



CANDIDATE
NAME

--

CENTRE
NUMBER

--	--	--	--	--

CANDIDATE
NUMBER

--	--	--	--

0580/23

October/November 2023

1 hour 30 minutes

You will need: Geometrical instruments

- 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 π , use either your calculator value or 3.142.

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

This document has **12** pages.

- 1 Tara goes on a journey by train.
The train leaves at 06 48.
The journey takes 12 hours and 35 minutes.

Find the time when Tara arrives.

..... [1]

2

61	63	64	66	68	69
----	----	----	----	----	----

From this list, write down

- (a) a cube number

..... [1]

- (b) a prime number.

..... [1]

- 3 The stem-and-leaf diagram shows the heights, in centimetres, of some plants.

10	4	8		
11	1	3	4	6
12	2	3	6	9
13	2	6	9	

Key: 10|4 represents 10.4 cm

- (a) Find the median height.

..... cm [1]

- (b) Work out the mean height.

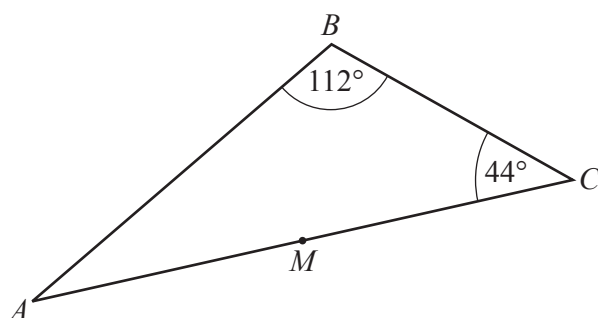
..... cm [2]

- 4 Shubhu invests \$750 in a savings account for 5 years.
The account pays simple interest at a rate of 1.8% per year.

Calculate the total interest she earns during the 5 years.

\$ [2]

5



NOT TO
SCALE

The diagram shows triangle ABC .
 M is the midpoint of AC .

Triangle ABC is rotated 180° about centre M .
The image and the original triangle together form a quadrilateral $ABCD$.

- (a) Write down the mathematical name of the quadrilateral $ABCD$.

..... [1]

- (b) Find angle BAD .

Angle BAD = [2]

- 6 Rama asks a group of students how they travel to school.
The table shows the probability of how a student, chosen at random, travels to school.

	Bus	Walk	Car	Other
Probability	0.4	0.32	0.17	

- (a) Complete the table.

[2]

- (b) There are 1800 students at the school.

Find the expected number of students that walk to school.

..... [1]

- 7 **Without using a calculator**, work out $1\frac{5}{6} \div \frac{11}{15}$.

You must show all your working and give your answer as a mixed number in its simplest form.

..... [3]

- 8 Find the highest common factor (HCF) of 48 and 80.

..... [2]

9 $P = \frac{2wy^2}{3}$

Find the positive value of y when $P = 108$ and $w = 8$.

$y =$ [3]

10 $\vec{AB} = \begin{pmatrix} 7 \\ -3 \end{pmatrix}$

(a) Find $3\vec{AB}$.

$\begin{pmatrix} \\ \end{pmatrix}$ [1]

(b) Find $|\vec{AB}|$.

$|\vec{AB}| =$ [2]

- 11 A bronze sphere has radius 3.6 cm.
The density of bronze is 8.05 g/cm^3 .

Find the mass of the sphere.

Give your answer **in kilograms**, correct to the nearest gram.

[The volume, V , of a sphere with radius r is $V = \frac{4}{3}\pi r^3$.]

[Density = mass $\div$ volume.]

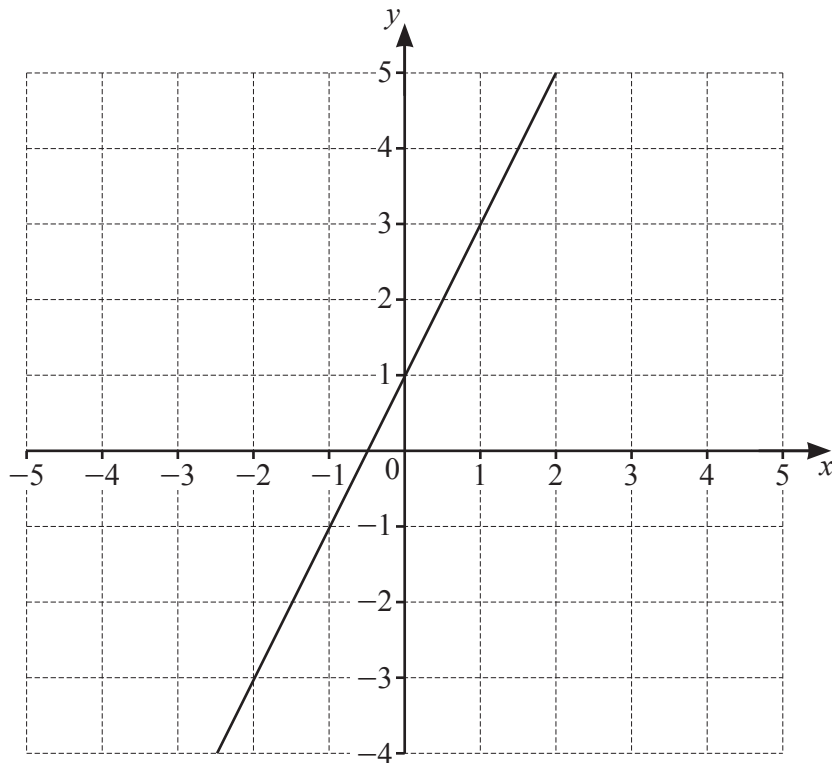
..... kg [4]

- 12 Oliver sent 22% more messages in June than in May.
He sent 305 messages in June.

