NAME:.. Mark

ST ANDREW'S CATHEDRAL SCHOOL

Year 10 Advanced Mathematics

Topic Similarity

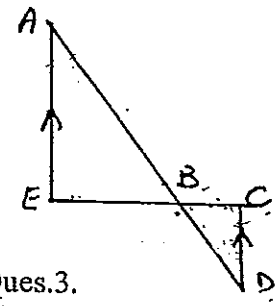
WORKING NEEDS TO BE SHOWN FOR ALL QUESTIONS

Ques.1.

Using O as the centre of enlargement and a scale factor of 2 draw the enlargement.

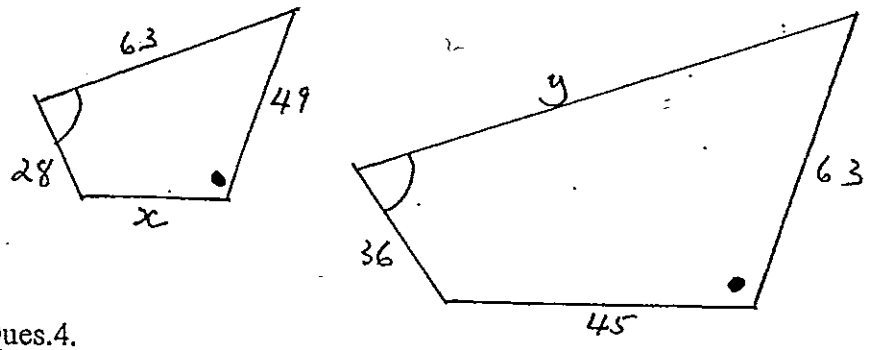
Ques.2.

In the diagram below list the two pair of corresponding sides.



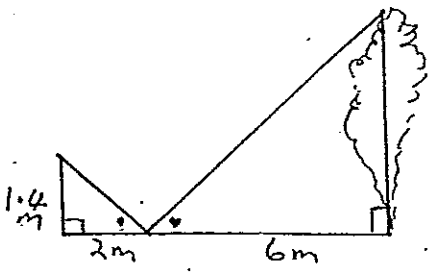
Ques.3.

The following quadrilaterals are similar. Find the value of x and y.

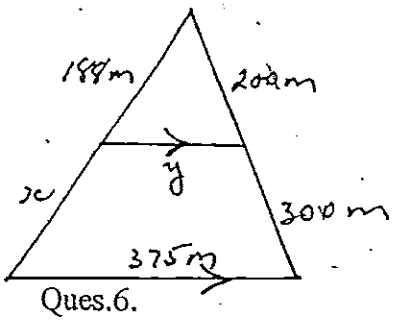


Ques.4.

In the following diagram find the height of the tree.



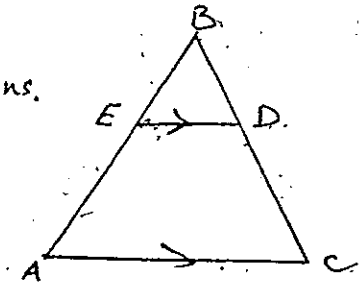
Ques.5. In the following diagram find the value of x and y.



Ques.6.

In the figure at the side D divides BC in the Ratio of 2:3., AC ∥ ED, BA=35m.

(i) Prove that $\triangle EBD \sim \triangle ABC$ giving reasons.



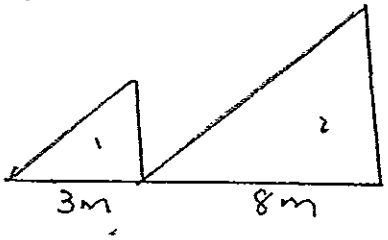
(ii) What is the ratio of BD to BC? .....

(iii) Find the length of BE. .....

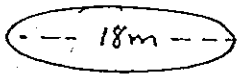
(iv) Find the length of EA. .....

