Cambridge Assessment International Education

Cambridge Lower Secondary Checkpoint

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

2088976979

MATHEMATICS **1112/02**

Paper 2 **October 2021**

1 hour

You must answer on the question paper.

You will need: Geometrical instruments
Tracing paper (optional)

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You should show all your working in the booklet.
- You may use a calculator.

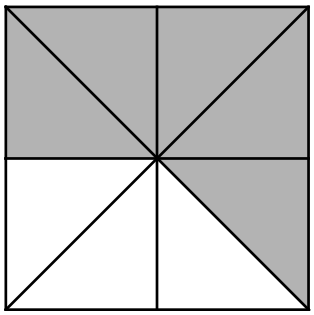
INFORMATION

- The total mark for this paper is 50.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **20** pages. Any blank pages are indicated.

[Turn over

1 The diagram shows a square split into congruent triangles.



Work out the percentage of the square that is shaded.

..... % [1]

2 ◆ is a multiple of 8
✱ is a factor of 15

◆ + ✱ = 45

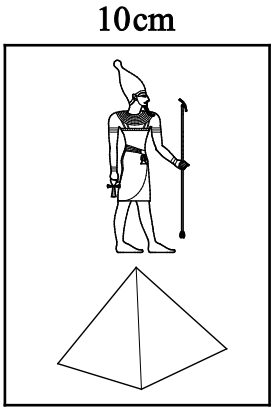
Find the value of ◆ and the value of ✱

◆ = ...

✱ = ...

[2]

3 The diagram shows a postcard with a width of 10 cm.
The ratio of width to length of the postcard is 4 : 5



NOT TO SCALE

(a) Work out the length of the postcard.

..... cm [1]

(b) Work out the area of the postcard.

..... cm^2 [1]

4 Write an integer on each line to complete the equation.

$7x +$ ..... $+$ ..... $x - 6 = 9x - 3$

[2]

5 Write the ratio 150 : 250 in its simplest form.

..... : ..... [1]

6 Here is part of a bus timetable.

Southend	12:03	13:03	14:03	15:03	16:04
Rayleigh	12:35	13:35	14:35	15:37	16:41
Chelmsford	13:00	14:00	15:00	16:02	17:09
Stansted airport	13:39	14:39	15:41	16:44	17:52

(a) The 15:03 bus from Southend is 23 minutes late when it arrives at Stansted airport.

Work out the time the bus arrives.

..... [1]

(b) Rajiv travels from Rayleigh to Stansted airport.
He arrives at Rayleigh at 14:45

Work out the number of minutes Rajiv waits for the next bus.

..... minutes [1]

(c) Oliver travels by bus from Rayleigh to Stansted airport.
His flight leaves at 5:15 pm.
He needs to arrive at the airport more than 1 hour before the flight leaves.

Work out the latest time Oliver can leave Rayleigh.

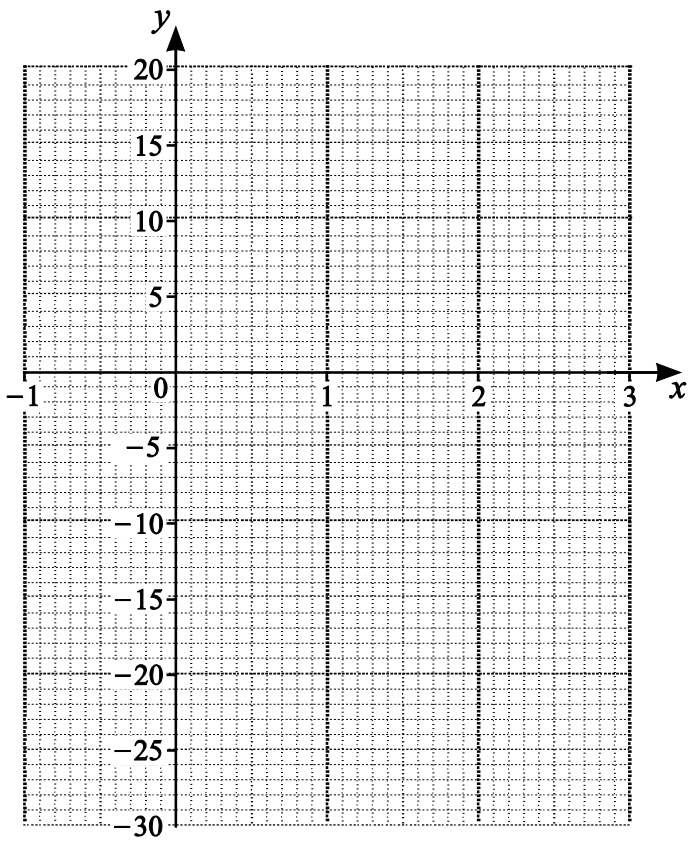
..... [1]

