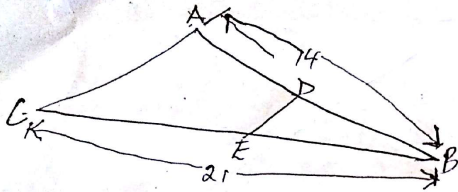


3)



$$\text{Let } BD = x$$

$$\frac{21}{14} = \frac{x+3}{x}$$

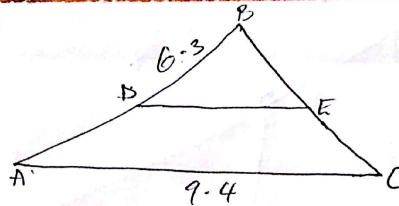
$$21x = 14x + 42$$

$$7x = 42$$

$$x = 6$$

$$\text{Therefore } AD = 14 - 6 = 8$$

4)



BD and BA are corresponding sides

$$\frac{5}{8} = 6.3$$

$$\therefore BA = 10.08$$

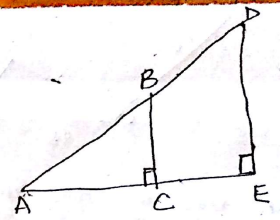
$$\frac{6.3}{10.08} = \frac{x}{9.4}$$

$$x = \frac{6.3 \times 9.4}{10.08}$$

$$x = 5.875$$

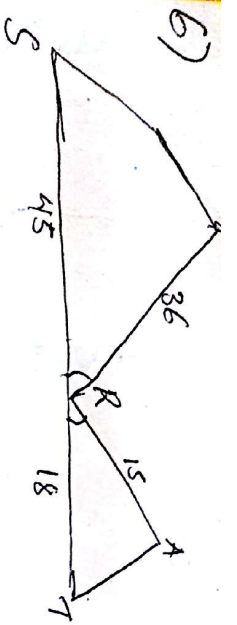
$$5.9$$

5)

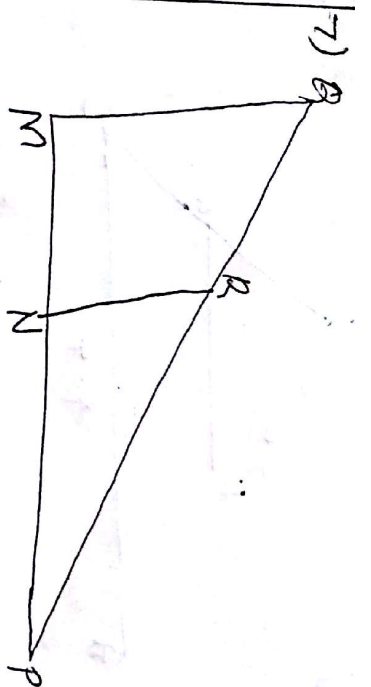


In the table above the statement which is true should indicate the ratios of the corresponding sides are equal. The correct answer is 2.

