

CANDIDATE
NAME

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CENTRE
NUMBER

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CANDIDATE
NUMBER

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MATHEMATICS

Paper 2

1112/02

October 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.

This document consists of **15** printed pages and **1** blank page.

1 Work out.

$$(6.5 + 3.2)(6.5 - 3.2)$$

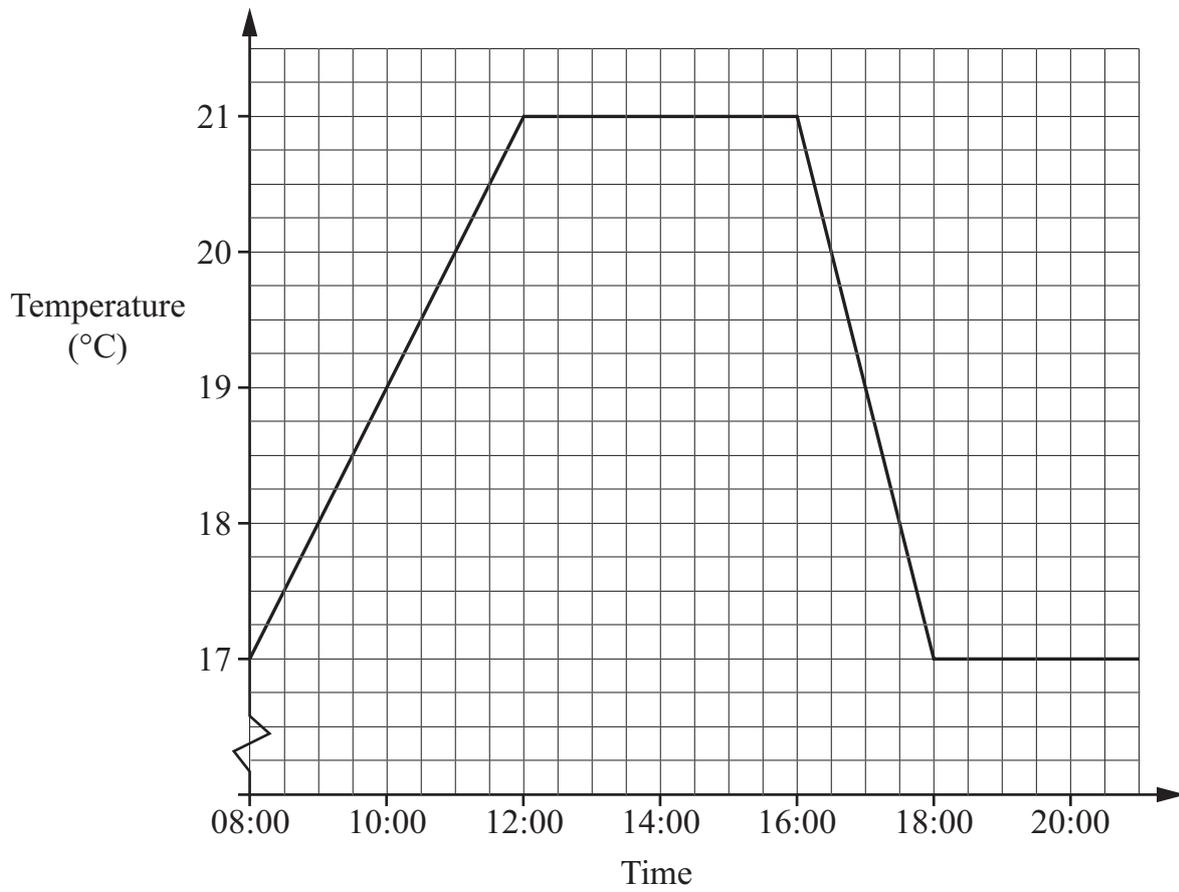
..... [1]

2 Pierre buys 56 litres of fuel for \$103.60
Carlos buys 40 litres of the same fuel.

Work out how much Carlos pays.

