CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

MATHEMATICS **1112/02**

Paper 2 **April 2017**

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.

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International Examinations

1 Put a ring around the larger fraction in **each** pair.

$$\frac{3}{4} \quad \textbf{or} \quad \frac{7}{10}$$

$$\frac{5}{8} \quad \textbf{or} \quad \frac{13}{20}$$

$$\frac{2}{3} \quad \textbf{or} \quad \frac{6}{10}$$

[1]

2 (a) Expand the brackets.

$$4(t - 5)$$

.... [1]

(b) Here is a formula.

$$w = 2u + 7$$

Work out the value of w when $u = 19$

$w =$ .... [1]

3 Write the missing numbers in the boxes to make the statements correct.

(a) 50% of 60 $= \dfrac{1}{5}$ of $\boxed{}$

[1]

(b) $\dfrac{3}{4}$ of 60 $= \boxed{}$ % of 50

[1]

4   Rectangles *A* and *B* are identical.
Each has a perimeter of 40 cm.
They are put together to make a new rectangle.

A	B
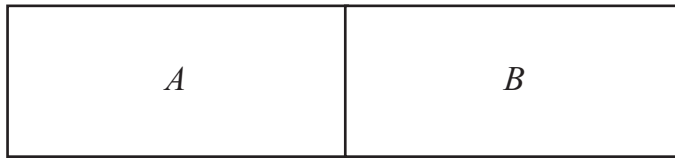
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The perimeter of the new rectangle is 68 cm.

Work out the length and width of rectangle *A*.

length = ... cm

width = ... cm   [2]
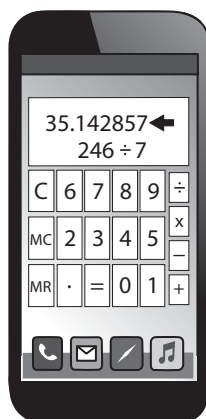
5   A country has a total area of 40.8 million hectares.
28.4 million hectares is covered with forest.

Work out the percentage of the total area that is covered with forest.
Give your answer to one decimal place.

.... %   [2]

6 Safia is at a restaurant.
She wants to share the $246 bill equally between 7 people.
She uses a calculator to work out how to share the bill.

Safia says,

"Everyone needs to pay $35.14"

Tick (✓) to show if Safia is correct.

Yes ☐   No ☐

Explain your answer.

....
.... [1]

7 Chen shares $165 between three friends.
The ratio he uses is

Blessy	:	Carlos	:	Gabriella
1	:	4	:	6

Work out how much Carlos receives.

$ .... [1]

8 Yuri is investigating the hypothesis:

> Girls are more likely to play a musical instrument than boys.

He collects data from 40 boys and 80 girls.

He finds that

- altogether 91 of the people asked play a musical instrument,
- 20 of the girls do **not** play a musical instrument.

(a) Complete the table using this information.

	Boys	Girls	Total
Play a musical instrument			
Do not play a musical instrument			
Total	40	80	120

[2]

(b) Complete the sentences.

The percentage of **girls** who play an instrument is .... %.

The percentage of **boys** who play an instrument is .... %.

Tick (✓) to show if the data supports Yuri's hypothesis.

Yes ☐   No ☐

[2]

9 Show that $\sqrt[3]{46}$ is less than $\sqrt{12.9}$

[1]

10 The cost of posting a parcel depends on its mass.

Mass of parcel	Cost
Up to 0.25 kg	$1.20
0.25 kg up to 0.5 kg	$2.15
0.5 kg up to 1 kg	$3.25
1 kg up to 2 kg	$4.70
2 kg and over	$6.35

Mike posts 7 bars of chocolate in a parcel.
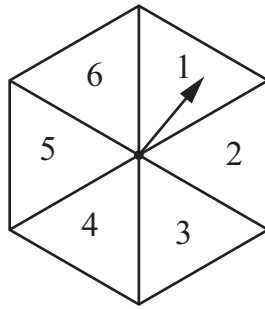Each bar has a mass of 0.14 kg.
The total mass of the packaging is 95 g.

