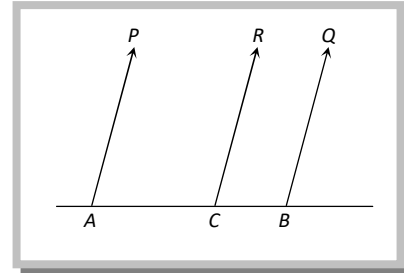


Parallel Forces.

(1) **Like parallel forces:** Two parallel forces are said to be like parallel forces when they act in the same direction.

The resultant R of two like parallel forces P and Q is equal in magnitude of the sum of the magnitude of forces and R acts in the same direction as the forces P and Q and at the point on the line segment joining the point of action P and Q , which divides it in the ratio $Q : P$ internally.

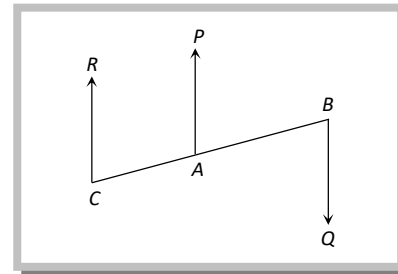


(2) **Two unlike parallel forces:** Two parallel forces are said to be unlike if they act in opposite directions.

If P and Q be two unlike parallel force acting at A and B and P is greater in magnitude than Q . Then their resultant R acts in the same direction as P and acts at a point C on BA produced. Such that $R = P - Q$ and $P \cdot CA = Q \cdot CB$

Then in this case C divides BA externally in the inverse ratio of the forces,

$$\frac{P}{CB} = \frac{Q}{CA} = \frac{P - Q}{CB - CA} = \frac{R}{AB}$$



Important Tips

☞ If three like parallel forces P, Q, R act at the vertices A, B, C respectively of a triangle ABC , then their resultant act at the

(i) Incentre of ΔABC , if $\frac{P}{a} = \frac{Q}{b} = \frac{R}{c}$

(ii) Circumcentre of ΔABC , if $\frac{P}{\sin 2A} = \frac{Q}{\sin 2B} = \frac{R}{\sin 2C}$

(iii) Orthocentre of ΔABC , if $\frac{P}{\tan A} = \frac{Q}{\tan B} = \frac{R}{\tan C}$

(iv) Centroid of ΔABC , if $P = Q = R$.