Cambridge Assessment International Education

Cambridge Lower Secondary Checkpoint

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

7910049035

MATHEMATICS **1112/01**

Paper 1 **April 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 are **not** allowed to 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.

[Turn over

1 Complete the calculations.

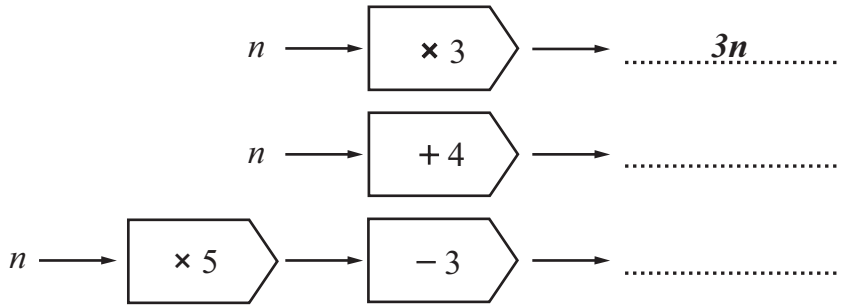
(a) $0.9 \times 4 =$ .....

[1]

(b) ..... $\times 7 = 2.8$

[1]

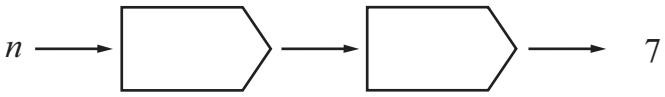
2 **(a)** Write an algebraic expression for each function machine.
One has been done for you.



[1]

(b) Complete the function machine for the statement below.

Hassan thinks of a number.
He divides the number by 4
and then adds 2
The answer is 7



[1]

(c) Work out the number Hassan was thinking of in part **(b)**.

..... [1]

3 Here is a number fact.

$$148 \times 76 = 11\,248$$

Use this fact to work out the calculations.

14.8×76

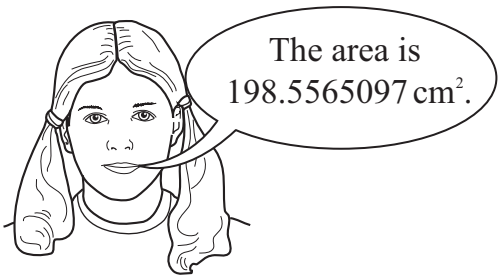
.....

149×76

.....

[2]

4 Eva measures the diameter of a circle as 15.9 cm.
She uses a calculator to work out the area.
She says,



Round this answer to an appropriate degree of accuracy.

..... cm² [1]

5 Work out.

$7.2 - 3.463$

..... [1]

6 Here is a number statement.

$$\frac{11}{12} - \frac{1}{2} = \frac{a}{12}$$

Find the value of a.

$a =$ ..... [1]

7 Work out 15% as a fraction in its simplest form.

..... [1]

8 Here are parts of two train timetables.
One shows journeys from Manchester to Leeds and the other shows journeys from Leeds to Manchester.

Manchester	07:40	08:11	08:41	09:11	09:41	10:10
Stalybridge	07:53	08:25	08:54	09:25	09:54	10:24
Huddersfield	08:12	08:46	09:13	09:46	10:13	10:45
Dewsbury	08:23	08:55	09:23	09:55	10:22	10:54
Leeds	08:36	09:09	09:36	10:08	10:35	11:07

Leeds	08:40	09:13	09:41	10:14	10:41	11:14
Dewsbury	08:51	09:24	09:52	10:25	10:52	11:25
Huddersfield	09:00	09:34	10:01	10:34	11:01	11:34
Stalybridge	09:19	09:54	10:19	10:54	11:19	11:54
Manchester	09:38	10:09	10:38	11:08	11:38	12:07

(a) Carlos is travelling from Stalybridge to Leeds on the 08:54 train.

Find how long his journey takes.

