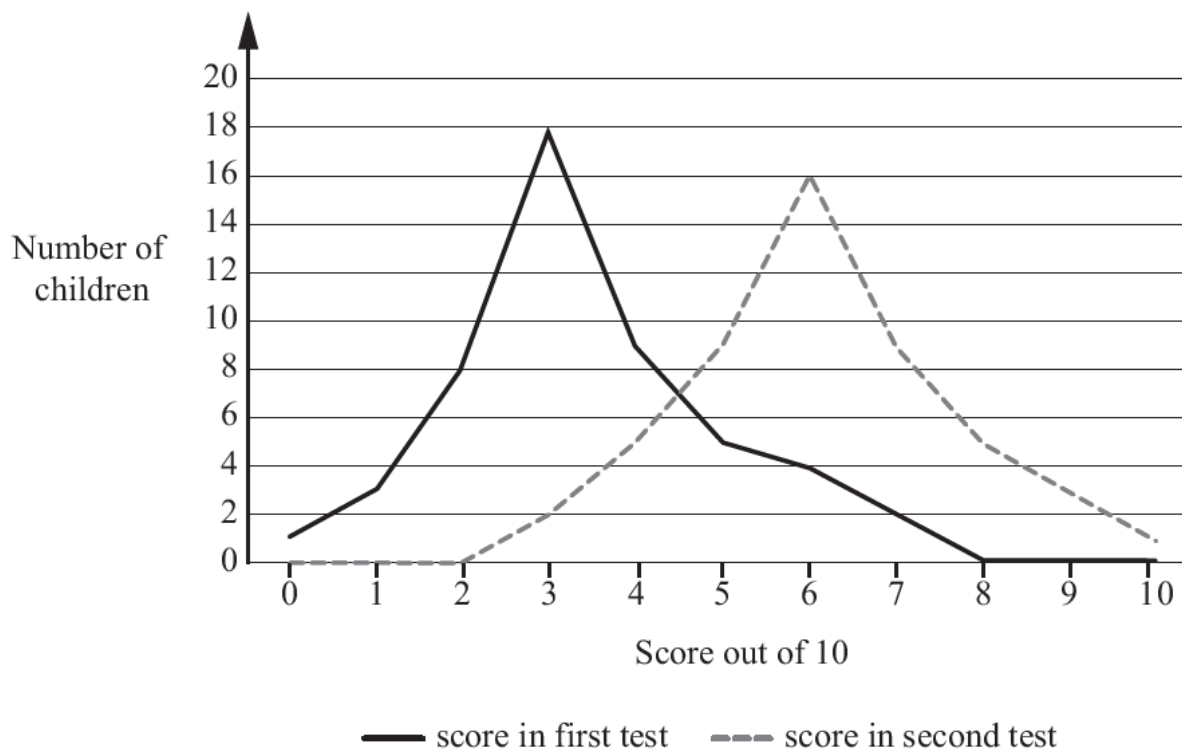
22 These two mapping diagrams are **equivalent** to each other.



Complete the second mapping diagram by writing in a whole number.

[1]

- 23 Fifty children take a mathematics test.
Three weeks later they take a second mathematics test.
The graph shows their scores, out of 10, in both tests.



Write a statement to compare the scores of the children in the two tests.

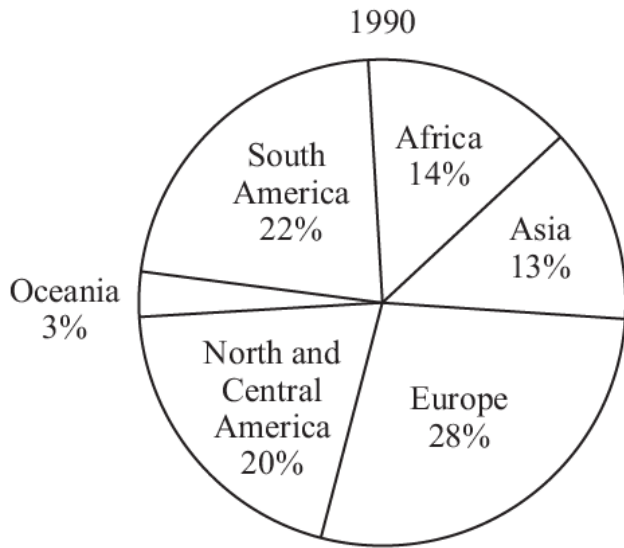
.....

..... [1]

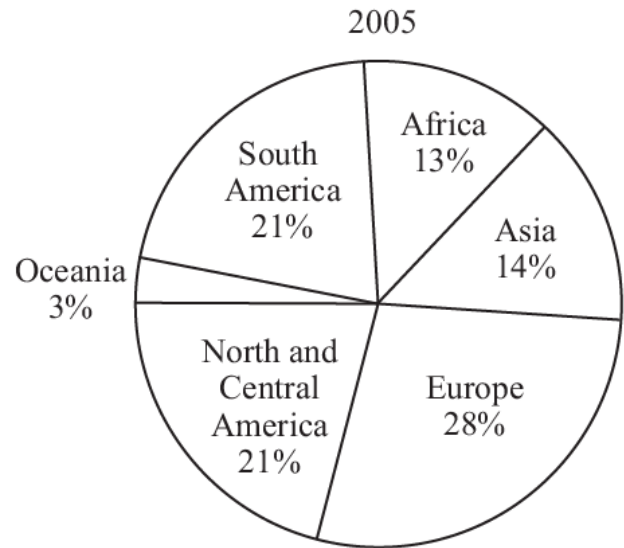
24 Aiko is investigating the question

How did the area of forest in South America change between 1990 and 2005?

