Cambridge Assessment International Education

Cambridge Lower Secondary Checkpoint

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

123341152 0

MATHEMATICS **1112/02**

Paper 2 **April 2022**

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 **16** pages. Any blank pages are indicated.

IB22 05_1112_02/6RP

1 Here is a list of numbers.

5 7 10 12 16 20

Write down the number that is a factor of 56

7 [1]

2 Rajiv is thinking of three **consecutive even** numbers less than 20
The product of these three numbers is between 1000 and 2000

Find the three numbers Rajiv is thinking of.

10 , 12 and 14 [1]

3 **(a)** Work out 45% of $285

$285 \times 45\%$

$ 128.25 [1]

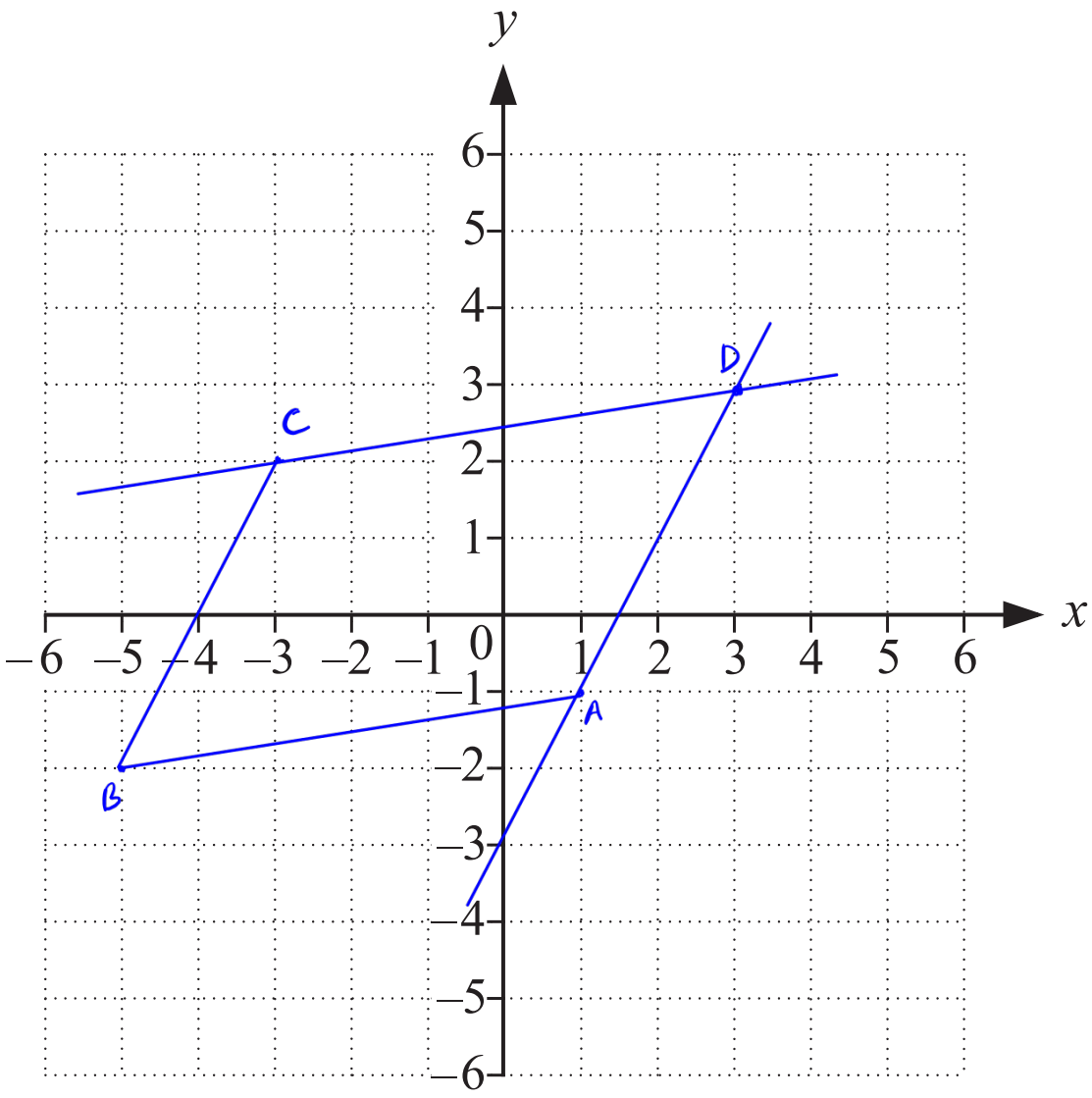
(b) Eva buys a book for $5
She sells it for $6.50

Work out the percentage profit.

