

## Cambridge IGCSE<sup>™</sup>

	CANDIDATE NAME		
	CENTRE NUMBER		CANDIDATE NUMBER
	MATHEMATIC	CS	0580/21
n	Paper 2 (Extend	ded)	October/November 2023
			1 hour 30 minutes
	You must answe	er on the question paper.	
ω	You will need:	Geometrical instruments	

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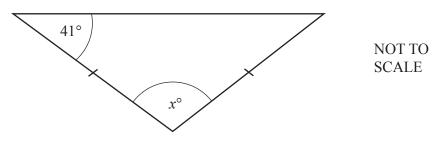
## INSTRUCTIONS

- 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 use a calculator where appropriate. •
- You may use tracing paper.
- You must show all necessary working clearly.
- Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place for angles in • degrees, unless a different level of accuracy is specified in the question.
- For  $\pi$ , use either your calculator value or 3.142.

## **INFORMATION**

- The total mark for this paper is 70.
- The number of marks for each question or part question is shown in brackets [].

1 The diagram shows an isosceles triangle.



Find the value of *x*.

2 The stem-and-leaf diagram shows the time, in minutes, it takes each of 15 people to complete a race.

1										
2	1	3	3	4	5	6	7	7	7	
3	0	1	1							

Key: 1 6 represents 16 minutes

Find

(a) the mode

..... min [1]

(b) the range

..... min [1]

(c) the median.

..... min [1]

- **3** Complete these statements.
  - (a) When  $x = \dots, x+3 = 8$ . [1]
  - **(b)** When 7y = 63,  $10y = \dots$
- 4 The table shows some information about Amir's shopping.

Fruit	Cost per kilogram	Number of kilograms Amir buys	Cost
Oranges	\$2.35	3.2	\$
Bananas	\$	2.8	\$
		Total	\$13.54

Complete the table.

**5** Factorise completely.

(a) 42mk - 35m

 [2]

<b>(b)</b>	$h^2 - 144$	
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	[1	ľ	]						
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[1]

[3]

- 10000 9000 Х × 8000 7000 X ж × 6000 Value of 5000 Х car(\$)Х 4000 3000 Х 2000 1000 0 10000 20000 30000 40 000 50000 60,000 0 70000 80000 Salary(\$)
- 6 For each of 10 people working in an office, the scatter diagram shows their salary and the value of their car.

(a) One of these people has a salary of \$28000.

Find the value of their car.

\$	[1]
----	-----

- (b) Another person starts to work in the office. Their salary is \$54000 and the value of their car is \$6100. Plot this information on the scatter diagram. (c) What type of correlation is shown in the scatter diagram?
  - [1] .....

[1]

7 The exchange rate between Singapore dollars and euros is 1 Singapore dollar = 0.62 euros.Find the value of 161.20 euros in Singapore dollars.

..... Singapore dollars [1]

8 Calculate.

$$7\frac{3}{11} \times 3\frac{3}{10}$$

9 Find the highest common factor (HCF) of 140 and 126.

**10** Simplify.

- (a)  $n^5 \times n$
- **(b)**  $8x^6 \div 2x^2$

.....[2]

(c)  $(243y^{20})^{\frac{2}{5}}$ 

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	[2]
0580/21/O/N/23	[Turn over

11 Solve.

 $4(2x-3) \ge 43+3x$ 

......[3]

12 Write 0.42 as a fraction in its simplest form. You must show all your working.

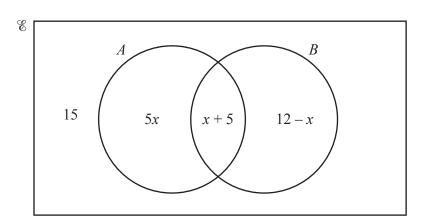
......[3]

**13** At the end of 2021 there were 27000 rhinos living in the wild. The number of rhinos is expected to decrease exponentially by 3% each year.

Work out the number of rhinos expected to be living in the wild 4 years later, at the end of 2025. Give your answer correct to the nearest whole number.

......[3]

14 (a)

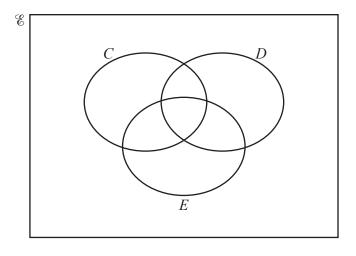


The Venn diagram shows information about the number of elements in sets *A*, *B* and  $\mathscr{C}$ .  $n(\mathscr{C}) = 52$ .