She finds these pie charts for the years 1990 and 2005 on the internet.



Total area of forest in the world:
3860 million hectares



Total area of forest in the world:
3790 million hectares

They show the proportion of the world's total forest area in each continent. They also give the total area of forest in the world.

Use the information in the pie charts to find the decrease in the area of forest in **South America** from 1990 to 2005.

..... million hectares [2]

25 The diagram shows the position of two mountains, A and B .



A third mountain, C , is

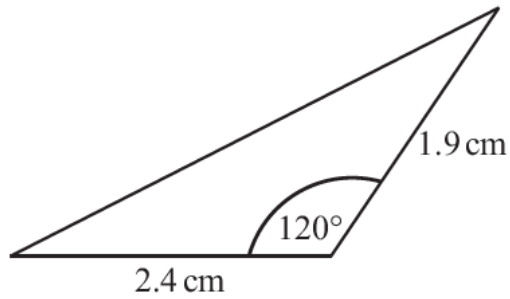
on a bearing of 145° from A

and

on a bearing of 270° from B .

Mark the position of C on the diagram.

[2]

NOT TO
SCALE

The length of the longest side of this triangle is $\sqrt{1.9^2 + 2.4^2 + (1.9 \times 2.4)}$

(a) Calculate the length.

Write down your full calculator answer.

..... cm [1]

(b) Round your answer to part (a) to an appropriate degree of accuracy.

..... cm [1]

27 Pierre is an electrician.

He uses this formula to work out the amount, \$ C , to charge for a job that takes t hours.

$$C = 20 + 30t$$

He starts a job at 9.30 am and finishes at 1 pm.

Work out his charge for this job.

\$ [1]

- 28 Yuri rolls a six-sided dice 200 times.
Lily rolls the same dice 250 times.

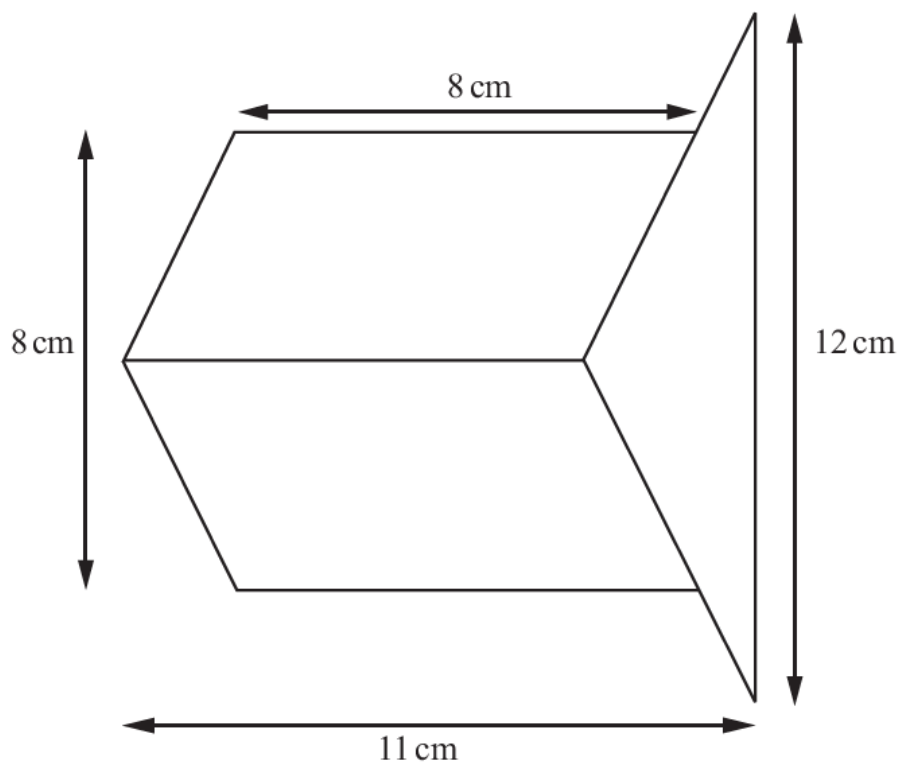
The table shows their relative frequencies for a score of six.

	Number of throws	Relative frequency for a six
Yuri	200	0.18
Lily	250	0.22

Work out how many sixes they rolled altogether.

..... [2]

29 The diagram shows a shape made from two identical parallelograms and a triangle.



NOT TO
SCALE

Calculate the total area of the shape.

..... cm^2 [2]