Find how many more messages he sent in June than in May.

..... [3]

- 13 The graph of $y = 2x + 1$ is drawn on the grid.



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

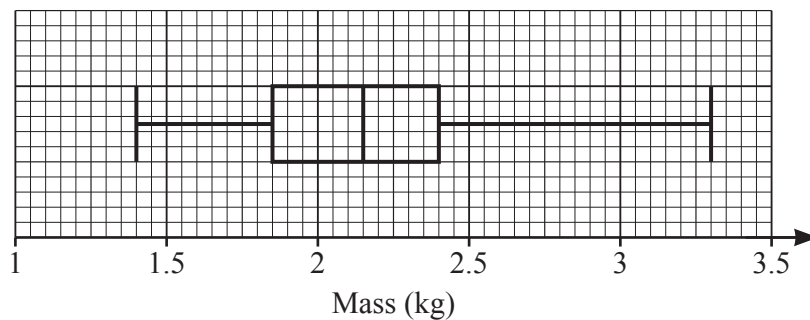
$$y \geq 2x + 1$$

$$y \geq 1$$

$$4x + 3y < 12$$

[4]

- 14 The box-and-whisker plot shows information about the mass, in kg, of some parcels.



- (a) Find the mass of the heaviest parcel.

..... kg [1]

- (b) Find the interquartile range.

..... kg [1]

15 $T = \sqrt{3d - e}$

Rearrange the formula to make d the subject.

$$d = \dots\dots\dots [3]$$

16 A cylinder with height 12.5 cm has a curved surface area of $105\pi \text{ cm}^2$.

Calculate the volume of the cylinder.

$$\dots\dots\dots \text{ cm}^3 [4]$$

17 (a) Simplify.

$$(64y^{27})^{\frac{2}{3}}$$

$$\dots\dots\dots [2]$$

(b) Simplify.

$$\frac{x-5}{x^2-25}$$

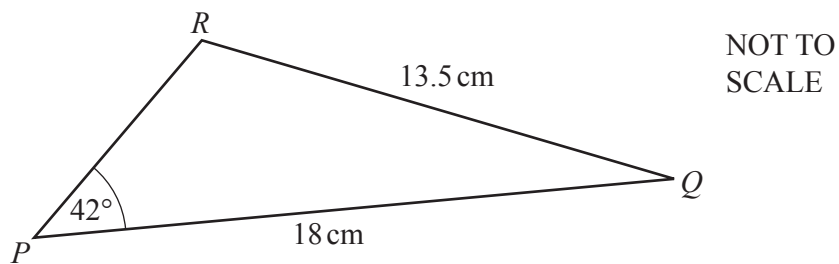
$$\dots\dots\dots [2]$$

- 18 F is proportional to the product of m and a .

Calculate the percentage change in F when m is increased by 40% and a is decreased by 15%.

..... % [3]

- 19



Calculate the obtuse angle PRQ .

Angle PRQ = [4]

20 $(x+a)(x+2)(2x+3)$ is equivalent to $2x^3 + bx^2 + cx - 18$.

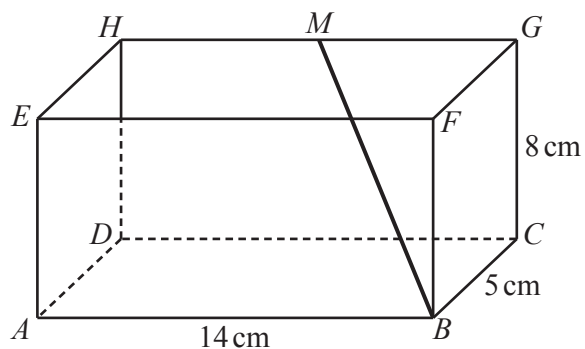
Find the value of each of a , b and c .

$a =$

$b =$

$c =$ [3]

21

NOT TO
SCALE

The diagram shows a cuboid $ABCDEFGH$.
 $AB = 14$ cm, $BC = 5$ cm and $CG = 8$ cm.
 M is the midpoint of HG .

(a) Calculate BM .

..... cm [3]

(b) Calculate the angle that BM makes with the base $ABCD$.

..... [3]

Question 22 is printed on the next page.

- 22 Find the coordinates of the point where the line $4x + y = 9$ intersects the curve $y + x^2 = 5$.
You must show all your working.

(..... ,) [5]

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge Assessment International Education is part of Cambridge Assessment. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which is a department of the University of Cambridge.