7 **(a)** Complete this table of values for $y = 10x - 15$

x	-1	1	3
y			15

[1]

(b) Use the table to draw a graph of $y = 10x - 15$



[1]

8 Mia buys a car for $12 500
She sells it to Chen for $16 000

(a) Calculate Mia's percentage profit.

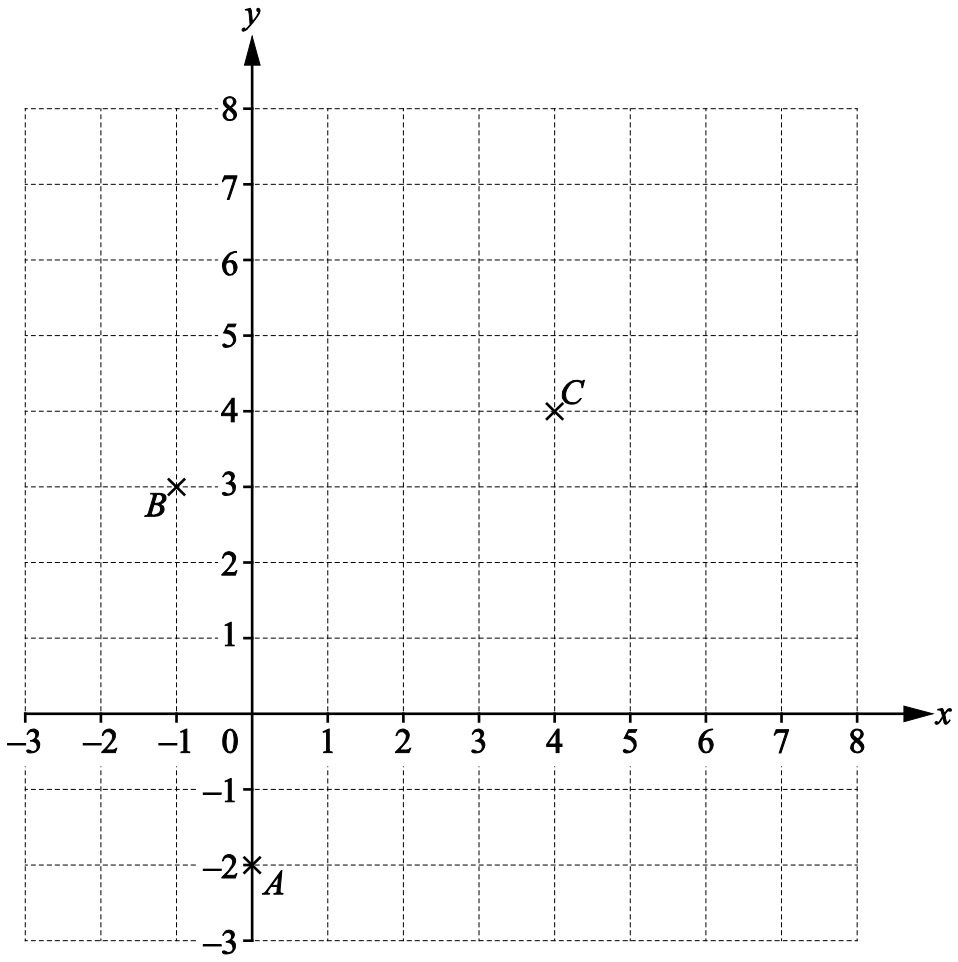
.....% [2]

(b) Chen sells the car to Gabriella.
He makes a loss of 5%.

