UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

MATHEMATICS

Paper 1 (Core)   **0580/01 0581/01**

Candidates answer on the Question Paper.
Additional Materials: Electronic calculator
                         Geometrical instruments   May/June 2005
                         Mathematical tables (optional)
                         Tracing paper (optional)   **1hour**

Candidate
Name

Centre
Number

Candidate
Number

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black pen in the spaces provided on the Question Paper.

You may use a pencil for any diagrams or graphs.

Do not use staples, paper clips, highlighters, glue or correction fluid.

DO **NOT** WRITE IN THE BARCODE.

DO **NOT** WRITE IN THE GREY AREAS BETWEEN THE PAGES.

Answer **all** questions.

If working is needed for any question it must be shown below that question.

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

The total number of marks for this paper is 56.

Electronic calculators should be used.

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.

For Examiner's Use

This document consists of **9** printed pages and **3** blank pages.

UNIVERSITY *of* CAMBRIDGE
International Examinations

[Turn over

1 The diameter of the sun is 1 392 530 kilometres.
Write this value correct to 4 significant figures.

Answer .... km [1]

2 A bag of 30 sweets contains 8 chocolates, 13 nougats and 9 toffees.

A sweet is selected at random.
What is the probability that it is a toffee?

Answer .... [1]

3 Anne took a test in chemistry.
She scored 20 marks out of 50.
Work out her percentage mark.

Answer ....% [1]

4 Write, in its simplest form, the ratio

3.5 kilograms : 800 grams.

Answer .... : .... [2]

5 Work out 4^{-3} as a fraction.

Answer .... [2]

6   2,   3,   5,   9,   12, 15

From the set of numbers above, write down

(a) a multiple of 6,

Answer (a) .... [1]

(b) a prime factor of 27.

Answer (b) .... [1]

7 Alphonse spends \$28 on food.

This amount is $\frac{4}{9}$ of his allowance.
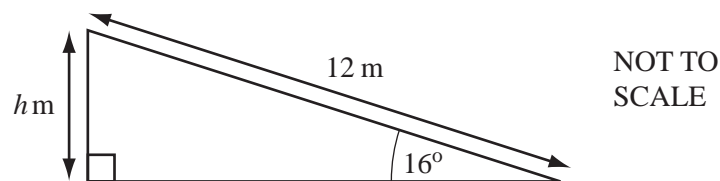
Calculate his allowance.

Answer \$ .... [2]

8 When $x = -3$ find the value of

$$x^3 + 2x^2.$$

Answer .... [2]

9 At the market, Fernando weighs his fruit to the nearest 10 grams.
He weighs a mango as 260 grams.
Complete the statement in the answer space.

Answer ....g ⩽ weight of mango < .... g [2]

10

A ramp from a car park to a shopping centre slopes upward at an angle of 16° to the horizontal.
The length of the ramp is 12 metres.
Calculate the difference in height, *h* metres, between the car park and the shopping centre.

Answer ....m [2]

11 Yasmeen is setting up a business.
She borrows $5000 from a loan company.
The loan company charges 6% per year simple interest.
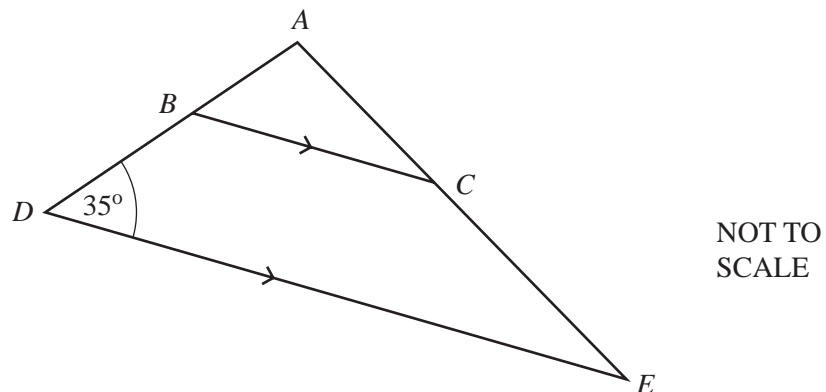How much interest will Yasmeen pay after 3 years?

Answer $ .... [2]

12 Make *s* the subject of the formula

$$p = st - q.$$

Answer s = ... [2]

13

In the diagram *BC* is parallel to *DE*. *ABD* and *ACE* are straight lines.
(a) Choose one of the following words to complete the statement in the answer space.
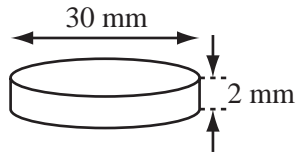
      congruent   equilateral   isosceles   similar

Answer (a) Triangle *ABC* and triangle *ADE* are .... [1]

(b) Angle *BDE* = 35°.
Calculate the size of angle *DBC*.