$\frac{6.5 - 5}{5} \times 100\% = 30\%$

30 % [2]

4 Here is a grid.



(a) $A = (1,-1)$, $B = (-5,-2)$ and $C = (-3,2)$

Plot points A, B and C on the grid.

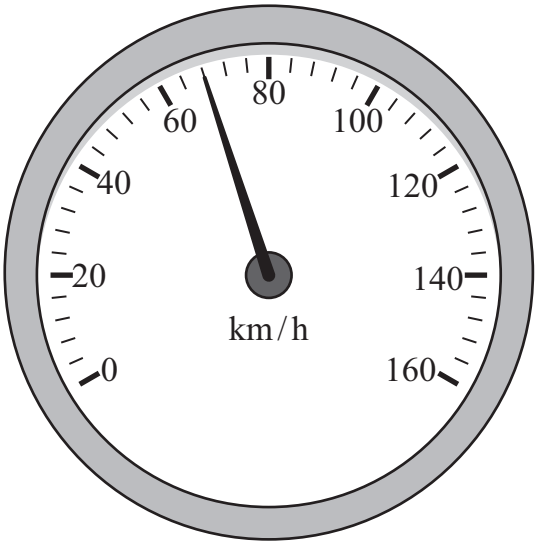
[1]

(b) $ABCD$ is a parallelogram.

Find the coordinates of point D.

$D =$ (3 , 3) [1]

5 Write down the speed shown on the diagram.



68 km/h [1]

6 A road is 450 metres long.

(a) It takes a woman 5 minutes to walk along the road.

300 seconds

Work out the average speed of the woman.
Give your answer in **metres per second**.

$\frac{450}{300} = 1.5$

1.5 metres per second [2]

(b) A bicycle travels along the road at an average speed of 5 metres per second.

Work out the time it takes the bicycle to travel along the road.
Give your answer in seconds.

$\frac{450}{5} = 90$

90 seconds [1]

7 Mike buys 8 cakes for $11.60

Calculate the cost of 5 cakes.

1 cake : $\frac{11.6}{8}$

5 cakes : $5 \times \frac{11.6}{8} = 7.25$

$ 7.25 [2]

8 Complete these sentences.

A cube has 6 faces.

A cylinder has 0 vertices.

[1]

9 Angelique goes on a train journey from Aba to Ditta.
Here is a section of the train timetable.

Aba	09:42	10:28	11:05	11:42
Burra	09:50	–	11:13	–
Cadez	10:16	–	11:39	–
Ditta	10:37	11:07	12:00	12:21

The afternoon journeys have the same duration as the morning journeys.

Angelique catches the 12:53 train from Aba.
The train does not stop at Burra or Cadez.

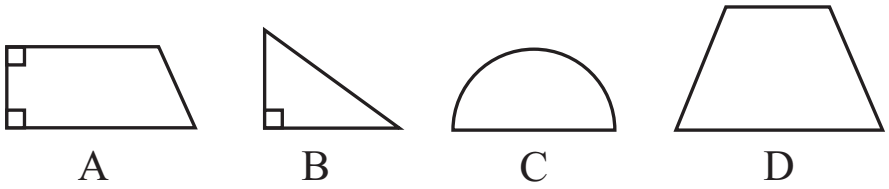
Work out the time Angelique arrives in Ditta.

11:42 $\xrightarrow{18'}$ 12:00 $\xrightarrow{21'}$ 12:21 Total: 39'

12:53 + 39' = 13:32

13:32 [2]

10 Write the letter of each shape in the correct position in the table.



One has been done for you.

	Has at least one right angle	Has no right angles
Has parallel sides	A	D
Has no parallel sides	B	C

[1]

11 Find $\sqrt[3]{32}$

3.2 [1]

12 Simplify.

(a) $\frac{7}{x}-\frac{3}{x}+\frac{1}{x}$ $= \frac{7-3+1}{x} = \frac{5}{x}$

$\frac{5}{x}$ [1]

(b) $\frac{y}{x}+\frac{m}{2x}$ $= \frac{2y}{2x} + \frac{m}{2x} = \frac{2y+m}{2x}$

$\frac{2y+m}{2x}$ [2]

13 Here are the spelling test results for the 25 students in Class A.

Score	4	5	6	7	8	9	10
Frequency	6	4	3	4	3	3	2
cu. fre	6	10	13	17	20	23	25

(a) Complete the table for Class A.

Class A	
Mean	6.44
Mode	4
Median	6
Range	6

13th

[2]

(b) Here is some information about Class B for the same test.

