Review Exercise 14

Q.1 Which of the following are true which are false?

(i) Congruent triangles are of same size and shape. (True)

(ii) Similar triangles are of same shape but different sizes. (True)

(iii) Symbol used for congruent is '$\sim$' (False)

(iv) Symbol used for similarity is ' $\cong$' (False)

(v) Congruent triangle are similar (True)

(vi) Similar triangles are congruent (False)

(vii) A line segment has only one midpoint (True)

(viii) One and only one line can be drawn through two points (True)

(ix) Proportion is non equality of two ratio (False)

(x) Ratio has no unit (True)

Q.2 Define the following

(i) Ratio

The ratio between two a like quantities is defined as $a : b = \frac{a}{b}$ where a and are the elements of the ratio.

(ii) Proportion

Proportion is defined as the equality of two ratio i,e a : b = c : d

(iii) Congruent Triangles

Two triangles are said to be congruent (symbols $\cong$) if there emits a corresponding betweet them such that all the corresponding sides and angles are congruent.

(iv) Similar Triangles

If two triangles are similar then the measures of their corresponding sides are proportional.

Q.3 In ΔLMN shown in the figure $\overline{MN} \| \overline{PQ}$

(i) If $mLM = 5cm$, $m\overline{LP} = 2.5cm$
$mLQ = 2.3$ cm then find LN

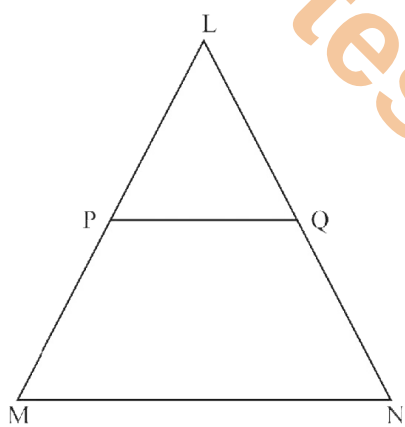
$$\frac{m\overline{LP}}{m\overline{LM}} = \frac{m\overline{LQ}}{m\overline{LN}}$$

$$\frac{2.5}{5} = \frac{2.3}{\overline{LN}}$$

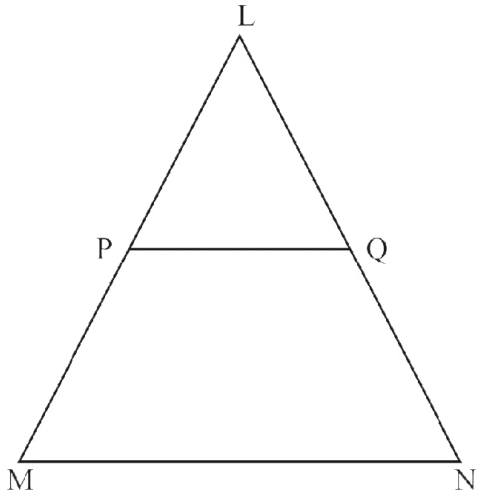
$$(2.5)\ \overline{LN} = 5 \times 2.3$$

$$\overline{LN} = \frac{11.5}{2.5}$$

$$\overline{LN} = 4.6cm$$



(ii) If mLM = 6cm , mLQ = 2.5cm
mQN = 5cm then find
mLP



$$\frac{m\overline{LP}}{m\overline{LM}}=\frac{m\overline{LQ}}{m\overline{LN}}$$

$$\frac{LP}{6}=\frac{2.5}{LN}$$

$$\overline{LN}=\overline{LQ}+\overline{QN}$$

$$\overline{LN}=2.5+5$$

$$\overline{LN}=7.5\text{cm}$$

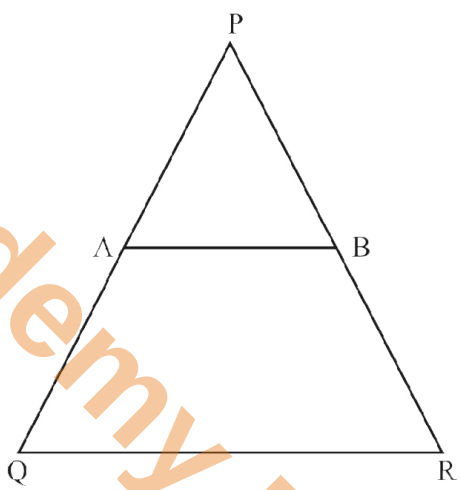
$$\frac{\overline{LP}}{6}=\frac{2.5}{7.5}$$