Answer (b) Angle *DBC =* .... [1]

14

30 mm

2 mm

NOT TO
SCALE

An old Greek coin is a cylinder with a **diameter** of 30 millimetres and a thickness of 2 millimetres.
Calculate, in cubic millimetres, the volume of the coin.
[The volume of a cylinder, radius r, height h, is $\pi r^2 h$.]

Answer .... mm^3 [2]

15 (a) Write down a common multiple of 6 and 8.

Answer (a) .... [1]

(b) Work out

$$\frac{5}{6} - \frac{3}{8}.$$

Give your answer as a fraction in its lowest terms.
You must show all your working.

Answer (b) .... [2]

16 Look at the sequence of numbers

7, 11, 15, 19, ……….

(a) Write down the next number in the sequence.

Answer (a) .... [1]

(b) Find the 10th number in the sequence.

Answer (b) .... [1]

(c) Write an expression, in terms of n, for the nth number in the sequence.

Answer (c) .... [1]

17 **(a)** Expand the bracket and simplify the expression

$$7x + 5 - 3(x - 4).$$

Answer (a) .... [2]

(b) Factorise $5x^2 - 7x$.

Answer (b) .... [1]

18 Camilla has \$5 to spend in the market.
She buys $1\frac{1}{2}$ kilograms of bananas priced at 80 cents per kilogram and 3 yams priced at 45 cents each.
How much money does she have left?

Answer \$ .... [3]

19
$$\frac{8.95 - 3.05 \times 1.97}{2.92}$$

(a) (i) Write the above expression with each number rounded to one significant figure.

Answer (a)(i) .... [1]

(ii) Use your answer to find an **estimate** for the value of the expression.

Answer (a)(ii) .... [1]

(b) Use your calculator to work out the value of the **original** expression.
Give your answer correct to 2 decimal places.

Answer (b) .... [1]

For Examiner's Use

20

Country	Area (km^2)
Brazil	8.51 x 10^6
Panama	7.71 x 10^4
Guyana	2.15 x 10^5
Colombia	1.14 x 10^6

The table above gives the areas of four South American countries, correct to 3 significant figures.

(a) List the countries in order of area, smallest to largest.

Answer (a) .... < Guyana < .... < .... [1]

(b) Use a whole number to complete the statement in the answer space.

Answer (b) The area of Colombia is approximately .... times the area of Guyana. [2]

21

> **SALE**
> All items
> 35% Reduction

Abdul bought a spade in this sale. Its **original** price was $16.

(a) How much did Abdul save?

Answer (a) $ .... [2]

(b) The next day, all items were sold at half the **original** price.
How much **more** would Abdul have saved if he had waited until the next day to buy the spade?

Answer (b) $ .... [1]