Class B	
Mean	4.04
Mode	6
Median	4
Range	5

Draw a ring around the **two best** measures for comparing which class did better.

(Mean) Mode (Median) Range

[1]

(c) Tick (✓) the class that has the better results overall.

Class A [✓] Class B [ ]

Explain your answer.

Class A has higher mean than class B

[1]

14 One solution of the equation

$$x^2 + 4x = 63$$

lies between 6 and 7

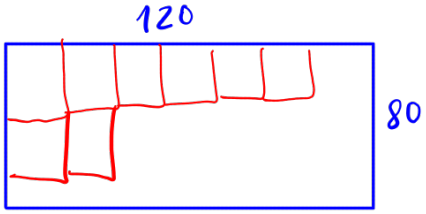
Use the method of trial and improvement to find this solution correct to 1 decimal place.
Show all your working in the table.
You may not need to use all the rows.

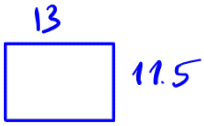
x	$x^2 + 4x$	Too big or too small ?
6	60	Too small
7	77	Too big
6.5	68.3	Too big
6.3	64.89	Big
6.2	63.24	✓

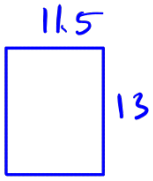
$x =$ 6.2 [3]

15 Yuri has a large rectangular card measuring 1.2 m by 0.8 m.
He wants to cut it up to make small rectangular cards each measuring 13 cm by 11.5 cm.

Work out the largest number of cards that he can make.







Way 1 : 9 × 6 = 54

Way 2 : 10 × 6 = 60

60 [3]

16 These are the ratios of iron to other materials in metal A and metal B.

	iron : other materials	
Metal A	2 : 27	= 0.074
Metal B	5 : 56	= 0.089

Tick (✓) the metal that contains the greater proportion of iron.

Metal A ☐ Metal B ☑

You must show your working.

[2]

17 This frequency diagram shows the number of visits to the gym by 155 people in September.

cu. fr
25
65
85
115
140
155

Work out how many people went to the gym more than 20 times.

25 + 15 = 40

40

Work out the class interval that contains the median number of visits.

position of median: 78 th

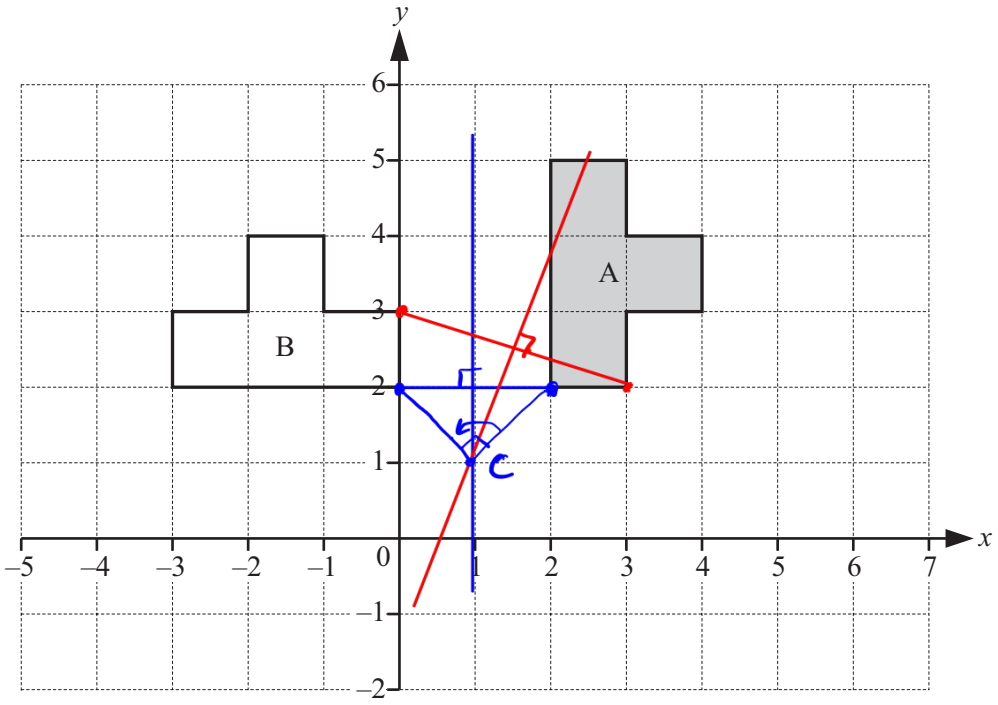
11 – 15 [2]

18 Write decimal numbers in the spaces to make a true statement.

0.009 < 0.0096 < 0.01 < 0.0109 < 0.011

[2]

19 The diagram shows shape A and shape B drawn on a grid.



Describe fully the **single** transformation that transforms shape A to shape B.