\$ [2]

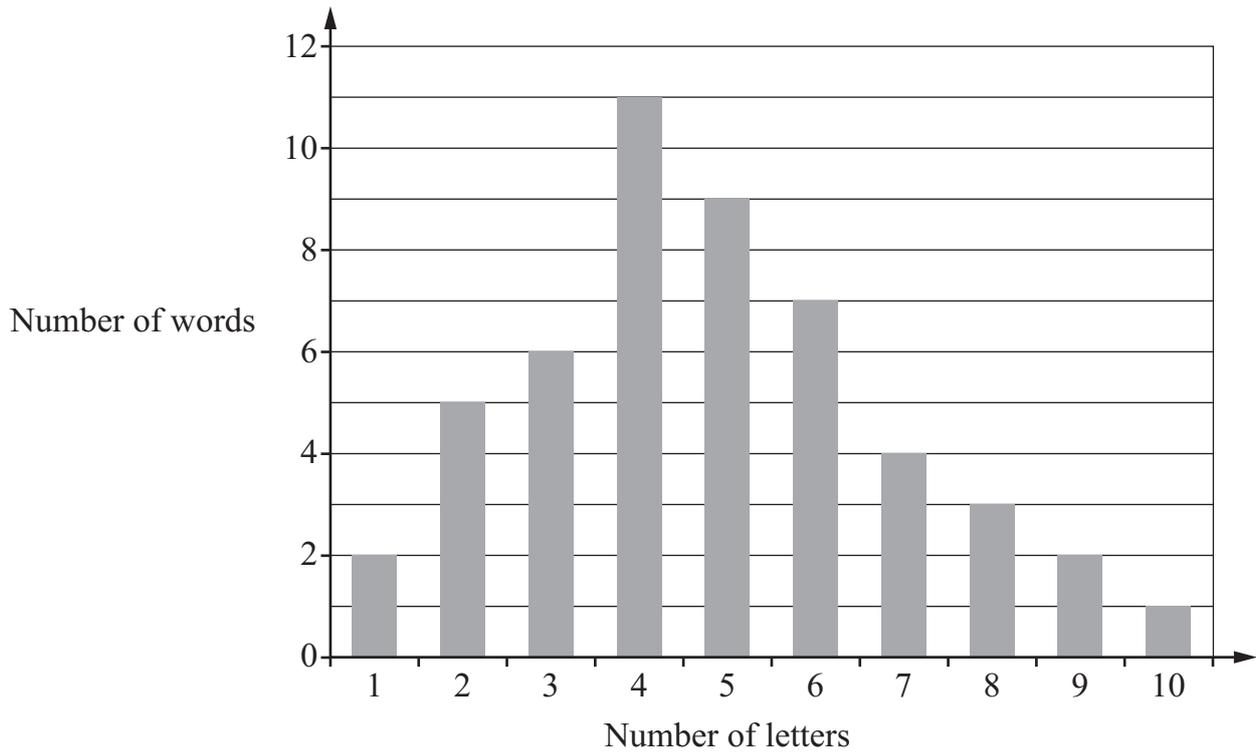
3 The graph shows the temperature of a room at different times during one day.



Work out the difference between the temperature at 11 am and at 5.30 pm.

..... °C [2]

4 The graph shows the number of letters in 50 words from a page in a book.



Write down

(a) how many more four-letter words there are than five-letter words,

..... [1]

(b) the largest number of letters in a word.

..... [1]

7 Body mass index can be used to measure how healthy a person is.

$$\text{Body mass index} = \frac{M}{H^2}$$

M is mass in kilograms.

H is height in metres.

Yuri is 1.8 m tall and his mass is 64.8 kg.

Calculate Yuri's body mass index.

..... [1]

8 Angelique has a fair six-sided dice.



(a) Find the probability of throwing a multiple of 3

..... [1]

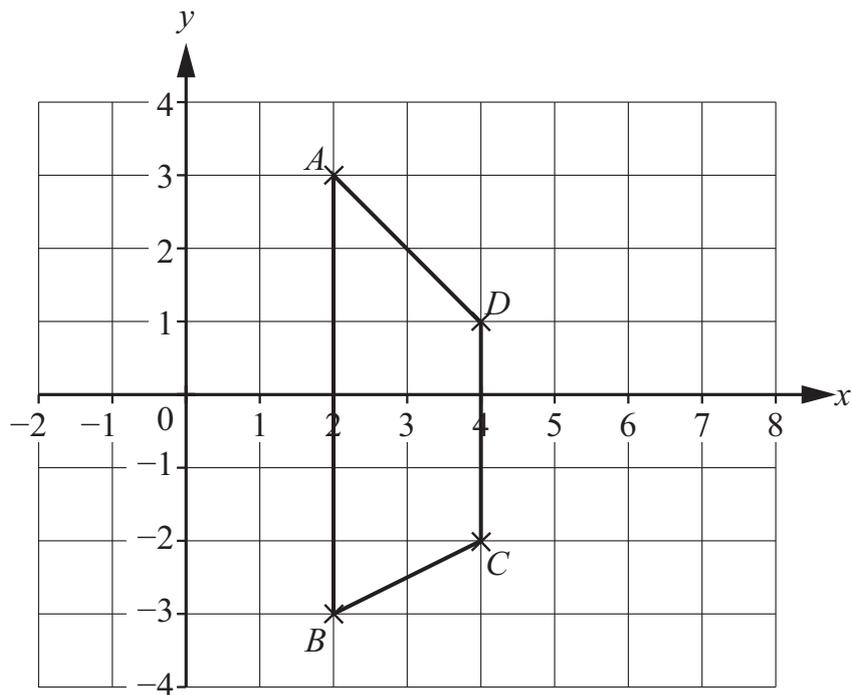
(b) Angelique throws a different six-sided dice 120 times.
The table shows her results.