Work out how much it will cost Mike to post his parcel.
You **must** show how you worked out your answer.

$ .... [2]

11 A biased spinner has 6 sides.

The table shows the probabilities for some of the outcomes.

Outcome	1	2	3	4	5	6
Probability	0.3	0.15		0.28		

The remaining three outcomes are equally likely.

Work out the probability that the spinner lands on 5

.... [2]

12 An adult lion is 1.21 metres tall.
A baby lion is 55 centimetres tall.

Write the ratio of the height of the adult lion to the height of the baby lion.
Give your answer in its simplest form.

.... : .... [2]

13 (a) Calculate the value of $(x+5)(x-4)$ when $x = -3$

.... [1]

(b) $(x+5)(x-4) = 286$

Use trial and improvement to find the positive solution of this equation.
Show your trials in the table.

You may not need all the rows.

One value has been done for you.

x	$(x+5)(x-4)$
10	90

$x = $ .... [2]

(c) Expand and simplify $(x+5)(x-4)$

.... [2]

14 A car travels 240 km in $3\frac{3}{4}$ hours.

Calculate the average speed of the car.

.... km/h   [2]

15 Here are the times, in seconds, that 7 adults take to run a race.

| 40.8 | 46.3 | 49.2 | 38.2 | 44.0 | 42.9 | 45.5 |

Hassan calculates the mean time.

He writes,

"The mean time is 43.8428571 seconds."

(a) Write a comment about the accuracy that Hassan uses in recording the answer.

....
....   [1]

(b) Write his answer to a more suitable degree of accuracy.

.... seconds   [1]

16 Anastasia owns a café.
She records the number of hot drinks and the number of cold drinks she sells on each of 10 days.

Number of hot drinks	78	83	70	75	90	97	60	68	84	74
Number of cold drinks	63	60	72	66	53	64	80	76	65	82

The data for the first 6 days has been plotted on the scatter graph.
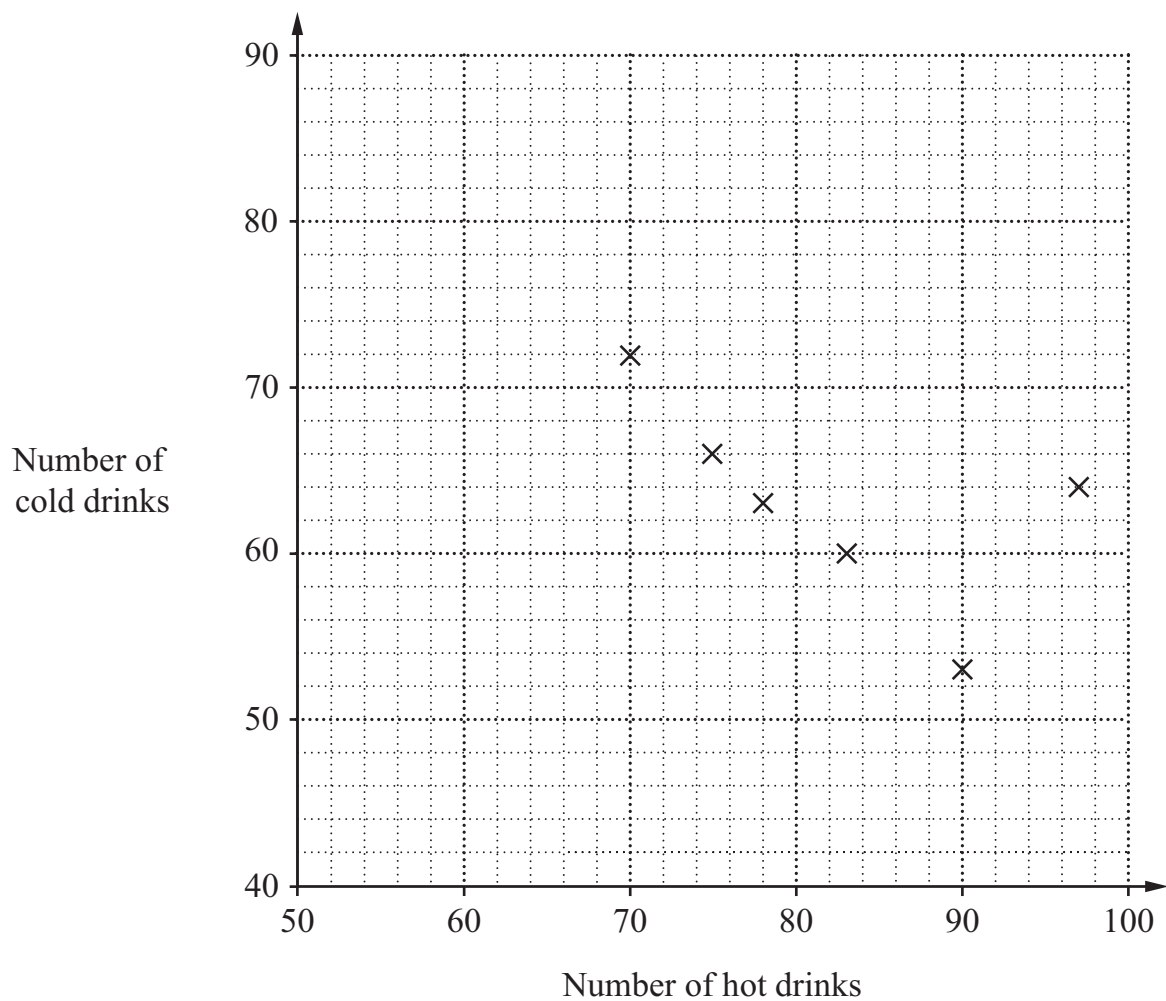
(a) Complete the scatter graph by plotting the data for the remaining 4 days. [2]