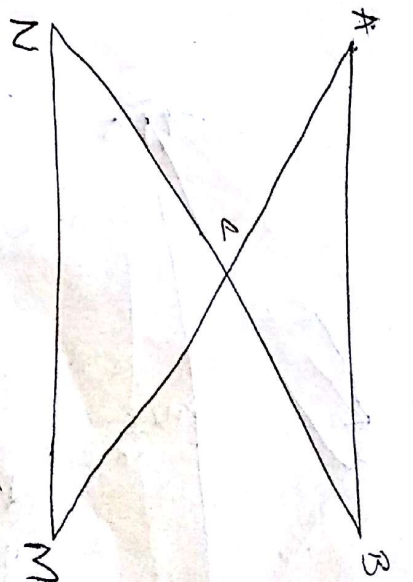
$$\frac{AB}{AD} = \frac{BC}{DE}$$



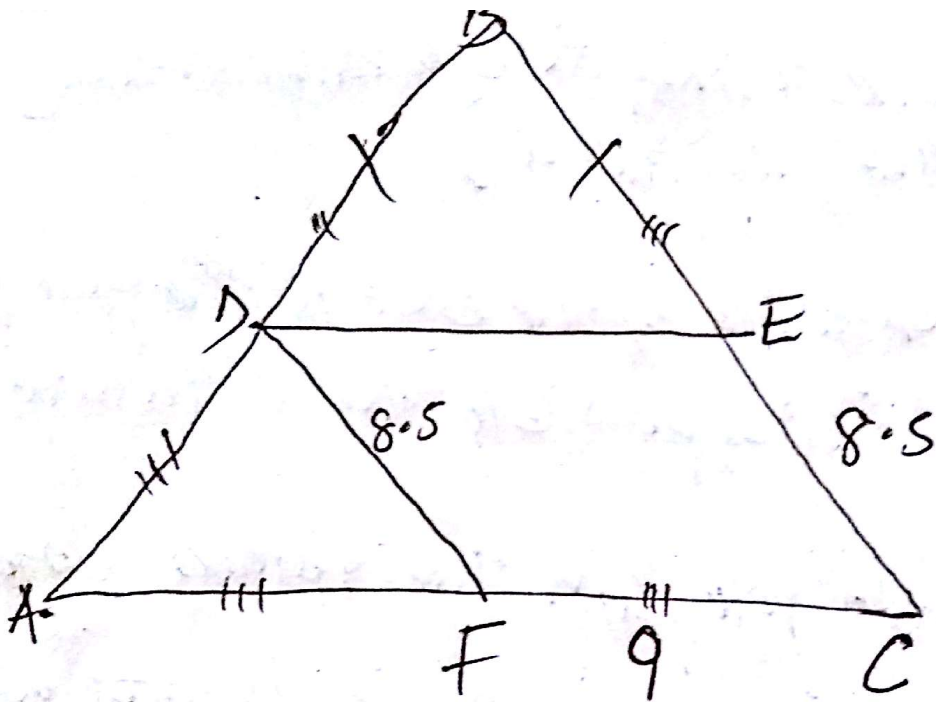
The triangle  $QRS$  and  $ART$  are not similar by either similarity on SAS, SSS, AAA, ASA,  $\frac{45}{36}$  is not equal to  $\frac{18}{15}$ .  
Corresponding angles are not equal.  
 $\triangle QRS$  is not similar to  $\triangle ART$



The correct answer is  
4)  $PM=6, PM=9, PR=8, PR=12$   
The ratios of the corresponding sides are equal.  
 $\frac{9}{6} = \frac{12}{8}$



Triangle  $ABC$  maps on triangle  $MNC$  reflection and dilation is maintained all the properties.

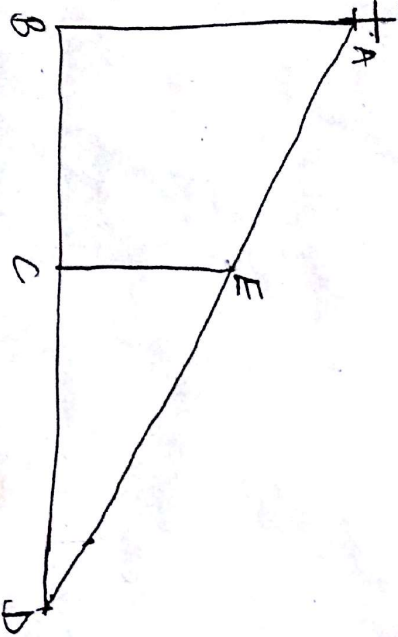


Since ~~DE~~  $DE$  ~~EF~~ is a parallelogram and hence opposite sides are equal  
 i.e.  $DE = FC$  and  $DF = EC$   
 $\therefore DE = 9$ ,  $E$  is the midpoint of  $BC$   
 hence  $CE = \frac{BC}{2} = \frac{17}{2} = 8.5$

$$\begin{aligned} \text{The perimeter} &= DE + EC + CF + FD \\ &= 9 + 8.5 + 9 + 8.5 \\ &= 35 \end{aligned}$$

10.