Score	1	2	3	4	5	6
Frequency	15	26	21	14	20	24

Work out the experimental probability of throwing a multiple of 3

..... [1]

9 Trapezium $ABCD$ is shown on the grid.



E is a point on line AB .
Angle $AED = 90^\circ$

Mark E on the grid with a cross (×).

[1]

10 Manjit sells ice cream.

On Monday,

80 men bought ice cream,

31 of these men chose chocolate flavour,

41% of the women who bought an ice cream chose chocolate flavour.

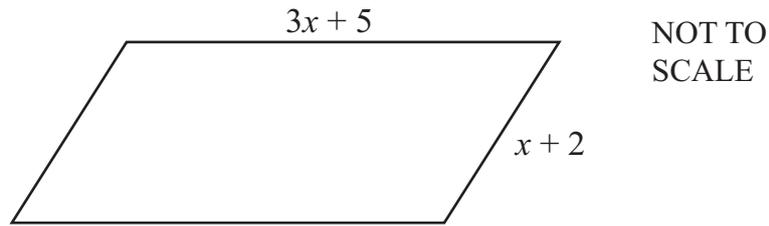
Tick (✓) to show if men or women are more likely to choose chocolate flavour ice cream.

Men Women

Show how you worked out your answer.

[2]

- 11 The diagram shows a parallelogram.
All sides are measured in centimetres.



- (a) Write down an expression, in terms of x , for the perimeter of the parallelogram.

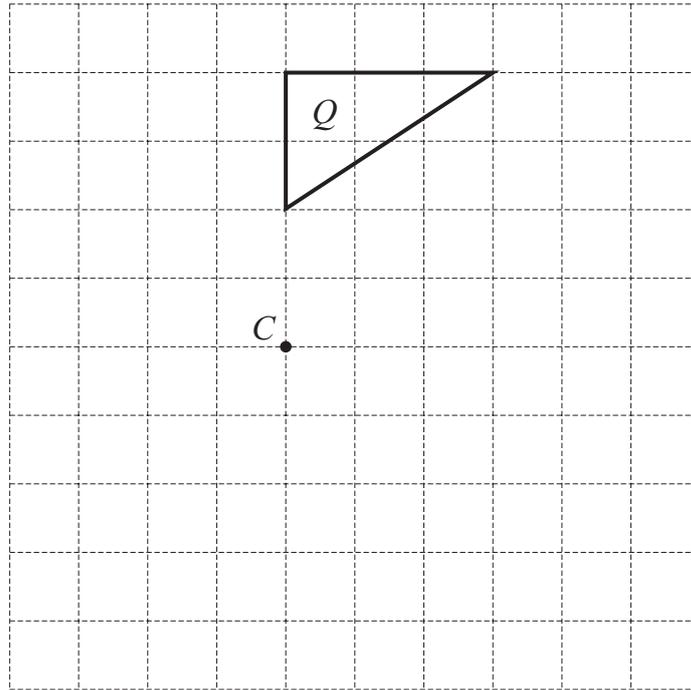
..... cm [1]

- (b) The perimeter of the parallelogram is 62 cm.

Work out the length of the **longest side** of the parallelogram.

..... cm [3]

12 Rotate shape Q by 90° **clockwise** about point C .



[1]

13 In 2012 there are 600 members of a sports club.
In 2013 this increases to 744 members.

Work out the percentage increase in the number of members of the sports club.

