Cambridge Assessment International Education

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4718159596

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/22**

Paper 2 (Extended) **February/March 2022**

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 may use tracing 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.

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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. $\quad A = \pi rl$

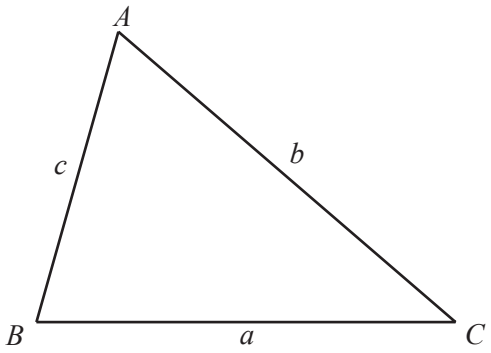
Curved surface area, A, of sphere of radius r. $\quad A = 4\pi r^2$

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 Write down a cube number between 10 and 100.

..... [1]

2 Work out $(0.1)^4$.

..... [1]

3 Alex goes to sleep at 20 40 and wakes up the next morning at 06 10.

Work out the length of time, in hours and minutes, that Alex is asleep.

..... h ..... min [1]

4 **(a)** Work out $2\begin{pmatrix}2\\3\end{pmatrix}-\begin{pmatrix}-3\\5\end{pmatrix}$.

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

(b) F is the point (5, 7).
The vector that maps F onto the point G is $\begin{pmatrix}-1\\3\end{pmatrix}$.

Find the coordinates of G.

(..... , ...) [1]

5 Work out $\frac{3}{4}-\frac{1}{6}$, giving your answer as a fraction in its lowest terms.

..... [2]

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6 Divide \$140 in the ratio 2 : 1 : 4.

\$ ..... , \$ ..... , \$ ..... [2]

7 The volume of a hemisphere with radius 3 cm is $k\pi$ cm^3.

Find the value of k.

$k =$ ..... [2]

8 Write 4^{-2} as a fraction.

..... [1]

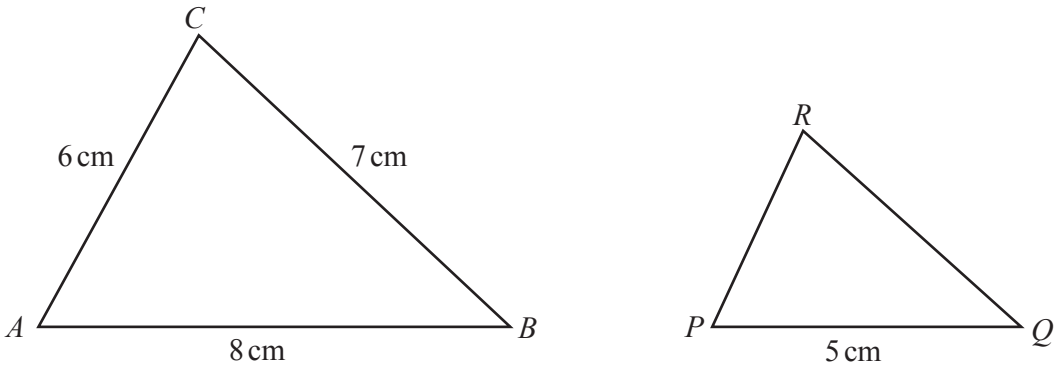
9 A train is travelling at a speed of 30 m/s.
The length of the train is 70 m.
The train passes through a station of length 170 m.

Find the time the train takes to pass completely through the station.

..... s [2]

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10 (a)



NOT TO SCALE

Triangle PQR is similar to triangle ABC.

Work out the length of PR.

$PR =$ ..... cm [2]

(b) Two mathematically similar containers have capacities of 27 litres and 8 litres.
The surface area of the smaller container is $1600\,\text{cm}^2$.

Work out the surface area of the larger container.

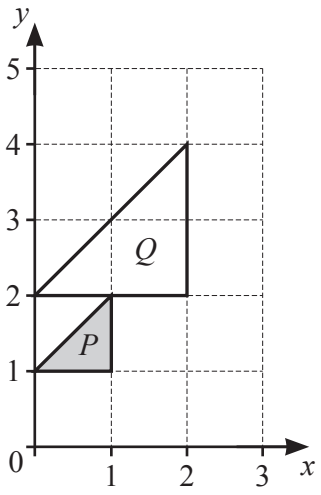
..... cm^2 [3]

11 Factorise.

$1 + x - y - xy$

..... [2]

12 (a)

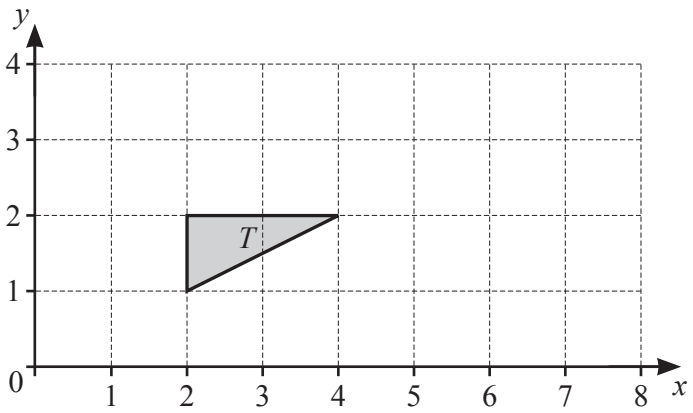


Describe fully the **single** transformation that maps triangle P onto triangle Q.

.....

..... [3]

(b)



Stretch triangle T by a factor of 2 with invariant line $x = 1$. [2]

13 Rationalise the denominator.

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

..... [1]

14 In this calculation, the three numbers are written in standard form.

$(4\times10^{p})\times(n\times10^{p+2})=3.2\times10^{t}$

n, p and t are integers.

(a) Find the value of n.

$n=$ ..... [1]

(b) Find t in terms of p.

$t=$ ..... [1]

15 Simplify.

$$\frac{x-4}{x^2-16}$$

..... [2]

16 The solutions to the equation $x^2+gx+h=0$ are $\frac{1-\sqrt{17}}{2}$ and $\frac{1+\sqrt{17}}{2}$.

Find the value of g and the value of h.

$g=$ .....

$h=$ ..... [3]

Questions 17 and 18 are printed on the next page.

17 Write as a single fraction, giving your answer in its simplest form.

$$2-\frac{3}{1+x}$$

..... [2]

18 Find the value of $\log 5+\log 8-2\log 2$.

..... [3]

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