Cambridge Assessment International Education

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CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/02**

Paper 2 (Extended) **For examination from 2020**

SPECIMEN PAPER **45 minutes**

You must answer on the question paper.

You will need: Geometrical instruments

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.
- Calculators must **not** be used in this paper.
- You must show all necessary working clearly and you will be given marks for correct methods even if your answer is incorrect.
- All answers should be given in their simplest form.

INFORMATION

- The total mark for this paper is 40.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **8** pages. Blank pages are indicated.

[Turn over

Formula List

For the equation $ax^2 + bx + c = 0$ $\quad x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Curved surface area, A, of cylinder of radius r, height h. $\quad A = 2\pi rh$

Curved surface area, A, of cone of radius r, sloping edge l. $\quad A = \pi rl$

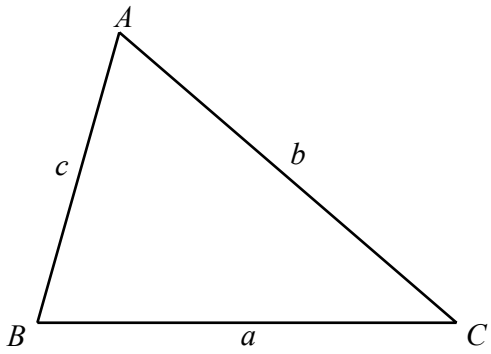
Curved surface area, A, of sphere of radius r. $\quad A = 4\pi r^2$

Volume, V, of pyramid, base area A, height h. $\quad V = \frac{1}{3}Ah$

Volume, V, of cylinder of radius r, height h. $\quad V = \pi r^2 h$

Volume, V, of cone of radius r, height h. $\quad V = \frac{1}{3}\pi r^2 h$

Volume, V, of sphere of radius r. $\quad V = \frac{4}{3}\pi r^3$



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc\cos A$$

$$\text{Area} = \frac{1}{2}bc\sin A$$

Answer **all** the questions.

1 Find the highest common factor (HCF) of 60 and 90.

..... [1]

2 Insert one pair of brackets to make the statement correct.

$$5 - 2 + 3 \times 2 = -5$$ [1]

3 $\mathbf{p} = \begin{pmatrix} 2 \\ 3 \end{pmatrix}$ $\mathbf{q} = \begin{pmatrix} 1 \\ 6 \end{pmatrix}$

Find $2\mathbf{p} - 3\mathbf{q}$.

$\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [2]

4 Write 0.72 as a fraction in its lowest terms.

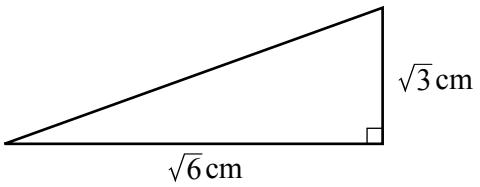
..... [1]

5 The mean of a list of 9 numbers is 6.
When a 10th number is included in the list the mean is 5.5 .

Find the value of this 10th number.

..... [2]

6



NOT TO SCALE

Find the length of the hypotenuse of the triangle.

..... cm [2]

7 Solve the simultaneous equations.

$$u - w = 9$$
$$3u + w = 19$$

u = ...

w = ... [2]

8 The scale of a map is 1 : 250 000 .

Find the actual distance, in kilometres, between two cities which are 42 cm apart on the map.

..... km [2]

9 $|x| < 4$ and x is an integer.

Find the smallest possible value of x.

..... [1]

10 The first 4 terms of a sequence are 20, 13, 6 and −1.

Find

(a) the next term,

..... [1]

(b) the nth term.

..... [2]

11 Make u the subject of the formula.

$$v^2 = u^2 + 2as$$

$u =$ ..... [2]

12 Factorise completely.

$$2a - b + 2ax - bx$$

..... [2]

13 Find the exact value of

(a) 3^{-3},

..... [1]

(b) $16^{\frac{3}{4}}$,

..... [1]

(c) $\cos 30°$.

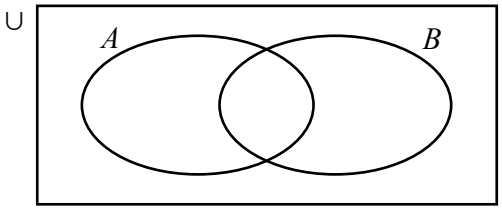
..... [1]

14 Simplify $\left(64x^{12}\right)^{\frac{1}{6}}$.

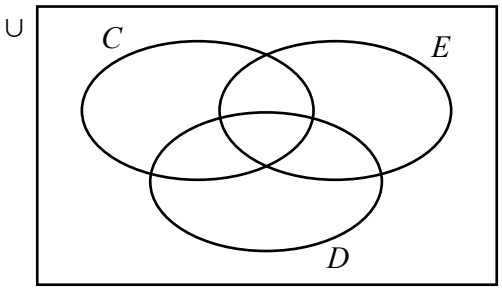
..... [2]

15 On each Venn diagram, shade the region indicated.

$(A \cup B)'$



$(C \cup D) \cap E'$



[2]

16 Find the equation of the straight line passing through $(-2, -4)$ and $(2, 0)$.

..... [3]

17 Rationalise the denominator.

$$\frac{3}{\sqrt{5}+2}$$

..... [2]

18 **(a)** Factorise $3y - y^2$.

..... [1]

(b) Simplify $\dfrac{3y - y^2}{9 - y^2}$.

..... [2]

Questions 19 and 20 are printed on the next page.

19 Find the value of

(a) $\dfrac{\log 4}{\log 8}$,

..... [2]

(b) $\log_4 8$.

..... [1]

20 $g(x) = \dfrac{2x+1}{x-1}$, $x \neq 1$

Solve the equation $g^{-1}(x) = 2$.

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