..... minutes [1]

(b) Jamila is travelling from Leeds to Dewsbury.
She arrives at the train station in Leeds at 8.50 am.

Find the time of the next train to Dewsbury.

..... [1]

(c) Oliver travels from Huddersfield to Leeds on the 08:12 train.
He goes shopping in Leeds and returns to the station $1\frac{1}{2}$ hours after he arrived.
He then catches the next train back to Huddersfield.

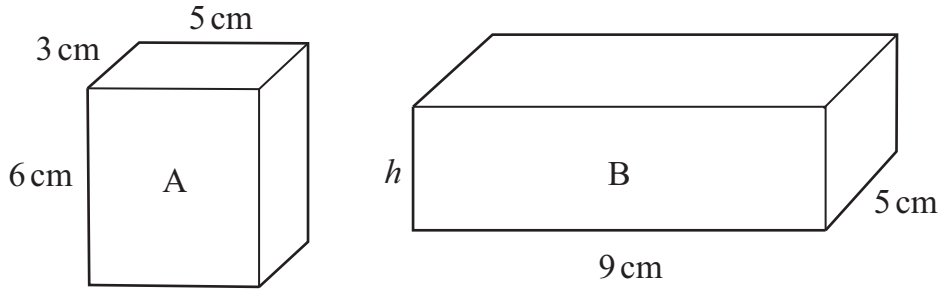
Find the time he gets back to Huddersfield.

..... [1]

9 Convert 160 kilometres into miles.

..... miles [1]

10 The diagram shows two cuboids.



NOT TO SCALE

The cuboids have **equal** volume.

Find the height, h, of cuboid B.

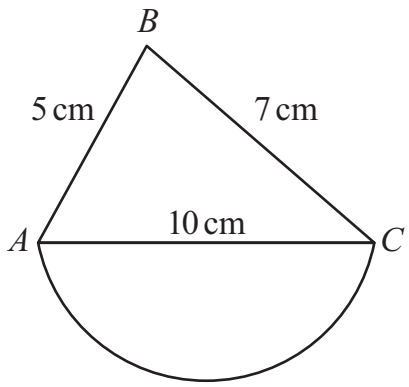
$h =$ ..... cm [2]

11 Tick (✓) to show if each of these statements is true or false.
One has been done for you.

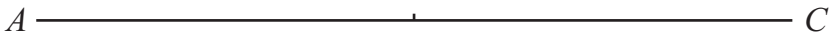
	True	**False**
1 m = 100 cm	✓	
1 mm = 0.01 cm		
1 kg = $\frac{1}{1000}$ g		
1 tonne = 1000 kg		

[1]

