Cambridge Assessment International Education

Mathematics

Stage 8

Paper 1 **2023**

Cambridge Lower Secondary Progression Test

Name

Class

Date

1 hour

Additional materials: Geometrical instruments
Tracing paper (optional)

INSTRUCTIONS

- Answer **all** questions.
- Write your answer to each question in the space provided.
- You should show all your working on the question paper.
- 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 [ ].

1 Write down the coordinates of two possible points that are on the line $y = x + 4$

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

2 Write **integers** in the boxes to make each statement correct.

$7^0 =$ ☐

$7^{20} \div 7^{18} =$ ☐

[2]

3 Work out.

$\sqrt[3]{-1000}$

..... [1]

4 Draw a line to match each formula, equation or expression to the correct description.

$3x + 4 = 19$	Formula
$10mp$	Equation
$A = b \times h$	Expression
$\frac{y}{4} = 20$	

[1]

5 Complete this sentence.

35 miles is equal to ..... km. [1]

6 **(a)** Write down the gradient of the line $y = 3x + 5$

..... [1]

(b) Write down the y-intercept of the line $y = 7 - 8x$

..... [1]

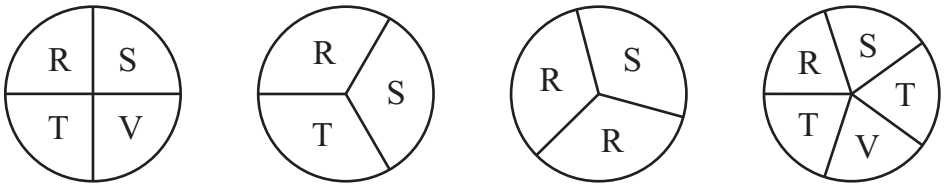
7 Work out.

$$8\frac{4}{7} - 3\frac{2}{7}$$

Give your answer as a mixed number in its simplest form.

..... [2]

8 When a fair spinner is spun the arrow is equally likely to point in any direction.
Chen has these four fair spinners.



He spins one of the spinners 600 times and the arrow points to the letter R 205 times.

Draw a ring around the spinner he is most likely to have used.

[1]

9 Complete each sentence with the correct number.

A regular octagon has ..... lines of symmetry.

A regular hexagon has rotational symmetry of order .....

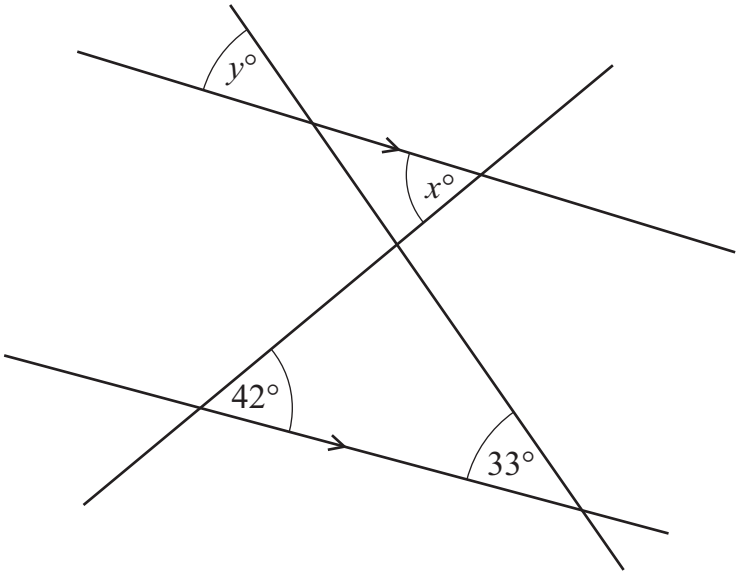
[1]

10 Factorise.

$6x + 24$

..... [1]

11 The diagram shows two straight lines crossing two parallel lines.



NOT TO SCALE

Find the value of x and the value of y.
Give a geometrical reason for each answer.

$x =$ ..... because .....

$y =$ ..... because .....