..... % [2]

14 Tick (\checkmark) to show if each of these statements is true or false.

	True	False
4328.418 rounded to 2 significant figures is 4328.42	<input type="checkbox"/>	<input type="checkbox"/>
21.87954 rounded to 3 decimal places is 21.88	<input type="checkbox"/>	<input type="checkbox"/>
7.568499 rounded to 3 decimal places is 7.568	<input type="checkbox"/>	<input type="checkbox"/>
0.004122 rounded to 4 significant figures is 0.004	<input type="checkbox"/>	<input type="checkbox"/>

[2]

15 In the United States a person’s mass is given in pounds.

100 pounds = 45.4 kg

A woman’s mass is 63.6 kg

Convert this to pounds.

.....pounds [2]

16 A museum opens three days each week, on a Monday, Tuesday and Saturday.

Hassam records the number of visitors on each day over a period of 20 weeks.

He calculates the mean and the range for each of the three days.

	Monday	Tuesday	Saturday
Mean	512	625	753
Range	364	353	207

Write down the day of the week that gets the most visitors.

Give a reason for your answer.

..... because

..... [1]

17 Solve the simultaneous equations using an algebraic method.

$$x + 2y = 13$$

$$3x + y = 24$$

You **must** show how you worked out your answers.

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots [3]$$

18 *A* has coordinates (2, -2).
B has coordinates (10, 14).

C is the midpoint of *AB*.

D is the midpoint of *CB*.

Find the coordinates of *D*.

$$(\dots\dots\dots, \dots\dots\dots) [3]$$

19 (a) A sequence begins

14 17 20 23

Write down a formula for the n th term of this sequence.

..... [2]

(b) The n th term of a different sequence is given by the formula

$$\frac{n}{2n+1}$$

Write down the first **three** terms of the sequence.

..... , , [2]

20 Simplify.

$$\frac{x}{4} + \frac{x+1}{8}$$

..... [2]

21 The equation $x^2 + 8x = 144$ has a solution between $x = 8$ and $x = 9$

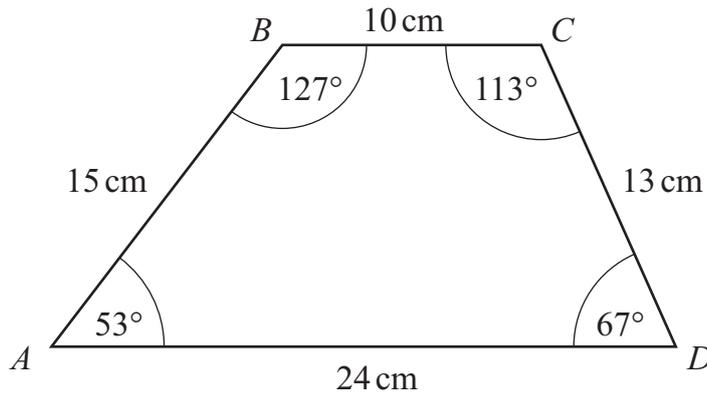
Use the method of trial and improvement to find the solution correct to one decimal place.
Show all your working in the table.

You may not need to use all the rows.

x	$x^2 + 8x$	Comment
8	$8^2 + 8 \times 8 = 128$	Too small
9	$9^2 + 8 \times 9 = 153$	Too big

$x =$ [3]

22 The diagram shows trapezium $ABCD$.



NOT TO SCALE

$ABCD$ is enlarged.

The centre of the enlargement is B and the scale factor is 3

Complete the sentences.

The length of the **longest** side of the enlargement of $ABCD$ is cm.

The size of the **smallest** angle of the enlargement of $ABCD$ is °.

[1]

23 Shirts are made from a mix of cotton and polyester.

The ratio of cotton to polyester in two shirts is

	cotton : polyester
Shirt A	13 : 7
Shirt B	3 : 2

By writing each ratio in the form $c : 1$, find which shirt contains the higher proportion of cotton.

Shirt has the higher proportion of cotton. [2]

24 Here are the details of a flight from London to Hong Kong.

Depart: London	20:20 local time
Arrive: Hong Kong	16:50 local time the next day
Flight time	12 hours 30 minutes

The time in Hong Kong is a number of hours ahead of the time in London.

Work out the number of hours ahead.

..... hours [1]

25 $6 \times 6 \times 6^a = 1$

Work out the value of a .

$a =$ [1]

26 A farmer needs 10 grams of seed to plant one square metre of wheat.
The farmer wants to plant a field of 15 hectares.

Work out how many kilograms of seed he needs.

..... kg [2]

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