12 Here is a sketch of a compound shape made from a triangle and a semicircle.

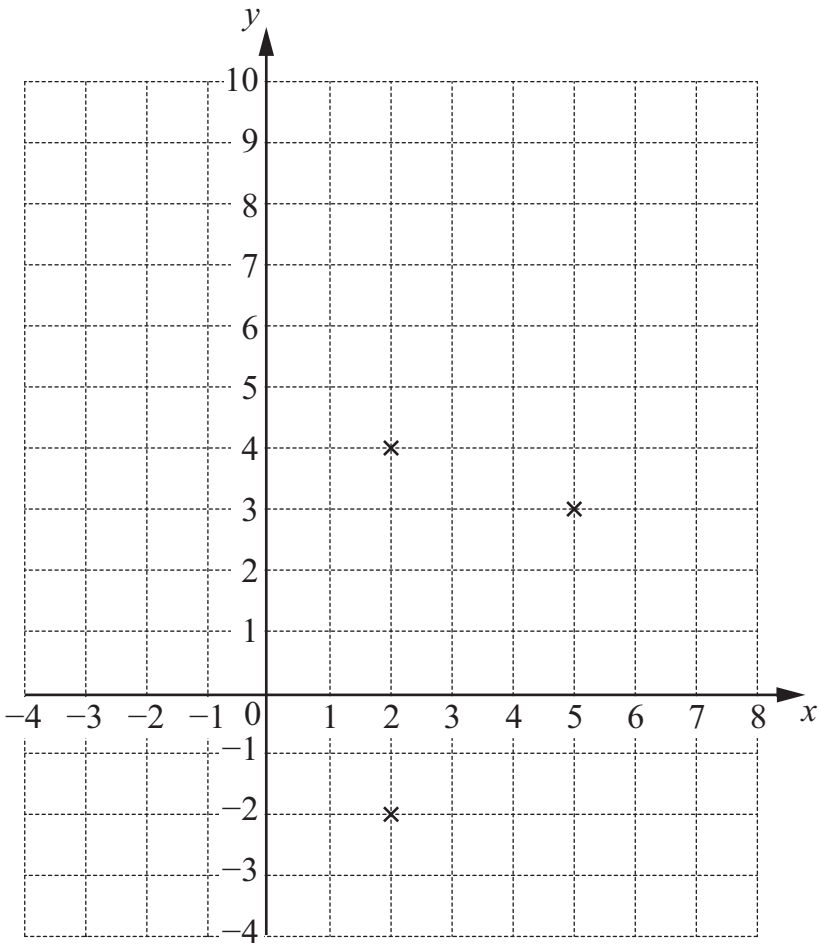


Use a ruler and compasses to construct the shape accurately.
Leave in your construction lines.
Line AC has been drawn for you.



[3]

13 The diagram shows the positions of three vertices of a parallelogram.



(a) Write down the coordinates of a possible position of the fourth vertex.

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

(b) Write down the coordinates of a **different** possible position of the fourth vertex.

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

14 Write $\frac{66}{72}$ as a fraction in its simplest form.

..... [1]

15 Work out.

$14 + -5.5$

.....

-6×-1.5

.....

[2]

16 A shop sells two sizes of washing powder.

Pack A contains 900 g plus $\frac{1}{4}$ extra free.

Pack B contains 1 kg plus 20% extra free.

Tick (✓) the pack that contains the most powder.
You must show your working.

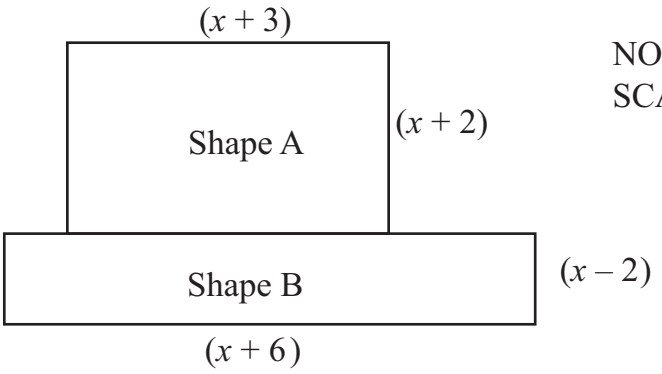
Pack A ☐ Pack B ☐

[2]

17 Two different rectangles are joined together to make a compound shape.

Shape A has a length of $(x + 3)$ and a width of $(x + 2)$.
Shape B has a length of $(x + 6)$ and a width of $(x – 2)$.

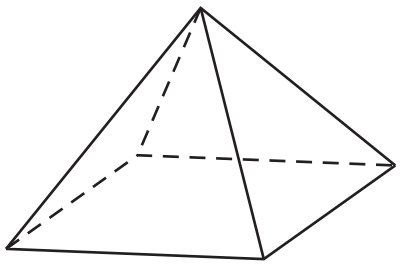
All measurements are in centimetres.



Find an expression for the area of the compound shape in cm^2.
Give your answer in the form $ax^2 + bx + c$.

..... [3]

18 Here is a square-based pyramid.
The top vertex is directly above the middle of the base.



Write down the number of planes of symmetry in the pyramid.