[2]

12 Complete the grid so that the three numbers in each row, each column and each diagonal have the same total.

		−12
−8	−1	6
	−16	

[2]

13 Find the value of each of these expressions when $x = -8$

$10x^2$

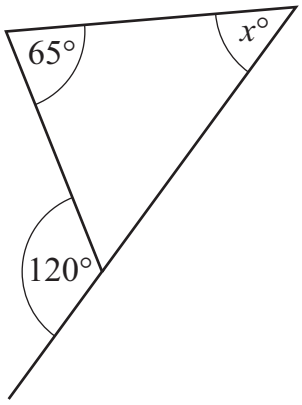
.....

$5(12 - x)$

.....

[2]

14 The diagram shows a triangle with an exterior angle of 120°.



NOT TO SCALE

Work out the value of x.

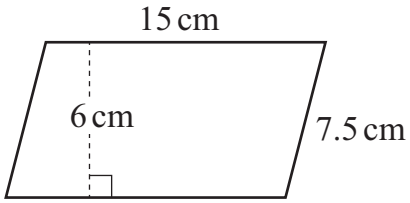
$x =$ ..... [1]

15 Expand the brackets.

$$5t(t^2 + 2t - 3)$$

..... [1]

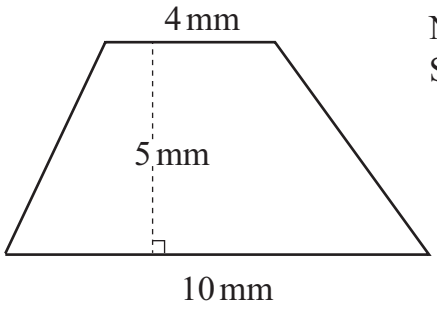
16 **(a)** Work out the area of this parallelogram.



NOT TO SCALE

..... cm^2 [1]

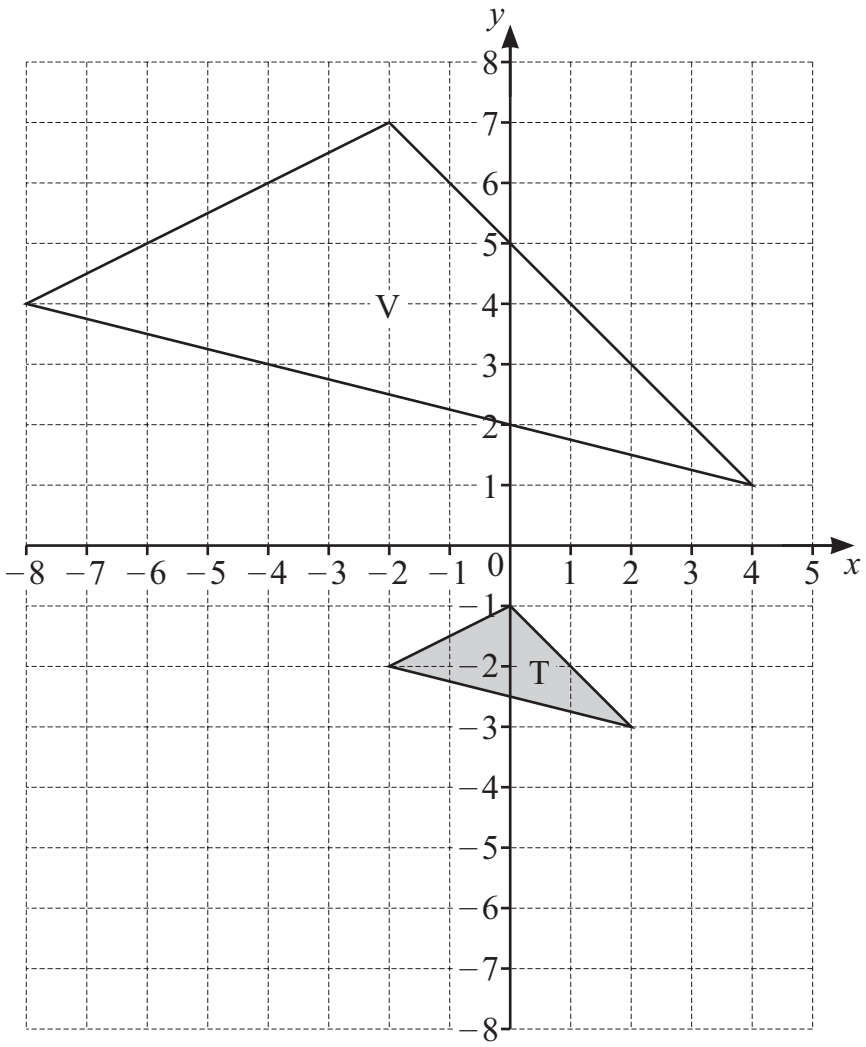
(b) Work out the area of this trapezium.