Rotation, 90° anticlockwise about (1,1)

[3]

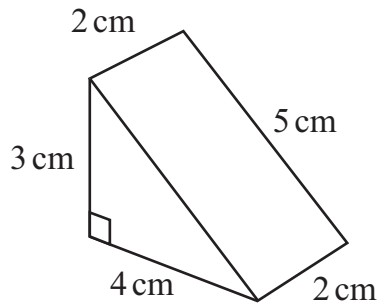
20 Two points A and B have coordinates $(-1, 4)$ and $(3, 6)$.

Find the coordinates of the midpoint of AB.

$$\left(\frac{-1+3}{2} ; \frac{4+6}{2} \right)$$

(1 , 5) [1]

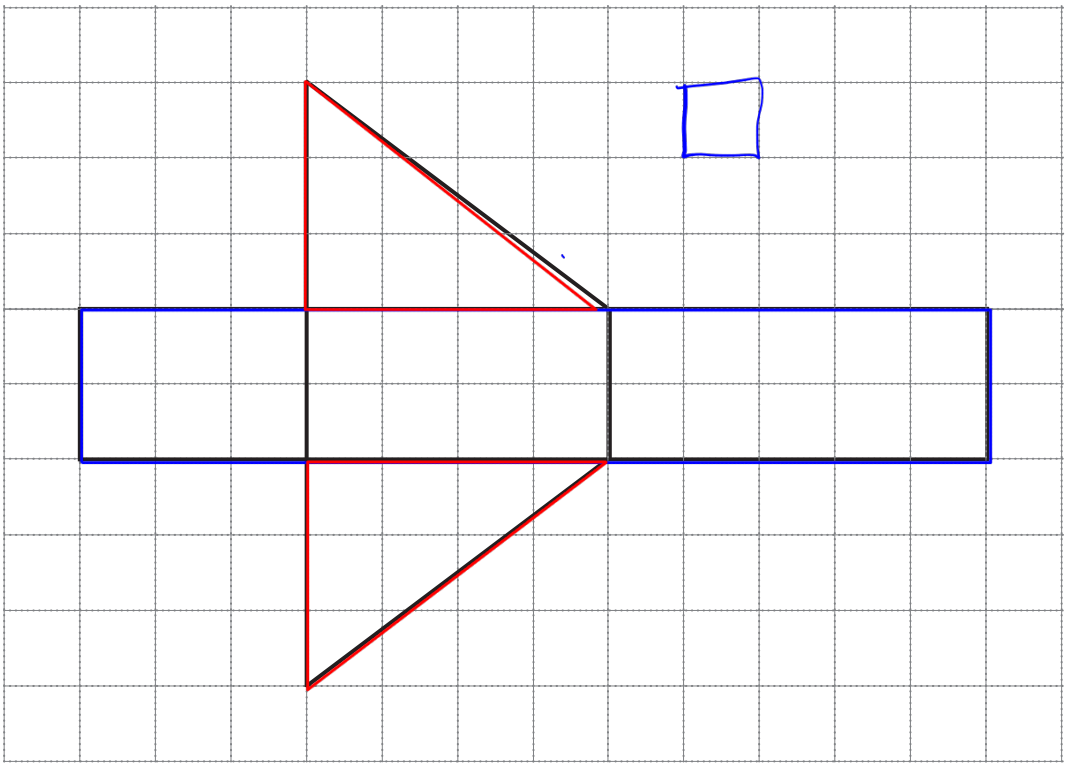
21 This is a triangular prism.



NOT TO SCALE

This is a net of the prism.

It is drawn on centimetre square paper.



Work out the surface area of the prism.

Area $\square$ $= 2 \times 12 = 24 \text{ cm}^2$

Area $\triangle$ $= 2 \times \left(\frac{1}{2} \times 3 \times 4 \right) = 12 \text{ cm}^2$

$24 + 12 = 36$

..... 36 ..... cm^2 [1]

22 Here is a multiplication with a mixed number missing.

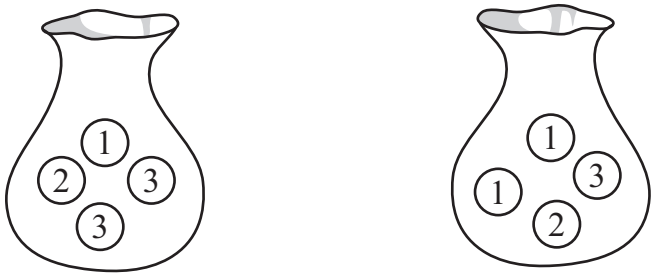
$$\frac{5}{8} \times \boxed{1\frac{1}{5}} = \frac{3}{4}$$

Work out the missing mixed number.