$$\overline{LP}=\frac{2.5\times 6}{7.5}$$

$$\overline{LP}=\frac{15}{7.5}$$

$$\overline{LP}=2\text{cm}$$

Q.4 **In the show figure let mPA = 8x – 7 mPB = 4x – 3** $m\overline{AQ}=5x-3$ $m\overline{BR}=3x-1$ **find the value of x if** $\overline{AB}\parallel\overline{QR}$



$$\frac{mPA}{mAQ}=\frac{mBP}{mBR}$$

$$\frac{8x-7}{5x-3}=\frac{4x-3}{3x-1}$$

By cross multiplying

$$(8x-7)(3x-1)=(4x-3)(5x-3)$$

$$24x^2-8x-21x+7=20x^2-12x-15x+9$$

$$24x^2-29x+7=20x^2-27x+9$$

$$24x^2-20x^2-29x+27x+7-9=0$$

$$4x^2-2x-2=0$$

$$4x^2-4x+2x-2=0$$

$$4x(x-1)+2(x-1)=0$$

$$(x-1)(4x+2)=0$$

$$x-1=0$$

$$x=1$$

$$4x+2=0$$

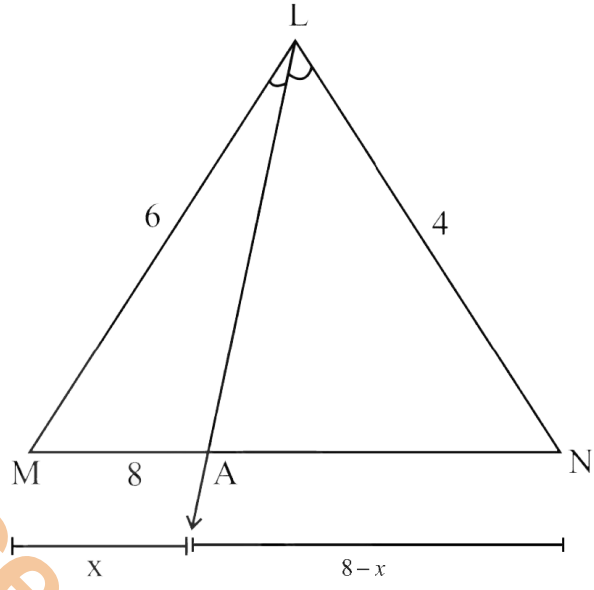
$$4x=-2$$

$$x=\frac{-\cancel{2}^{1}}{\cancel{4}_{2}}$$

$$x = \frac{-1}{2}$$

Length is always taken as positive not negative so value of $x = 1$

Q.5 In ΔLMN Shown in figure $\overrightarrow{LA}$ bisects ∠L. If $m\overline{LN} = 4m$ $m\overline{LM} = 6cm$ $m\overline{MN} = 8$ then find $m\overline{MA}$ and $m\overline{AN}$



$$\frac{m\overline{MA}}{m\overline{AN}} = \frac{m\overline{LM}}{m\overline{LN}}$$

$$\overline{MA} = x$$

$$\overline{AN} = 8\text{-}x$$

$$\frac{x}{8-x} = \frac{6}{4}$$

$$4x = 6(8-x)$$

$$4x = 48 - 6x$$

$$4x + 6x = 48$$

$$10x = 48$$

$$x = \frac{48}{10}$$

$$x = 4.8cm$$

$$m\overline{MA} = 4.8cm$$

$$\overline{MN} = \overline{MA} + \overline{AN}$$

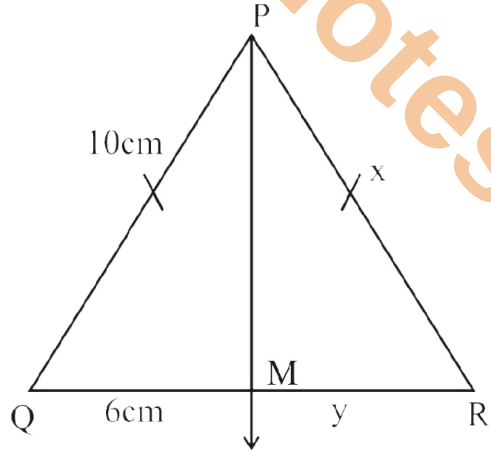
$$8 = 4.8 + \overline{AN}$$

$$8 - 4.8 = \overline{AN}$$

$$\overline{AN} = 3.2cm$$

Q.6 In Isosceles ΔPQR Shown in the figure, find the value of x and y

As we know that it is isosceles triangle



So

$$\overline{PQ} = \overline{RP}$$

$$10 = x$$

Or

$$x = 10cm$$

$\overline{PM} \perp \overline{QR}$

So it bisects the side and bisects the angle also

SO $\overline{QM} = \overline{MR}$

$6 = y$

Or

$y = 6\text{cm}$