..... [1]

19 The table shows the ratio of the number of teachers to the number of students needed for each class.

Class	Teachers : Students
Swimming	1 : 3
Volleyball	1 : 10
Football	1 : 12

(a) Students are asked to choose from the three classes.
14 choose swimming, 22 choose volleyball and 27 choose football.
All the classes happen at the same time.

Calculate the number of teachers needed in total.

..... [2]

(b) A dance class needs a ratio of 1 teacher for every 16 students.
There are 5 dance teachers.
72 students choose dance.

Calculate how many more students can attend the dance class.

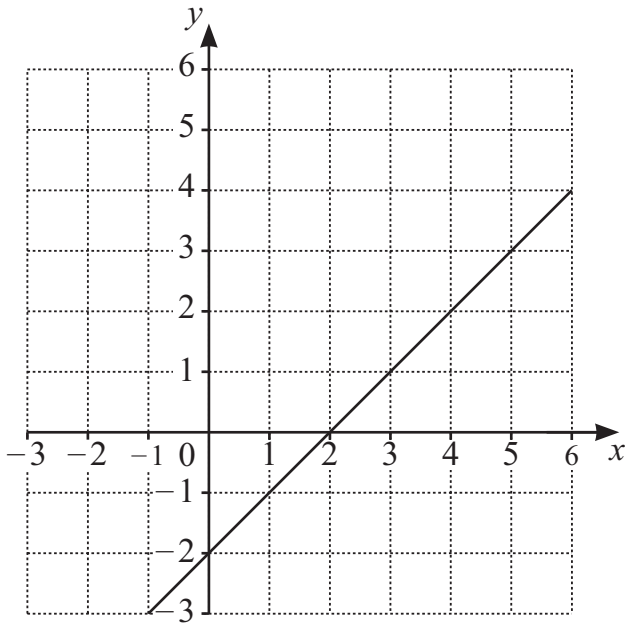
..... [1]

20 Mia wants to investigate if older students have more money than younger students.
She surveys students at her school.

Identify two pieces of data that Mia **must** collect from each of the students.

..... and ..... [1]

21 The grid shows a straight line.



(a) Draw a ring around the equation of the line.

$y = x + 2$ $y = 2x + 2$ $y = –2$ $y = x – 2$ $y = 2x – 2$

[1]

(b) A different equation is $2x + y = 4$

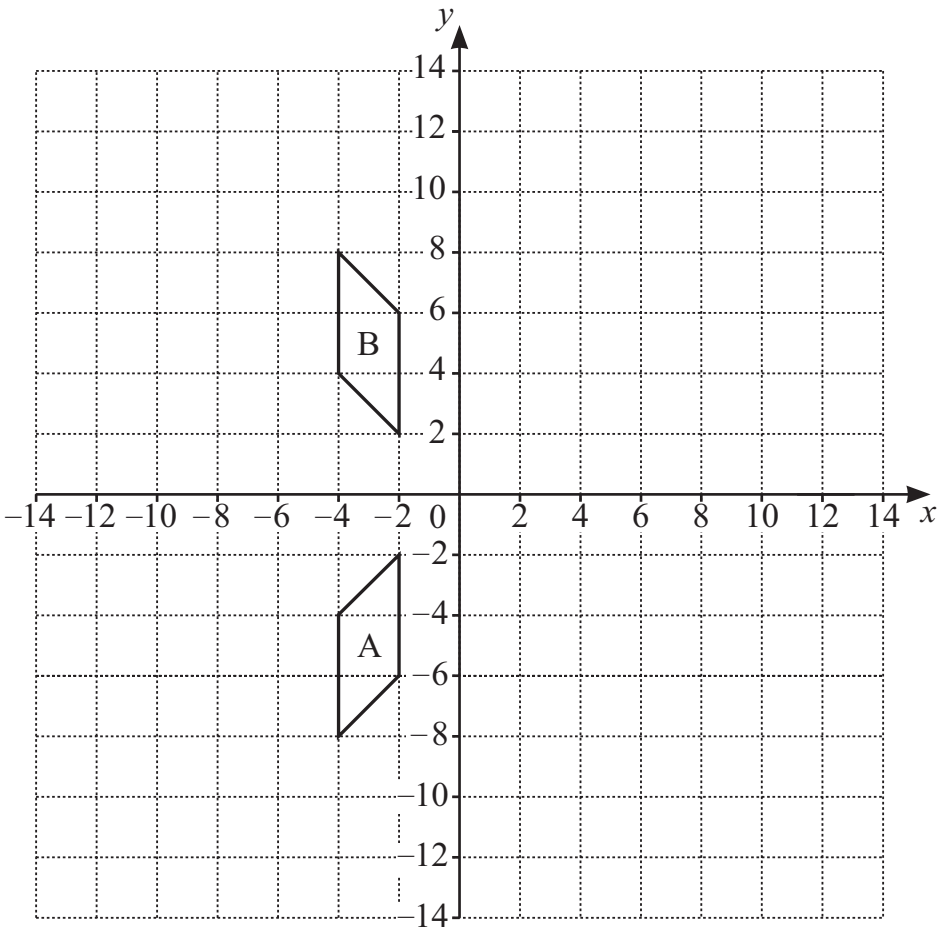
Complete the table of values for $2x + y = 4$