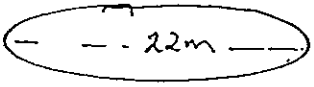
(v) Find the ratio of BE to EA. .....

Ques.7.(a) Find the ratio of the area of the smaller triangle to the larger one



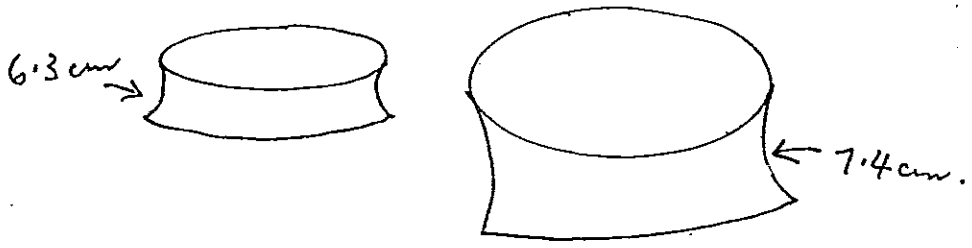
(b) If the area of the smaller ellipse is 18.0 m^2, find the area of the larger ellipse correct to 1 decimal place.





Ques.8. If the dimensions of an equilateral triangle are trebled, how is the area affected?

Ques.9.
The solids below are similar. Find the ratio of their volumes.



Ques.10.
Two similar vases were made of clay. The smaller one was 40cm tall and had a volume of 2625 cm^3 and needed 100ml of colouring to complete three coats. If the height of the ~~smaller~~ large vase is 90cm how many ml of colouring will be required for 3 Coats.

NAME: Terence Chong

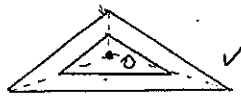
Mark: 31/31

Year 10 Advanced Mathematics

Topic Similarity

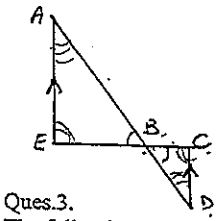
WORKING NEEDS TO BE SHOWN FOR ALL QUESTIONS

Ques.1.
Using O as the centre of enlargement and a scale factor of 2 draw the enlargement.



✓ 2

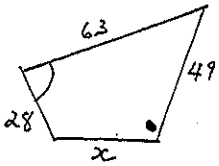
Ques.2.
In the diagram below list the two pair of corresponding sides.

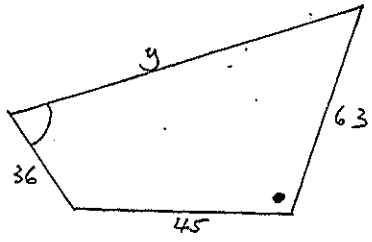


AB corresponds to DB ✓
CB corresponds to EB ✓

2

Ques.3.
The following quadrilaterals are similar. Find the value of x and y.





$\frac{x}{45} = \frac{28}{36}$

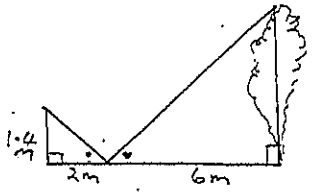
$x = 35$ ✓

$\frac{y}{63} = \frac{36}{28}$

$y = 81$ ✓

4

Ques.4.
In the following diagram find the height of the tree.



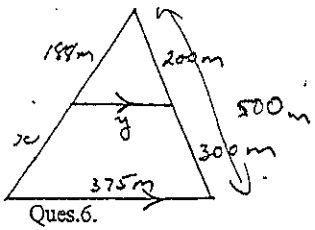
$\frac{\text{Tree height}}{1.4} = \frac{6}{2}$ ✓

Tree height = 4.2 m

2

10

Ques.5. In the following diagram find the value of x and y.



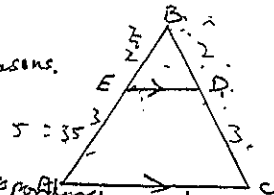
y = 150 m ✓

x = 282 m ✓

2

2

Ques.6.
In the figure at the side D divides BC in the Ratio of 2:3., AC // ED, BA=35m.