(b) State the type of correlation shown on the scatter graph.

.... [1]

17 The nth term of a sequence is $2n^2 + 3$

Work out the first three terms of this sequence.

.... , ... , ... [1]

18 The diagram shows a right-angled triangle with base x cm and height $(x-2)$ cm.

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$(x-2)$ cm

x cm
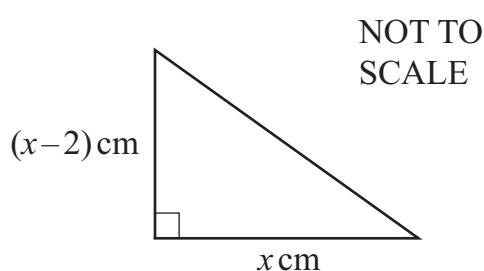
Write down an expression for the area of the triangle.

.... cm^2 [1]

19 Rajiv buys a book for $2.50
He sells the book for $4.29

Calculate his percentage profit.

.... % [2]

20 (a) A point lies on the line $3x + 2y = 12$
The x-coordinate of the point is 1

Work out the y-coordinate.

.... [2]

(b) Work out the coordinates of the point where the line $3x + 2y = 12$ crosses the x-axis.

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

(c) Draw the graph of $3x + 2y = 12$
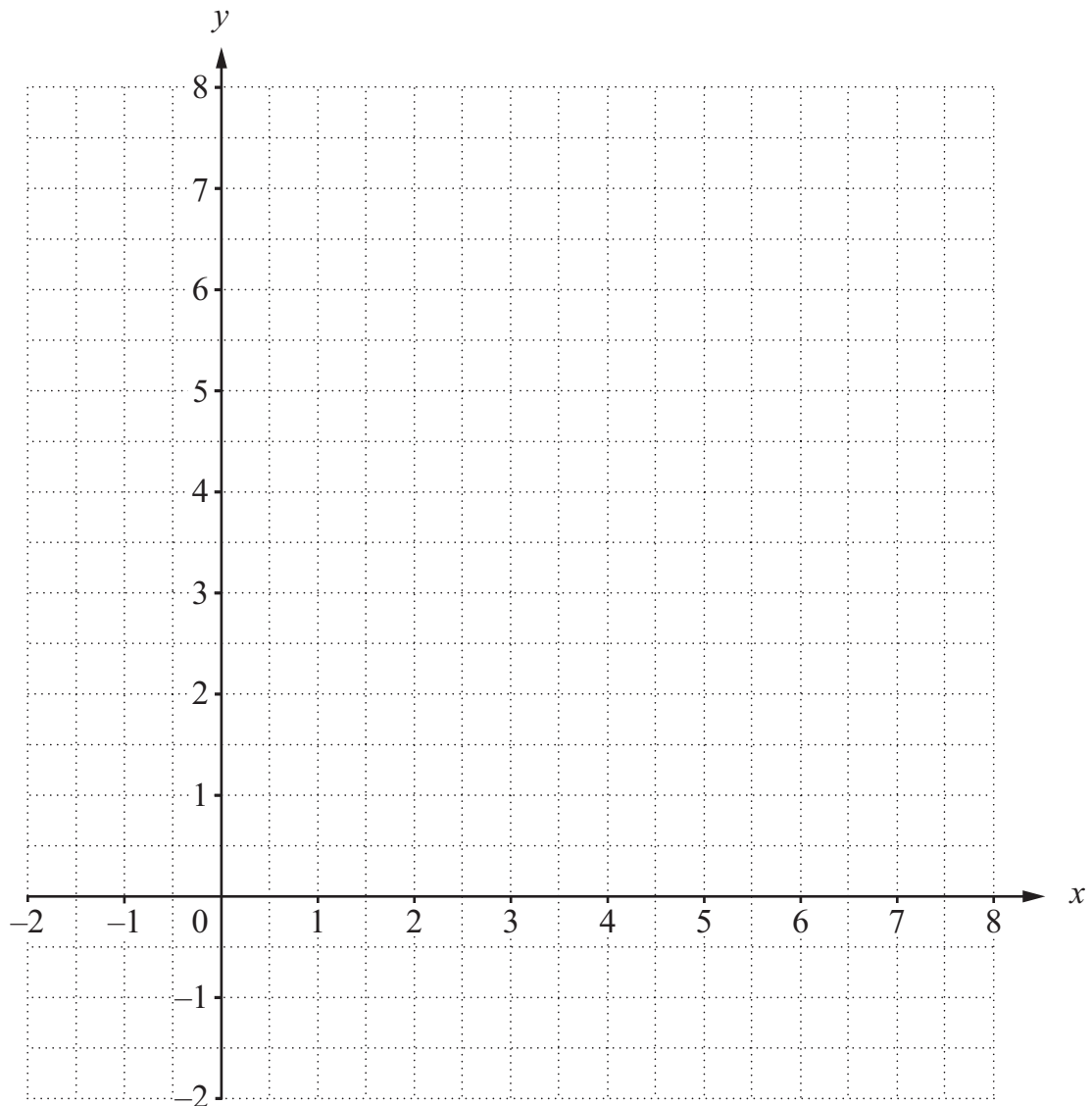
[1]

21 Complete the table to show the sum of the interior angles for different polygons.

Number of sides of polygon	Sum of the interior angles
5	540°
	720°
9	

[2]

22 Pierre walks 24 km due north then 7 km due east.

Calculate how far he is from his starting position.

.... km   [2]