x	0		3
y		0	– 2

[1]

(c) Draw the line $2x + y = 4$ on the same grid. [1]

22 Two shapes are shown on the grid.



(a) Describe the **single** transformation that maps shape A onto shape B.

.....

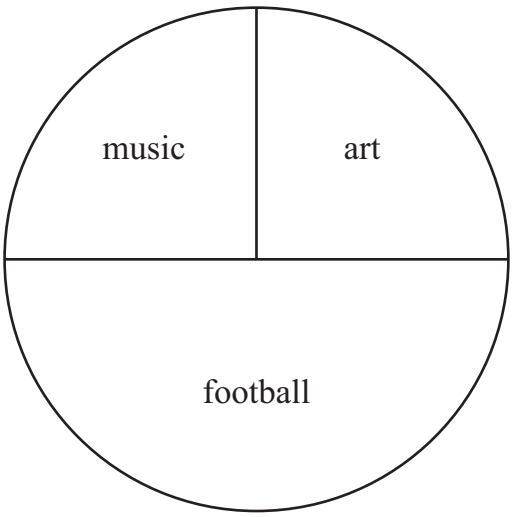
[2]

(b) Draw the image of shape B after an enlargement, scale factor 2, centre (–10, 8). [2]

23 Students can choose to take part in a club after school.

Lily draws a pie chart to show the clubs chosen by girls.
Yuri draws a pictogram to show the clubs chosen by boys.

