



MINISTRY OF EDUCATION, SINGAPORE
 in collaboration with
 CAMBRIDGE ASSESSMENT INTERNATIONAL EDUCATION
 General Certificate of Education Normal (Technical) Level

CANDIDATE
 NAME

CENTRE
 NUMBER

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MATHEMATICS (SYLLABUS T)

4046/01

Paper 1

For examination from 2023

SPECIMEN PAPER

1 hour 30 minutes

Candidates answer on the Question Paper.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, index number and name on all the work you hand in.
 Write in dark blue or black pen.
 You may use an HB pencil for any diagrams or graphs.
 Do not use staples, paper clips, glue or correction fluid.
DO NOT WRITE ON ANY BARCODES.

Answer **all** the questions.
 The number of marks is given in brackets [] at the end of each question or part question.

If working is needed for any question it must be shown in the space below the question.
 Omission of essential working will result in loss of marks.
 The total of the marks for this paper is 50.

The use of an approved scientific calculator is expected, where appropriate.
 If the degree of accuracy is not specified in the question and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.
 For π , use either your calculator value or 3.142.

This document consists of **10** printed pages.



Singapore Examinations and Assessment Board



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*Mathematical Formulae**Compound interest*

$$\text{Total amount} = P \left(1 + \frac{r}{100} \right)^n$$

Quadratic equation $ax^2 + bx + c = 0$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Geometry and Measurement

$$\text{Curved surface area of a cone} = \pi r l$$

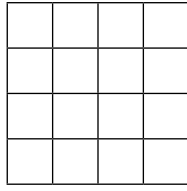
$$\text{Surface area of a sphere} = 4\pi r^2$$

$$\text{Volume of a cone} = \frac{1}{3} \pi r^2 h$$

$$\text{Volume of a pyramid} = \frac{1}{3} \times \text{base area} \times \text{height}$$

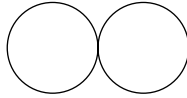
$$\text{Volume of a sphere} = \frac{4}{3} \pi r^3$$

- 1 Shade $\frac{3}{8}$ of the diagram.



[2]

2



For the diagram above, write down

- (a) the number of lines of symmetry,

Answer [1]

- (b) the order of rotational symmetry.

Answer [1]

- 3 Calculate the value of

(a) $2^4 \times 3^3 \times 5^3$,

Answer [1]

(b) $\sqrt{27} \times \sqrt{\frac{1}{3}}$,

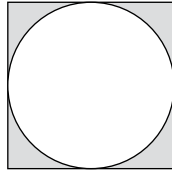
Answer [1]

- (c) the cube root of 216.

Answer [1]

- 4 The diagram shows a circle, radius 5 cm, touching the four sides of a square of side 10 cm.

Calculate the shaded area.



Answer cm² [3]

- 5 Solve the equation $4 - 2x = 3x - 8$.

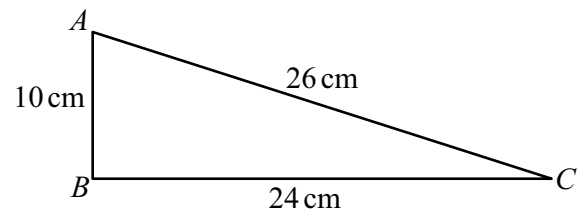
Answer $x =$ [3]

- 6 The size of a TV screen is measured in inches.
One inch is 2.54 cm.

The length of the diagonal of a TV screen is 60 inches.
Find the length of the diagonal in centimetres.
Give your answer to the nearest centimetre.

Answer cm [3]

- 7 (a) Show that triangle ABC has a right angle at B .



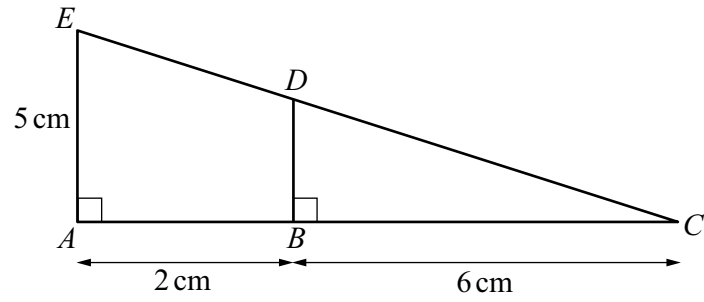
Answer

[2]

- (b) Calculate the acute angle at C .

Answer [2]

8



CAE and CBD are similar right-angled triangles.

