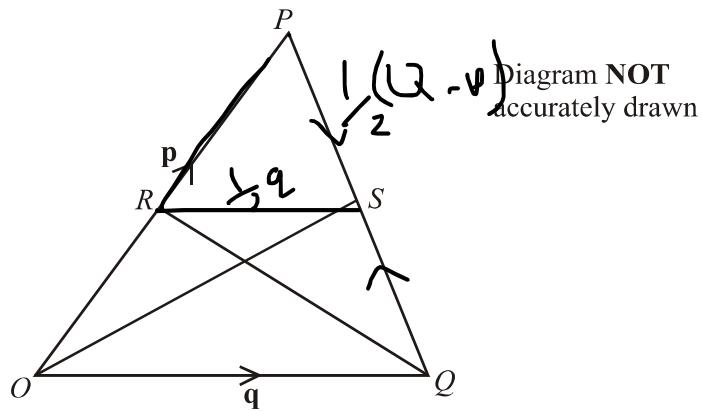


6.

 OPQ is a triangle. R is the midpoint of OP . S is the midpoint of PQ .

$$\overrightarrow{OP} = p \text{ and } \overrightarrow{OQ} = q$$

(i) Find \overrightarrow{OS} in terms of p and q .

$$\overrightarrow{PQ} = -\overrightarrow{P} + \overrightarrow{Q}$$

$$\overrightarrow{OS} = \overrightarrow{OP} + \frac{1}{2}\overrightarrow{P} + \frac{1}{2}\overrightarrow{PQ}$$

$$\overrightarrow{OS} = \frac{1}{2}q + \frac{1}{2}p$$

(ii) Show that RS is parallel to OQ .

$$\overrightarrow{RP} = \frac{1}{2}p \quad \overrightarrow{RS} = \frac{1}{2}p + -\frac{1}{2}p + \frac{1}{2}q$$

$$\overrightarrow{RS} = \frac{1}{2}q$$

$$\overrightarrow{OQ} = q$$

$$\overrightarrow{RS} = \frac{1}{2}q$$

$$\overrightarrow{OQ} = q$$

$$2\overrightarrow{RS} = \overrightarrow{OQ}$$

(5 marks)