Calculate the price Gabriella pays for the car.

$..... [2]

9 The diagram shows three points, A, B and C.



(a) Find the coordinates of the midpoint of the line AC.

(..... , ...) [1]

(b) $ABCD$ is a square.

Write down the coordinates of D.

D = (..... , ...) [1]

10 Write each of these as a single fraction.
Give each answer in its simplest form.

$\frac{6a}{7} - \frac{a}{7}$

.....

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

.....

[2]

11 A man has a mass of 120 kg.
A bus has a mass of 17 tonnes.
A rhinoceros beetle can lift an object 850 times its own body mass.

Work out the number of buses the man could lift if he could lift 850 times his own body mass.

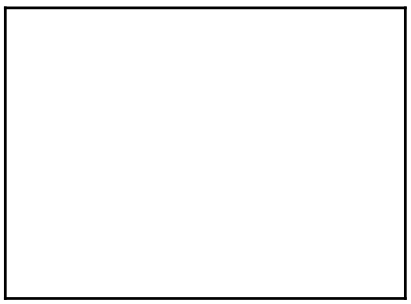
..... [2]

12 Hassan makes a scale drawing of his bedroom.
He uses the scale 1 : 40
Hassan's bed is represented by a rectangle 4.5 cm long on his drawing.

Work out the actual length of Hassan's bed.

..... cm [1]

13 Carlos builds a wooden frame.



NOT TO SCALE

He needs two 45 cm lengths of wood and two 60 cm lengths of wood.
Carlos has a 2 metre length of wood.

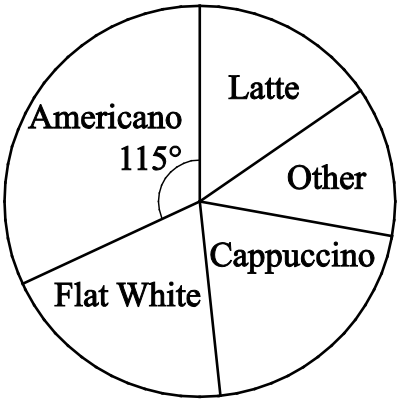
Tick (✓) to show if Carlos has enough wood to build the frame.

Yes ☐ No ☐

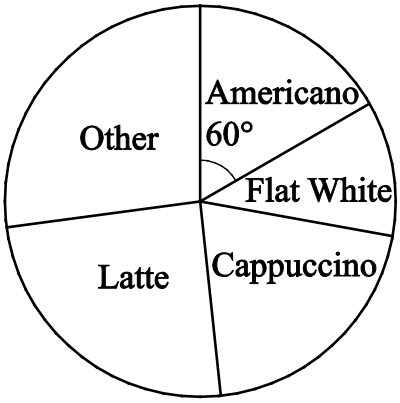
Show your working.

[2]

14 Two coffee shops record the different types of coffee they sell in a day.
The pie charts show their results.



Coffee shop at the park
Total 144 cups



Coffee shop at the train station
Total 480 cups

The coffee shop at the train station sells more cups of Americano than the coffee shop at the park.

Work out how many more cups of Americano are sold.

..... [2]

15 (a) Here is a table showing some algebraic expressions and what they mean in words.

Complete the table.
One has been done for you.

Algebraic expression	**Meaning in words**
$5x - 4$	Multiply x by 5 then subtract 4
	Add 3 to x then divide by 7
$9(x + 2)$	..... then .....

[2]

(b) Samira writes an algebraic expression which means

subtract 6 from x then square.

Write down the algebraic expression.

..... [1]

16 A security code is made up from one number and then one shape.

Number: 1 2 3 4

Shape: 

(a) Complete the sample space diagram.

		Shape		
		□	○	△
Number	1			1 △
	2			2 △
			3 ○	
		4 □		

[1]

(b) Eva says,

‘The number in my security code is even.’

Ahmed chooses an even number and a shape at random.

Find the probability that Ahmed chooses Eva’s security code.