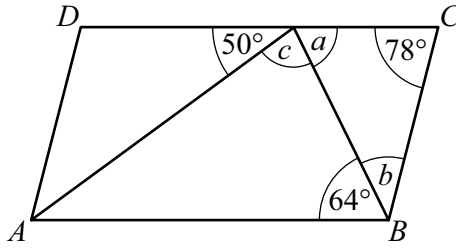
(a) Calculate length BD .

Answer cm [2]

(b) Find the area of triangle CAE .

Answer cm^2 [2]

9



The diagram shows a parallelogram $ABCD$.

(a) Find a .

Answer $a = \dots\dots\dots$ [1]

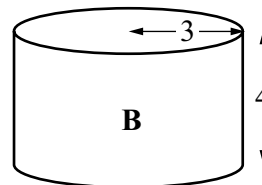
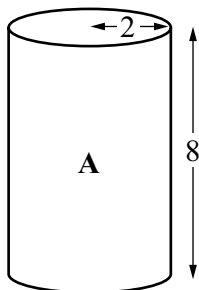
(b) Find b .

Answer $b = \dots\dots\dots$ [2]

(c) Find c .

Answer $c = \dots\dots\dots$ [1]

10

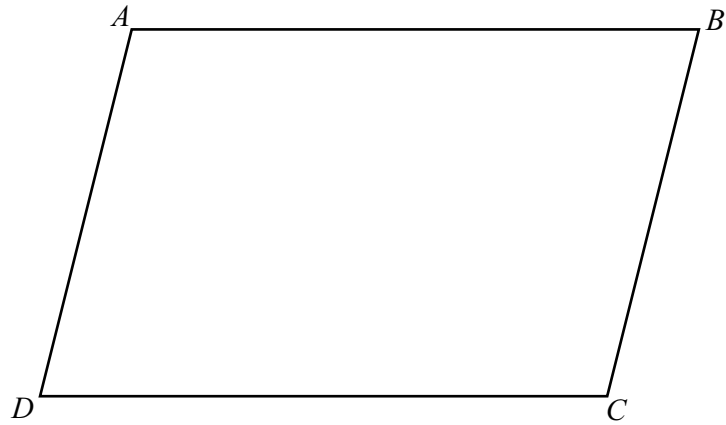


Cylindrical container A has radius 2 cm and height 8 cm.
 Cylindrical container B has radius 3 cm and height 4 cm.

Showing all your working, find out which container can hold a greater volume of liquid when completely filled.

Answer Container $\dots\dots\dots$ [4]

11



(a) Draw the perpendicular bisector of AD . [1]

(b) Draw the angle bisector of ABC . [1]

(c) The perpendicular bisector of AD and the angle bisector of ABC meet at T .

Measure and write down the angle BTC .

Answer Angle BTC = [1]

- 12 Leanne travels from Singapore to Kuala Lumpur by express coach. The fare for the journey depends on the departure time. Departure times and fares are shown in the table.

Departure Time	Fare (\$)
08 30	30
09 00	35
09 45	28
10 45	38
12 00	31
13 30	25

Depending on traffic, the journey always takes between 4 and 5 hours.

- (a) Leanne has a meeting in Kuala Lumpur at 14 30.

Find the latest departure time she must leave Singapore so that she arrives in Kuala Lumpur before her meeting starts.

Answer [2]

- (b) What is the fare for this departure time?

Answer \$ [1]

- (c) The distance from Singapore to Kuala Lumpur is 355 km.

Calculate the average speed of the coach in kilometres per hour if the journey time is 5 hours.

Answer km/h [2]

- (d) Convert your answer to **part (c)** into metres per second.

Answer m/s [2]

- 13** A cereal is sold in boxes.
Each box contains 720 grams of the cereal.

- (a)** It is recommended that an adult takes one serving of the cereal per day.
Each serving of the cereal is 45 grams.

Find the maximum number of 45-gram servings from one box.

Answer [2]

- (b)** The cereal boxes are cuboids with dimensions 9.5 cm by 24.5 cm by 35 cm.

Calculate the volume of one box, in cubic centimetres.

Answer cm³ [2]

- (c)** To transport the cereal, boxes are packed into crates.
Each crate contains 36 boxes of cereal.
The mass of the crate and the boxes is 20% of the total mass of the cereal.

Calculate the total mass of one crate containing 36 boxes of cereal.
Give your answer in kilograms.

Answer kg [4]