22

DISTANCE FROM HOME (km) — vertical axis from 0 to 15

TIME (am) — horizontal axis from 7 30 to 9 00

Home 0, Friend's House 5, School 12
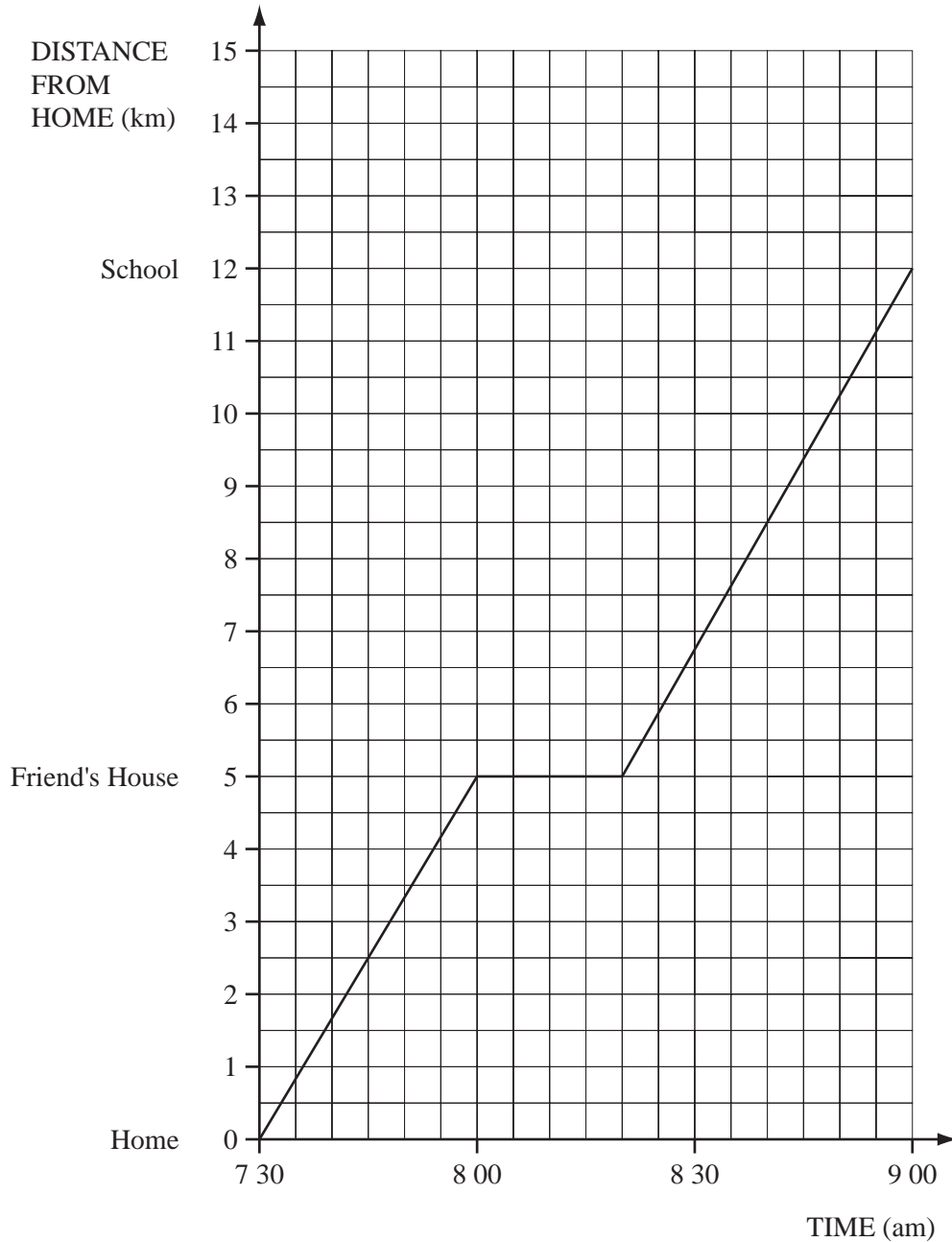
Ricardo rode to his friend's house. He waited for his friend to get ready.
Then they cycled together to school. Ricardo's journey is shown on the grid.

(a) Work out the speed at which Ricardo cycled to his friend's house.

Answer (a) .... km/h [2]

(b) How long did he wait for his friend?

Answer (b) .... min [1]

(c) Ricardo's brother left home at 8 00 am.
He cycled directly to school at a constant speed of 15 kilometres per hour.
Draw his journey on the **grid opposite**.

[1]

(d) How many minutes earlier than Ricardo did his brother arrive at school?

Answer (d) .... min [1]

23
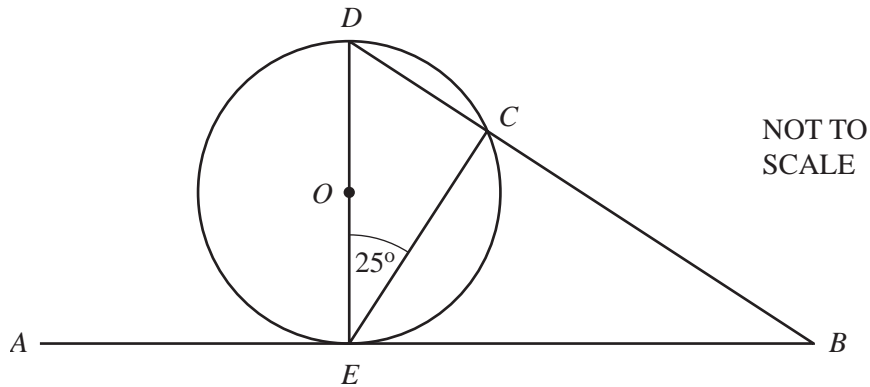
In the diagram, *DE* is a diameter of the circle, centre *O*.
AEB is the tangent at the point *E*. The line *DCB* cuts the circle at *C*.
Angle *DEC* = 25°.

(a) Write down the size of angle *DCE*.

Answer (a) Angle *DCE* = ... [1]

(b) Calculate the size of angle *CDE*.

Answer (b) Angle *CDE* = ... [2]

(c) Calculate the size of angle *DBE*.

Answer (c) Angle *DBE* = ... [2]

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