(i) Prove that $\triangle EBD \parallel\parallel \triangle ABC$ giving reasons.

In $\triangle BED$ and $\triangle BAC$
$\angle ABC$ is common
$\angle BED = \angle BAC$ (corresponding angles, $ED \parallel AC$)
~~$\angle EDB = \angle ACB$ (angle sum of triangle)~~
$\therefore \triangle BED \parallel\parallel \triangle BAC$ (equiangular)

Given

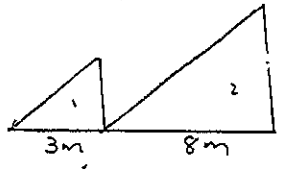
2

NOT NEEDED

(ii) What is the ratio of BD to BC? ...2:5.....
(iii) Find the length of BE. .....14 m.....
(iv) Find the length of EA. .....21 m.....
(v) Find the ratio of BE to EA. ...2:3.....

4

Ques.7.(a) Find the ratio of the area of the smaller triangle to the larger one

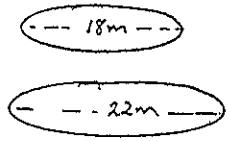


$\frac{\text{Area}_1}{\text{Area}_2} = \frac{3^2}{8^2}$

Ratio = 9:64 ✓

2

(b) If the area of the smaller ellipse is 18.0 m^2, find the area of the larger ellipse correct to 1 decimal place.



Ratio of Areas $= \frac{22^2}{18^2}$

Ratio = 121:81

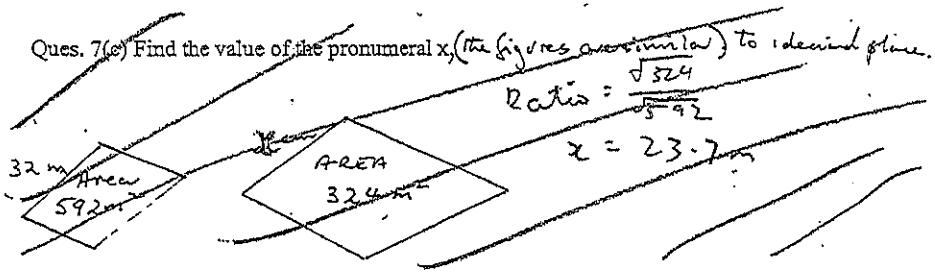
$\frac{\text{Area of large}}{18} = \frac{121}{81}$ ✓

Area of large = 26.9 m^2

2

14

Ques. 7(e) Find the value of the pronumeral x, (the figures are similar) to 1 decimal place.



$\text{Ratio} = \frac{\sqrt{324}}{\sqrt{592}}$

$x = 23.7$ m

Ques.8. If the dimensions of an equilateral triangle are trebled, how is the area affected?

$\frac{\text{Area}_1}{\text{Area}_2} = \frac{1^2}{3^2}$ The triangles' area is enlarged by 9.

Ratio = 1:9 2

Ques.9.
The solids below are similar. Find the ratio of their volumes.

$\frac{\text{Volume}_1}{\text{Volume}_2} = \frac{6.3^3}{7.4^3}$

Ratio = 250.047 : 405.224

Approximate ratio ≈ 50:81 2

Ques.10.
Two similar vases were made of clay. The smaller one was 40cm tall and had a volume of 2625 cm^3 and needed 100ml of colouring to complete three coats. If the height of the ~~smaller~~ vase is 90cm how many ml of colouring will be required for 3 coats.

large

Ratio of Areas $= \frac{90^2}{40^2}$

$= \frac{81}{16}$

$\therefore \frac{\text{Coats for large}}{100} = \frac{81}{16}$ 3

$\therefore$ Coats for large = 5060.25 ml

********** END OF TOPIC TEST 8 SIMILARITY **********