NOT TO SCALE

..... mm^2 [2]

17 The diagram shows two triangles, T and V.



(a) A transformation maps triangle T onto triangle V.

Complete these sentences.

The type of transformation is .....

The scale factor is .....

[2]

(b) Rotate triangle T by 270° anticlockwise about the point (–2, –3). [2]

18 Mike has these four number cards.

He uses each card once to make a four-digit number.

Work out how many different four-digit numbers he could make.

..... [1]

19 Jamila has p pencils.
Hassan has 3 fewer pencils than Jamila.
Naomi has 4 times as many pencils as Hassan.

Write an expression, in terms of p, for the total number of pencils the three children have.
Write your expression in its simplest form.

..... [3]

20 Here is a table showing information about some linear number sequences.

Sequence name	First four terms of sequence	How the sequence is related to sequence A	Term-to-term rule	5th term
A	6, 10, 14, 18, …		Add 4	22
B	7, 11, 15, 19, …	Add 1 to each term in sequence A	Add 4	23
C			Add 4	20
D		Double each term in sequence A		
E	–6, –10, –14, –18, …			

Complete the table. [3]

21 n lies in the interval $3.5 < n < 3\frac{9}{16}$

Find a possible value of n.
Give your answer as a mixed number.

$n =$ ..... [1]

22 Draw a ring around the inequality that is equivalent to $x \leq 4$

K

$x - 1 \leq 5$ $2x < 8$ $x < 5$ $x + 1 \leq 5$ $x - 3 \geq 1$

[1]

23 Work out.

K

$$11^2 - 5 \times 2.6 + \sqrt{9^2 + 63}$$

..... [2]

24 Rajiv has two pieces of string measuring 240 cm and 168 cm in length.

K He cuts both pieces of string into smaller pieces that are all equal in length.

Work out the greatest possible length for each smaller piece.

..... cm [3]

25 In June, eleven people take part in a long jump competition.
Here are the results for the distance, in metres, each person jumps.

2.6 2.4 3.6 2.8 4.2 3.8 5.1 3.0 4.5 3.3 4.6

(a) Complete the stem-and-leaf diagram for this information.

2					
3					
4					
5					

Key:

[3]

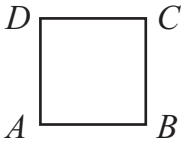
(b) In August, the same eleven people take part in another long jump competition.
The median distance jumped in August is 4.1 m.

Write down a comparison between the distances jumped in June and the distances jumped in August.
You must use statistics to support your comparison.

.....

..... [2]

26 Here is square *ABCD*.



ABCD is drawn on a grid so that *A* is at (2, 1) and *C* is at (6, 5).
ABCD is **reflected** in the *y*-axis to make square *A′B′C′D′*.

Write each of these points in the correct place in the table.

(3, –3) (–2, 3) (–5, 6) (–3, 3) (–2, 5)

Inside square *A′B′C′D′*	**Outside square *A′B′C′D′***	**A vertex of square *A′B′C′D′***	**On the edge of square *A′B′C′D′* but not a vertex**

[2]

27 Lily thinks of a number.
She squares the number and the answer is 4.6225
There are two possible numbers she could be thinking of.

Write down the **sum** of these two numbers.

..... [1]