Space exam review

1

a Describe fully the **single** transformation which maps triangle *A* onto triangle *B*.
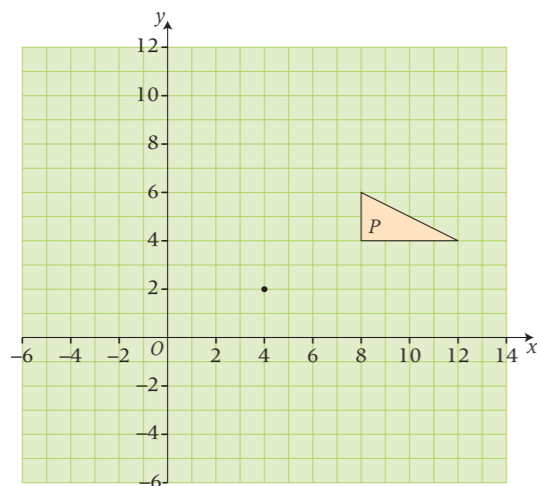
....

....

(3)

b On the grid, translate triangle *A* by the vector $\begin{pmatrix} -1 \\ 3 \end{pmatrix}$.

Label the new triangle *C*.
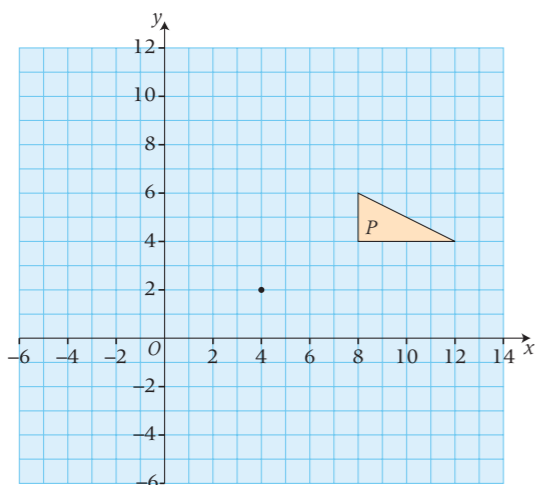
(2)

(Total 5 marks)

2 a

On the grid, rotate triangle *P* 90° anti-clockwise about the point (4, 2).
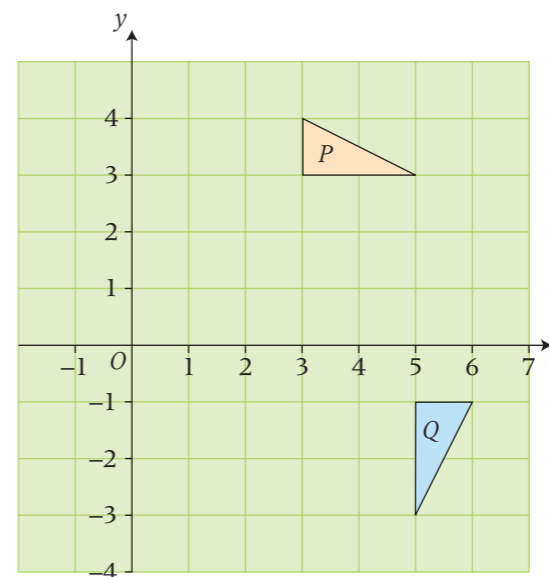
(2)

b

On the grid, enlarge triangle *P* with scale factor $\frac{1}{2}$ and centre (4, 2).

(2)

(Total 4 marks)

3

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

. . . .

. . . .

(3)

b Another shape, *R*, is enlarged by scale factor 2 to give shape S.

Write down whether each of the following statements
is a true statement or a false statement.

i The lengths in *R* and S are the same.   . . . .

ii The angles in *R* and S are the same.   . . . .

iii Shapes *R* and S are similar.   . . . .

iv Shapes *R* and S are congruent.   . . . .

(2)

(Total 5 marks)

4
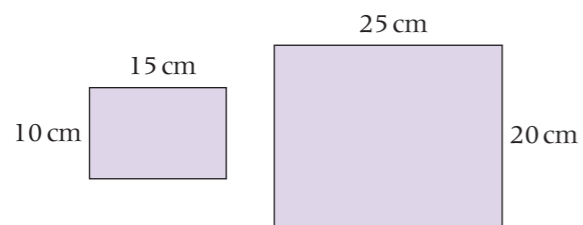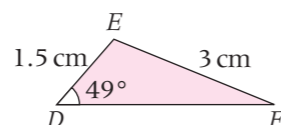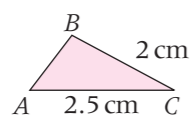
25 cm

15 cm

10 cm

20 cm

Diagram **NOT** accurately drawn

Are the two rectangles mathematically similar?
Tick (✓) the appropriate box.
You must show working to justify your answer.

Yes ☐   No ☐

(Total 3 marks)

5 Triangles *ABC* and *DEF* are similar.

B
2 cm
A   2.5 cm   *C*

E
1.5 cm   3 cm
49°
D   *F*

Diagrams **NOT** accurately drawn

AC = 2.5 cm   *BC* = 2 cm   *DE* = 1.5 cm   *EF* = 3 cm   Angle *EDF* = 49°

a Find the size of angle *BAC*.

