11. Here are three similar triangles.

Find the value of

(a) \(w\),

\[w = \ldots\]  
(1)

(b) \(x\),

\[x = \ldots\]  
(2)

(c) \(y\),

\[y = \ldots\]  
(2)
13. $ABCD$ and $PQRS$ are two similar quadrilaterals.

Diagrams NOT accurately drawn

$AB$ corresponds to $PQ$.
$BC$ corresponds to $QR$.
$CD$ corresponds to $RS$.

Find the value of
(a) $x$.

$$x = \ldots$$  

(b) $y$.

$$y = \ldots$$  

(c) $z$.

$$z = \ldots$$

(Total 5 marks)

12.

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

Yes [ ]
No [ ]

(Total 3 marks)
Quadrilateral \( P \) is mathematically similar to quadrilateral \( Q \).

(a) Calculate the value of \( x \).

\[
x = \quad (2)
\]

(b) Calculate the value of \( y \).

\[
y = \quad (2)
\]

The area of quadrilateral \( P \) is 60 cm\(^2\).

(c) Calculate the area of quadrilateral \( Q \).

\[
\quad \text{cm}^2 \quad (2)
\]

(Total 6 marks)
Diagram NOT accurately drawn

\[ \triangle ABC \text{ and } \triangle AED \text{ are two straight lines.} \]
\[ BE \text{ is parallel to } CD. \]
\[ AE = 5.1 \text{ cm}, \ BE = 6 \text{ cm}, \ CD = 10 \text{ cm}. \]

(a) Calculate the length of \( DE \).

(b) Calculate the value of \[ \frac{\text{Area of triangle } ABE}{\text{Area of trapezium } BCDE} \]

\[ \text{.............. cm} \]
\[ (3) \]

\[ \text{..............} \]
\[ (3) \]

(Total 6 marks)
20. (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.

\[ \text{\underline{\hspace{2cm}}} \] (1)

(b) \hspace{2cm} \text{Diagram NOT accurately drawn}

$AB = 10 \text{ cm}$.
$PQ$ 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.

\[ \text{\underline{\hspace{2cm}}} \] cm (2) Q20

(Total 3 marks)
14. Oil is stored in either small drums or large drums. The shapes of the drums are mathematically similar. 

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.

\[ \text{Volume of large drum} = \text{volume of small drum} \times 3 \]

\[ \text{Volume of large drum} = 0.006 \times 3 = 0.018 \text{ m}^3 \]

(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.

\[ \text{Cost of making large drums} = \text{Surface area of large drum} \times 3240 \times 1.20 \]

\[ \text{Surface area of large drum} = 0.2 \times 3 = 0.6 \text{ m}^2 \]

\[ \text{Cost of making large drums} = 0.6 	imes 3240 \times 1.20 = 2390.40 \]

\[ \text{Cost of making large drums} = \$2390.40 \]

(Total 6 marks)