$\frac{3}{4} : \frac{5}{8} = \frac{3}{4} \times \frac{8}{5} = \frac{6}{5} = 1\frac{1}{5}$

[1]

23 Lily has two bags.
Each bag contains four counters, as shown in the diagram.



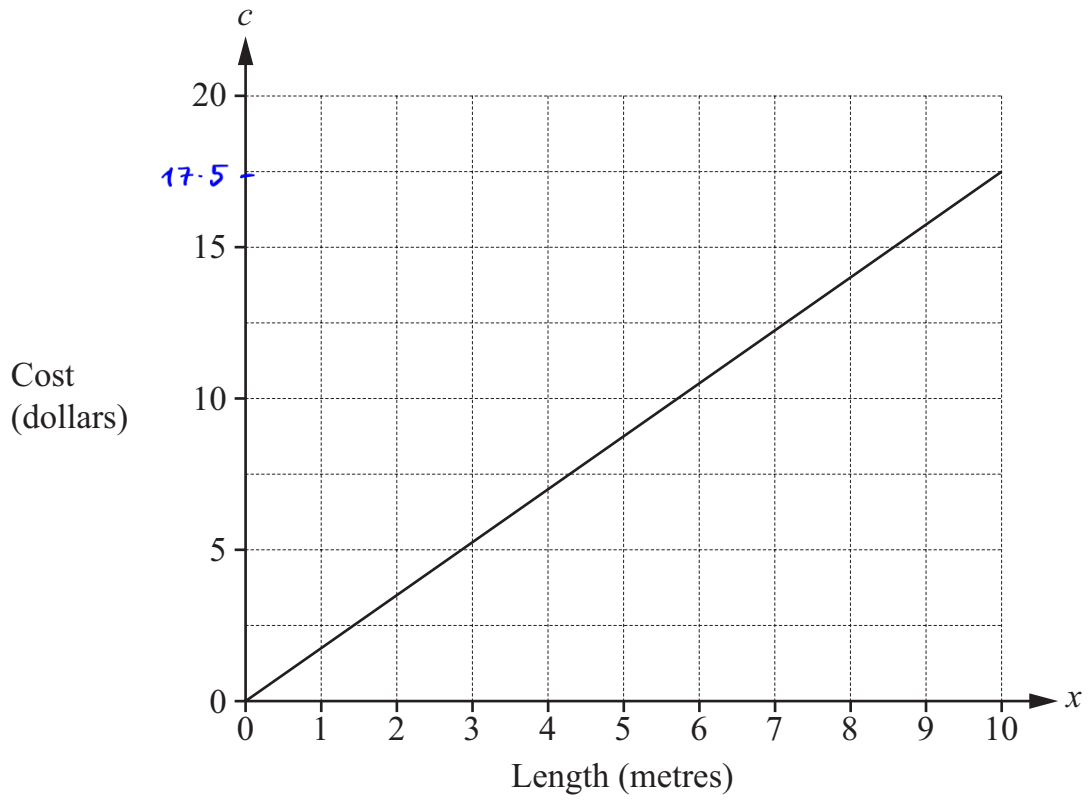
She picks **one** counter from each bag and adds together the numbers on the counters.

Work out the probability that the total of her numbers is **more** than 3
You may find the table useful.

	1	2	3	3
1	2	3	4	4
1	2	3	4	4
2	3	4	5	5
3	4	5	6	6

$\frac{11}{16}$ [2]

24 The graph shows that the cost of electrical wire is proportional to the length of the wire.



(a) Use the graph to find a formula for the cost, c dollars, of a length of wire, x metres.

$c = mx$

$m = \frac{17.5}{10} = 1.75$

$c =$ 1.75x [2]

(b) Calculate the cost of 23.4 m of wire.

$C = 1.75 \times 23.4 = 40.95$

$ 40.95 [1]

25 Cube A has a volume of $125\,cm^3$.
Cube B has a side length of 125 cm.
Cube C has a surface area of $125\,cm^2$. $6 \times a^2$

Write cubes A, B and C in order of size starting with the smallest.

side length of cube A is: $\sqrt[3]{125} = 5$ cm

B is: 125 cm

C is: $\sqrt{\frac{125}{6}} = 4.6$ cm

C ..... A ..... B ..... [2]

smallest largest