.........................°

(1)

b Work out the length of
  i *DF*,

.... cm

  ii *AB*.

.... cm

(4)

(Total 5 marks)

6

A

4.5 cm   5 cm

B   *E*

3 cm

C   *D*
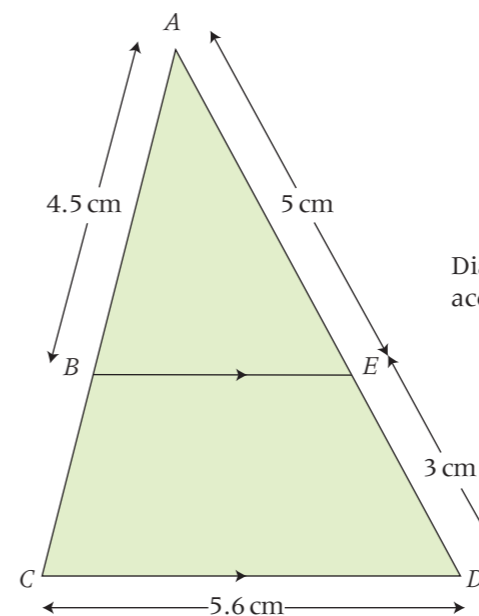
5.6 cm

Diagram **NOT** accurately drawn

BE is parallel to *CD*.
AB = 4.5 cm, *AE* = 5 cm, *ED* = 3 cm, *CD* = 5.6 cm.

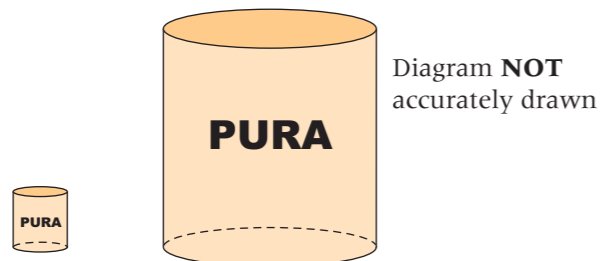**a** Calculate the length of *BE*.

.... cm

(2)

b Calculate the length of *BC*.

.... cm

(2)

(Total 4 marks)

7 Oil is stored in either small drums or large drums.
The shapes of the drums are mathematically similar.

Diagram **NOT**
accurately drawn

PURA

PURA

A **small** drum has a volume of 0.006 m^3 and a surface area of 0.2 m^2.

The height of a **large** drum is 3 times the height of a small drum.

a Calculate the volume of a large drum.

.... m^3

(2)

b The cost of making a drum is $1.20 for each m^2 of surface area.
A company wants to store 3240 m^3 of oil in large drums.
Calculate the cost of making enough large drums to store this oil.

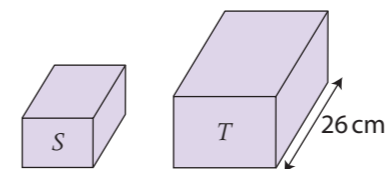$ ....

(4)

(Total 6 marks)

8

Diagram **NOT**
accurately drawn

S

T

26 cm

Two cuboids, S and T, are mathematically similar.
The total surface area of cuboid S is 157 cm^2 and the total surface area of cuboid T is 2512 cm^2.

a The length of cuboid T is 26 cm.

Calculate the length of cuboid S.

.... cm

(3)

b The volume of cuboid S is 130 cm^3.

Calculate the volume of cuboid T.

.... cm^3

(2)

(Total 5 marks)

9 a The ratio of the areas of two similar triangles is $1:k$.
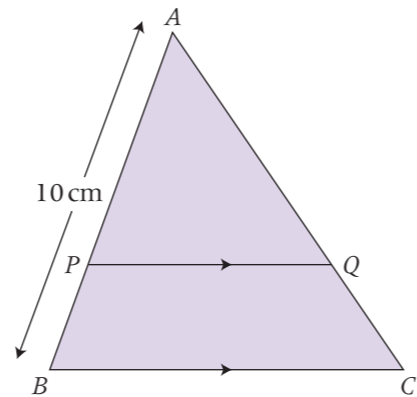Write down, in terms of k, the ratio of the lengths of their corresponding sides.

....

(1)

b

Diagram **NOT** accurately drawn

10 cm

AB = 10 cm
PQ is parallel to *BC*.

The area of triangle *APQ* is half the area of triangle *ABC*.
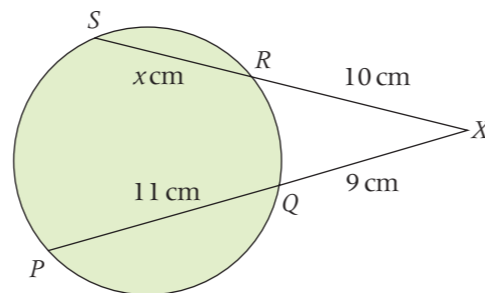
Calculate the length of *AP*.
Give your answer correct to 2 significant figures.

.... cm

(2)

(Total 3 marks)

10

The diagram shows a circle, *PQRS*.
SRX and *PQX* are straight lines.
PQ = 11 cm. *QX* = 9 cm. *RX* = 10 cm. *SR* = *x* cm.

Find the value of *x*.

x = ...

(Total 3 marks)