23 The diagram shows a garden *ABCD*.
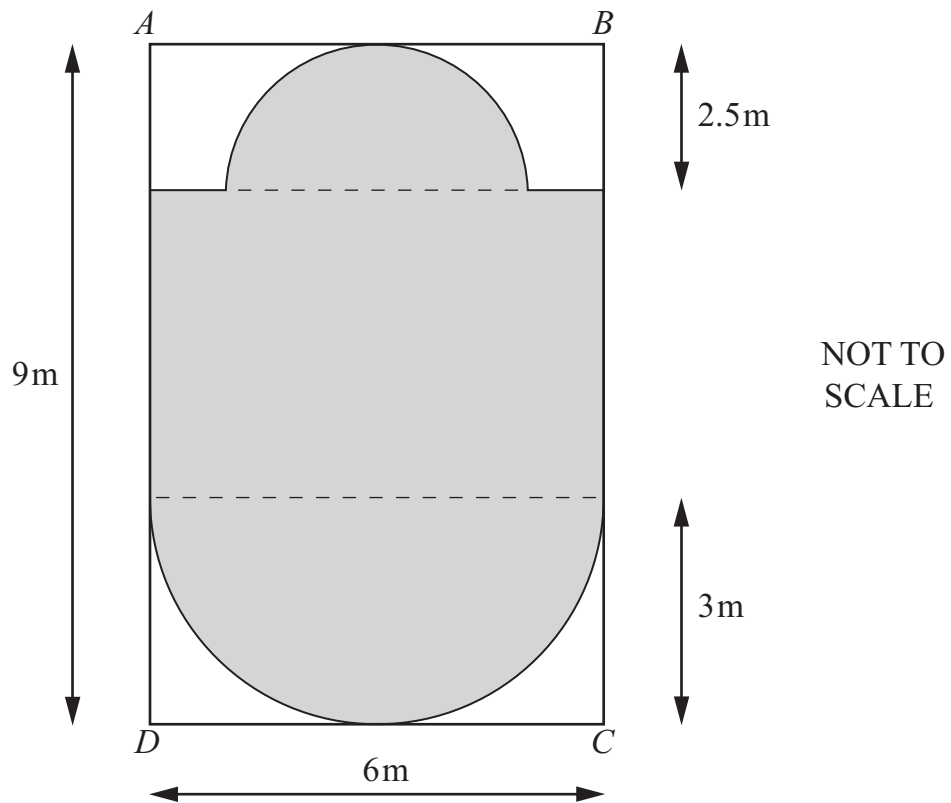
The shaded area is covered with grass.
The area covered with grass is formed from two semicircles and a rectangle.

Calculate the area covered with grass.

.... m² [3]

24 The diagram shows a quadrilateral.
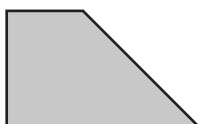
A teacher asks her class to show how the quadrilateral tessellates.

The work of two students is shown.

Mia's work
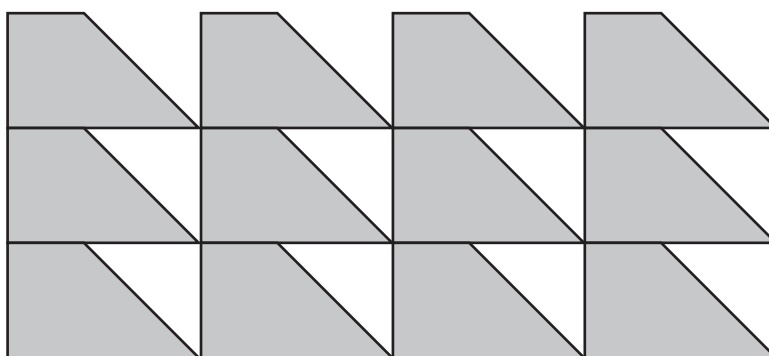
Lily's work
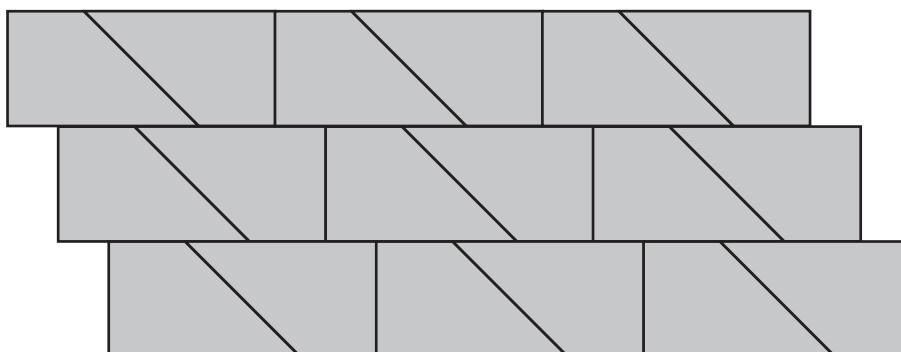
Lily has shown a tessellation of the quadrilateral.

Explain why Mia has **not** shown a tessellation of the quadrilateral.

.... [1]

16

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