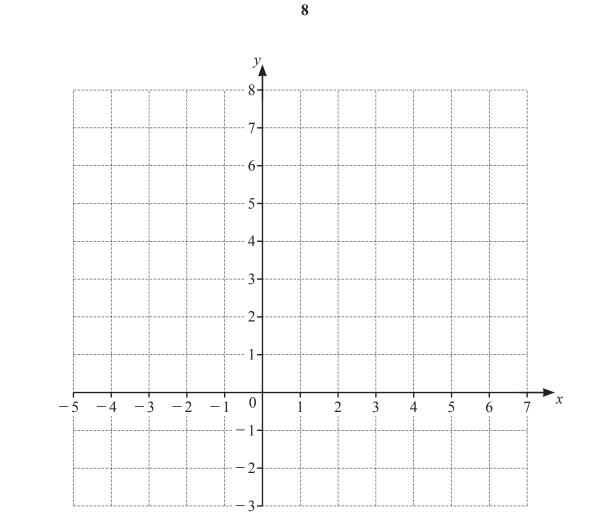
Find  $n(A \cap B)$ .

.....[3]

(b) In this Venn diagram, shade the region  $C \cap D \cap E$ .



[1]



By shading the **unwanted** regions of the grid, draw and label the region R which satisfies these inequalities.

$$y > 1 \qquad \qquad x \le 2 \qquad \qquad y \ge x+2$$

[5]

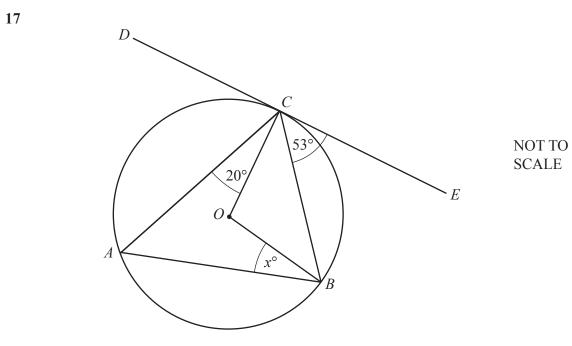
## $16 \qquad P = 2w + 2h$

w = 11 and h = 9.5, both correct to 2 significant figures.

Find the lower bound and the upper bound for P.

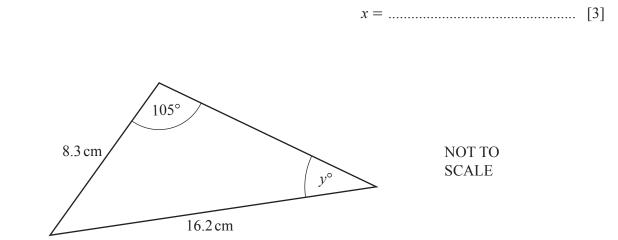
Lower bound =	
---------------	--

Upper bound =		[3]
---------------	--	-----



*A*, *B* and *C* are points on the circumference of a circle, centre *O*. Tangent *DE* touches the circle at *C*. Angle  $BCE = 53^{\circ}$  and angle  $ACO = 20^{\circ}$ .

Find the value of *x*.



Calculate the value of *y*.

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19 (a)



Sketch the graph of  $y = \cos x$  for  $0^{\circ} \le x \le 360^{\circ}$ .

(b) When  $\cos x = 0.21$ , find the reflex angle x.

.....[2]

[2]

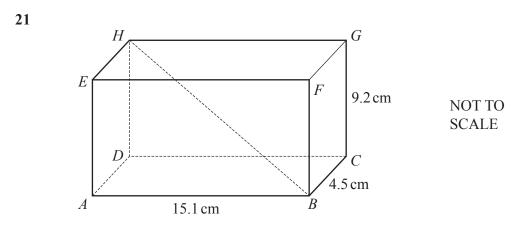
20 Write as a single fraction in its simplest form.

(a) 
$$\frac{10x^2 - 60x}{x^2 - x - 30}$$

......[3]

**(b)** 
$$\frac{7}{x+3} + \frac{5}{8x-1}$$

......[3]



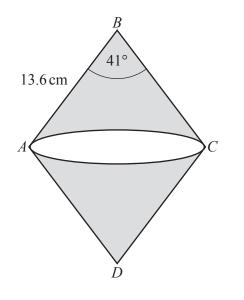
11

The diagram shows a cuboid *ABCDEFGH*. AB = 15.1 cm, BC = 4.5 cm and CG = 9.2 cm.

Calculate the angle that the diagonal *BH* makes with the face *ADHE*.

......[4]

22



NOT TO SCALE

*ABCD* is a rhombus with side length 13.6 cm. Angle  $ABC = 41^{\circ}$ . *BAC* is a sector of a circle with centre *B*. *DAC* is a sector of a circle with centre *D*.

Calculate the shaded area.

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