It is true as Jamal says that one can approximate the height of the support wire attaches to the telephone by using similar triangles.



Let AB be the telephone pole  
AC be the wooden pole  
AD be the length of support wire

AB is parallel to EC  
 $\therefore \triangle ABD$  and  $\triangle ECD$ , AB is parallel to EC

Hence ~~angle~~ Angle ABD equal to Angle ECD, corresponding angles.

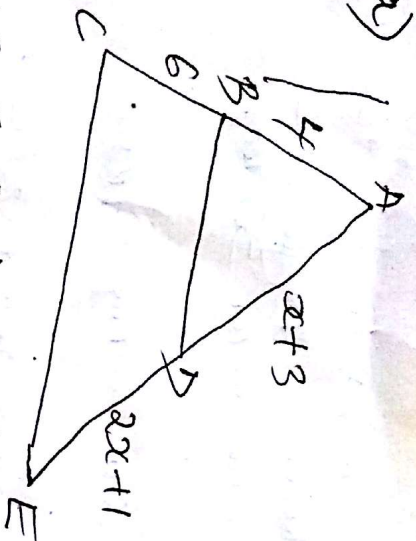
Angle ADB = Angle EDC, common Angle.

Triangle ABD = Triangle ECD, Angle Angle test of similarity.

$\therefore \frac{BD}{CD} = \frac{AB}{EC}$ , (corresponding sides of similar triangles are proportional)

Therefore if the distance of the base of the pole from the stake is given it is possible to calculate AB (telephone pole)  
If the height of the pole and the distance between the pole and the wire is given it is possible to calculate the length of support wire using the knowledge of similarities of triangles where the ratio of corresponding sides is equal.

12. a)



$\triangle ABD$  is similar to  $\triangle ACE$

That is, the ratio of corresponding sides must be equal.

$$\frac{AB}{AC} = \frac{AD}{AE}$$

$$\therefore \frac{4}{10} = \frac{x+3}{2x+1+x+3}$$

$$\frac{4}{10} = \frac{x+3}{3x+4}$$

$$12x+16 = 10x+30$$

$$12x-10x = 30-16$$

$$2x = \frac{14}{2}$$

$$x = 7$$

b)

$\triangle ABD$  is similar to  $\triangle ACE$

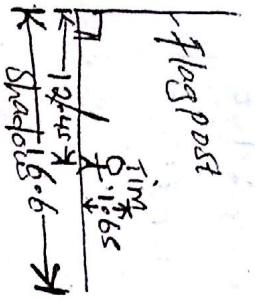
$\therefore$  The ratio of corresponding sides must be equal.

Let  $BD$  be  $x$

$$\frac{AB}{AC} = \frac{BD}{CE} \Rightarrow \frac{4}{10} = \frac{x}{30}$$

$$\Rightarrow \frac{120}{10} = \frac{10x}{10}$$

$$x = 12$$



### Calculation

$$\begin{aligned} \text{Tim's shadow} &= 16.6 - 12.45 \\ &= 4.15 \text{ M} \end{aligned}$$

Applying similarity and enlargement;

let  $x$  be the height of the flagpost.

The ratio of the flagpost divided by its shadow is equal to the ratio of Tim divided by his shadow.

$$\frac{x}{16.6} = \frac{1.65}{4.15}$$

$$\Rightarrow x = \frac{1.65 \times 16.6}{4.15}$$

= 6.6M, which is the height of the flagpost.

11.

The transformation that maps triangle ABC onto triangle ADE is dilation of triangle ABC centred at A by scale factor 3 (three).  $\downarrow$

Dilation makes all corresponding sides

proportional.

Triangle ADE is similar to triangle ABC by SAS ~~SSS~~ similarity, i.e. two sides and the included angle.