Girls



Boys

art				
football				
music				

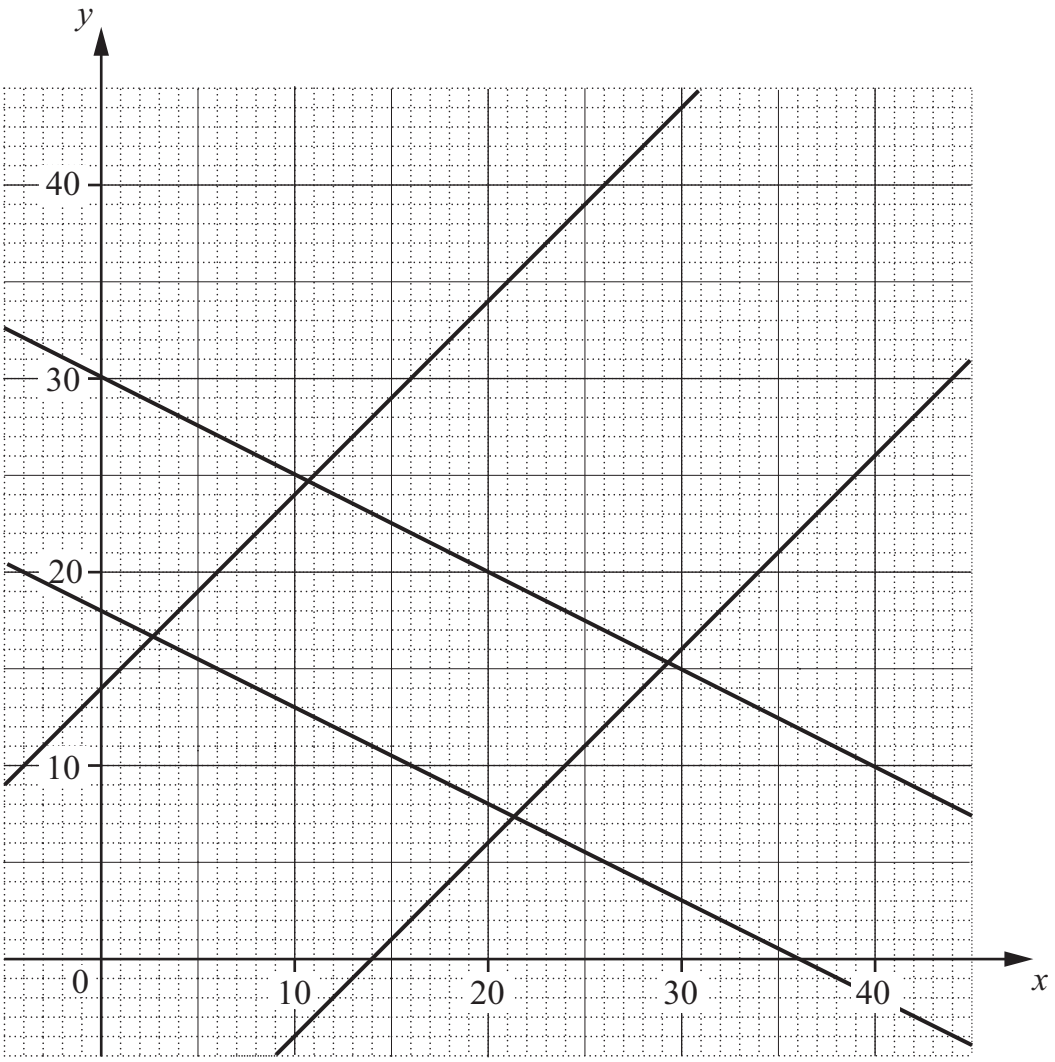
Key:  represents 20 boys

Tick (✓) to show if each of these statements is true or false or you cannot tell.

	True	False	You cannot tell
Ten more boys choose football than choose music.	☐	☐	☐
The modal club is the same for both girls and boys.	☐	☐	☐
A larger proportion of girls than boys choose art.	☐	☐	☐
A larger number of boys than girls choose football.	☐	☐	☐

[2]

24 Here is a graph of four lines.



The equations of the lines are

$y = x + 14$
$y = x - 14$
$x + 2y = 36$
$x + 2y = 60$

Use the graph to find an approximate solution to these simultaneous equations.

$y = x + 14$ and $x + 2y = 36$

$x =$ ..... and $y =$ ..... [2]

25 William plays a game.
He throws two fair dice.
His score is the **higher** of the two numbers shown on the dice.
The sample space diagram shows some of his possible scores.

		First dice					
		1	**2**	**3**	**4**	**5**	**6**
Second dice	**1**	1	2	3	4	5	6
	2	2	2	3	4		
	3	3	3	3	4		
	4				4		
	5					5	
	6						6

(a) Complete the sample space diagram. [2]

(b) Work out the probability that his score is greater than 4

..... [1]