..... [1]

17 Write a **positive** number in each box to make each statement true.

0.8	×	☐	<	0.8
1.3	÷	☐	<	1.3
8	÷	☐	>	80

[2]

18 Minibuses are used to take 142 people to a wedding.
One minibus can hold 17 people.

Work out the number of minibuses used.

..... [1]

19 Angelique finds coordinates on the straight line $y = 2x + 4$
She finds the x-coordinate from a given y-coordinate.

Draw a ring around the correct function to find x.

$x = 2y + 4$ $x = (y - 4) \div 2$ $x = (y \div 2) - 4$ $x = (y + 4) \div 2$

[1]

20 Naomi draws a tessellation using only one type of regular polygon.
Three of these polygons meet at one point in her tessellation.

Name the regular polygon Naomi uses.

..... [1]

21 Use the method of trial and improvement to find the solution of

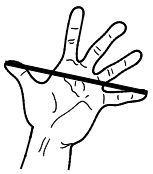
$$x^3 + 3x = 20$$

Find the value of x correct to one decimal place.
You must show all your working.
You may not need to use all the rows in the table.

x	$x^3 + 3x$	
2	14	

$x =$ ..... [3]

22 Safia wants to find out if taller students have bigger hand spans.



She wants to draw a scatter diagram.
She collects data from 15 students using this data collection sheet.

Height, x (cm)	**Tally**
$100 \leqslant x < 125$	
$125 \leqslant x < 150$	𝍸
$150 \leqslant x < 175$	𝍸 |||
$175 \leqslant x < 200$	||

Hand span, y (cm)	**Tally**
$10 \leqslant y < 15$	|
$15 \leqslant y < 20$	𝍸 𝍸
$20 \leqslant y < 25$	||||
$25 \leqslant y < 30$	

(a) Give one reason why this is **not** a good data collection sheet for her to use.

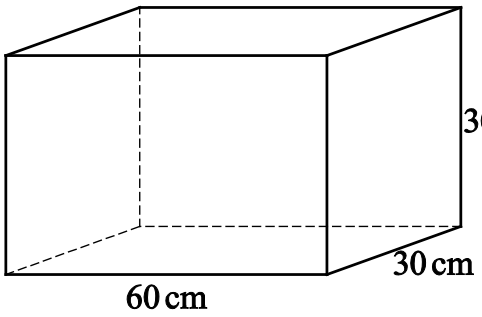
.....

..... [1]

(b) Design a suitable data collection sheet that Safia could use.

[1]

23 A fish tank in the shape of a cuboid has length 60 cm, depth 30 cm and height 30 cm.



NOT TO SCALE

(a) Find the capacity of the fish tank in litres.

..... *l* [2]

(b) The fish tank contains 47.7 litres of water.
Find the height of the water.
Give your answer in centimetres.

..... cm [1]

24 A box contains pens of different colours.
Yuri takes a pen from the box at random.
The probabilities of him taking a pen coloured red or blue or green are shown in the table.

Colour of pen	**Red**	**Blue**	**Green**
Probability	0.4	0.15	0.25

Yuri says,

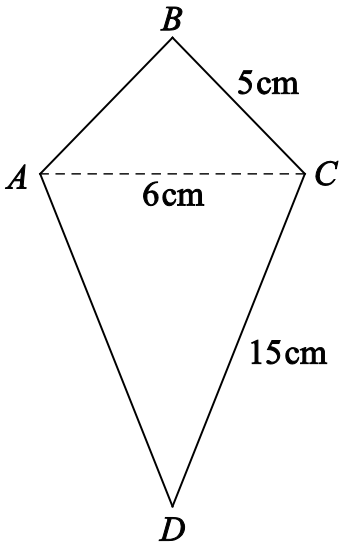
'There must be more than three different colours of pen in the box.'

Explain how the probabilities show Yuri is correct.

.....

..... [1]

25 Here is a kite.



NOT TO SCALE

$BC = 5$ cm, $CD = 15$ cm and $AC = 6$ cm.
AC and BD are perpendicular.

Find the length of BD.

..... cm [3]

BLANK PAGE

BLANK PAGE