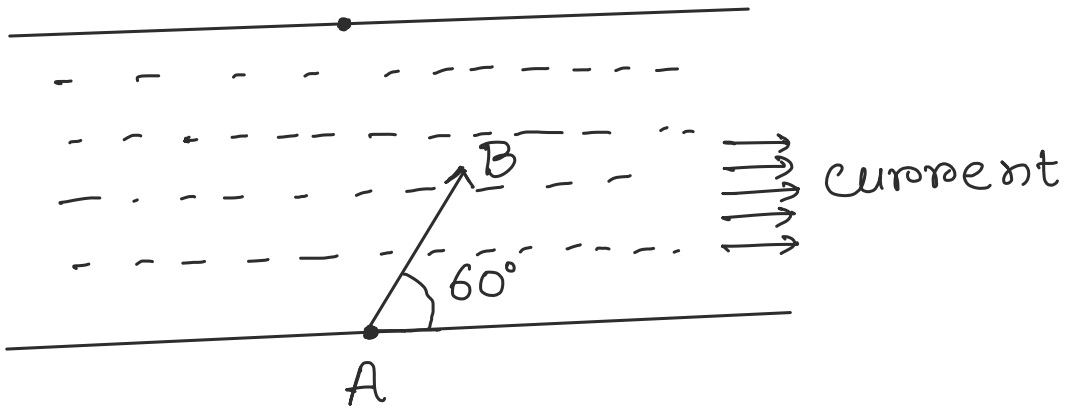
CQ

1. A boat is crossing a 2.5 km wide river from point A along AB as shown in the figure. The velocity of the boat is 5km/h and the velocity of the current is 3 km/h.



(a) What is unit vector?

(b) "It is easier to pull a lawn roller than to push" – explain mathematically.

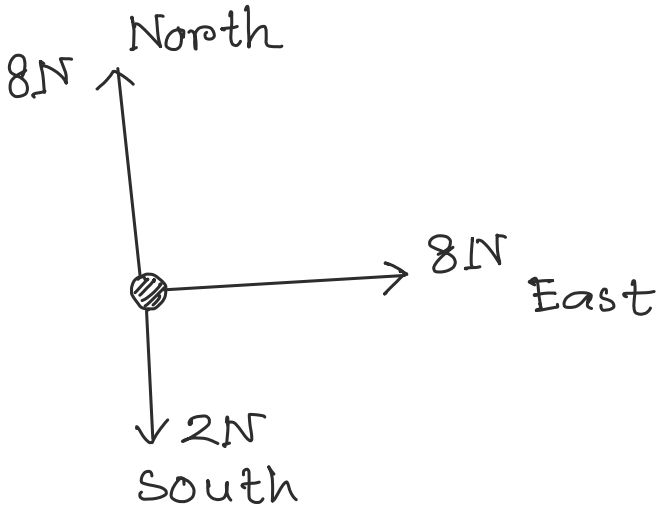
(c) What is the distance the boat will travel along the bank of the river? Also find the length of the path.

(d) Another boat is started to drive to reach at a minimum distance. One more boat is started to drive to reach in minimum time. Compare the time the three boats take. Which boat will reach at first?

$3 \times 10 = 30$

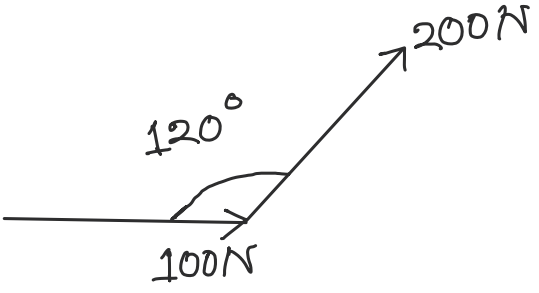
Written:

1.



Find the resultant force acting on the body.

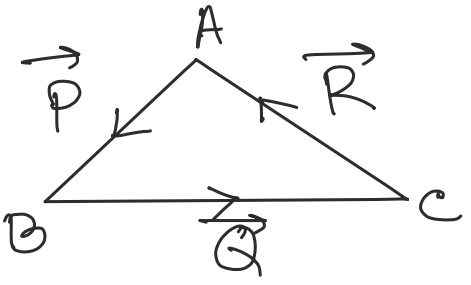
2.



Find the resultant vector.

3. A person can directly cross a river of width 100m in 4 minutes when there is no current. But it takes 5 minutes when there is current in the river. Find the velocity of the current?

MCQ $5 \times 1 = 5$

1. 

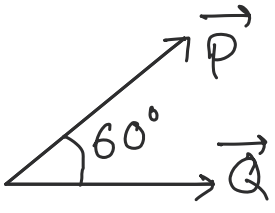
Which one is correct?

(a) $\vec{P}+\vec{Q}=\vec{R}$

(b) $\vec{P}+\vec{Q}-\vec{R}=0$

(c) $\vec{P}+\vec{Q}+\vec{R}=0$

(d) $\vec{Q}+\vec{R}=\vec{P}$

2. 

$|\vec{P}| = |\vec{Q}| = 10$

What is the direction of resultant vector?

(a) 45° (b) 30° (c) 35.43° (d) None of these

3. If the velocity of current of a river is 2km/h and the velocity of the boat is 4 km/h, at which angle the boat should be started to drive to reach at the exact opposite end of the river?

(a) 135° (b) 120° (c) 90° (d) None

4. What will be the magnitude of the resultant velocity of a boat to cross the river in minimum time? (The velocity of river is 6 km/h and current is 3km/h)

(a) 6.71 km/h (b) 7.71 km/h

(c) 5.19 km/h (d) None

5. Angle between a vector and its unit vector is —

(a) 360° (b) 180° (c) 90° (d) 0°