

Directions: Complete each interaction and draw a diagram that includes 1) a sketch of the moving/motionless object upon which the interaction occur and 2) arrows that show the relative size and direction of the forces applied (LABEL each arrow).

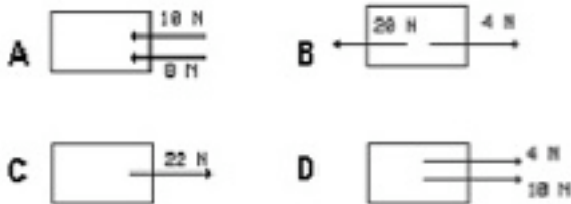
Interaction	Vector Diagram	Observations
Gently push a toy car with your finger		
2 people pull the Newton cart in opposite directions. Each person uses an equal amount of force.		
2 people push the car at the same time from opposite sides. One person applies a greater force than the other person.		
Hold a penny 20cm above the table, and then release the penny.		

Directions: Draw a vector diagram that shows all the forces involved. Calculate the net force and make the corresponding vector.

Scenario	Vector Diagram	Net Force
A car stops at the stop sign. Suddenly, a truck hits the car from behind applying a force of 50 N.		
What happens to the velocity of the car when the truck hits it?	X	
In a game of tug-of-war, one team pulls the rope to the right with a force of 20N. With a force of 15N the other team pulls the rope.		
What will happen if 2 additional players join the left team and contribute an additional 5N force?		

Some more questions:

- 1) When equilibrium is reached an object
- a) remains stationary
 - b) moves at a constant velocity
 - c) remains stationary or moves at a constant velocity
- 2) Which of the following produces the largest resultant force?



3)

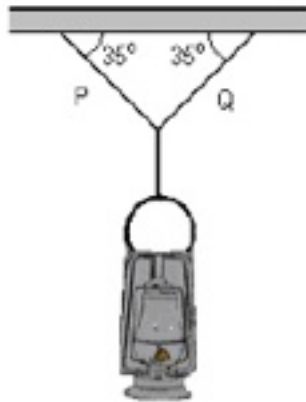


Which comparison is true about the tension of each strings in the arrangement of P ,Q and R?

- A** Tension in P > Tension in Q > Tension in R
- B** Tension in Q > Tension in P > Tension in R
- C** Tension in P > Tension in R > Tension in Q
- D** Tension in R > Tension in Q > Tension in P

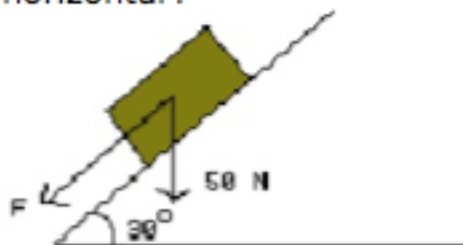
4)

Figure shows a lantern of mass 0.2 kg is suspended by a string that is joined two other strings.



5)

Figure shows a small carton of weight 50 N is placed on a inclined plane makes an angle 30° to the horizontal .



What is the value of F ?

- A** 50 N
- C** 20 N
- E** 5 N

- B** 25 N
- D** 10 N

6)

Figure(a) shows a situation in tug of war contest. The rope remains stationary at central line although the rope is pulled at opposite ends by both of teams.
 F_1 and F_2 are the forces acting at the rope.

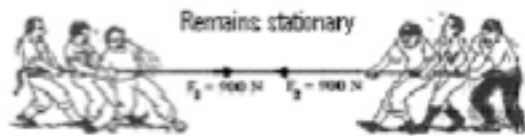


Figure (a)

7)

Figure shows three loads suspended from inelastic strings through two smooth pulleys.



If the three loads in equilibrium, what is the value of W ?

- | | |
|---------------|---------------|
| A 8 N | B 12 N |
| C 16 N | D 24 N |
| E 32 N | |

8)

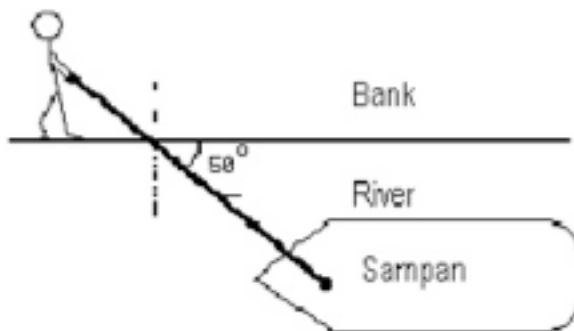


If the tension of each string is 150 N, what is the mass of the monkey?

- | | |
|----------------|----------------|
| A 5 kg | B 10 kg |
| C 15 kg | D 20 kg |
| E 30 kg | |

9)

Figure show a sampan in river is pulled by a workman. The workman pulls with a force of 400 N and the rope used make an angle 50° with the bank of the river.



(a) What is the force pulling the sampan forward.

(b) What is the force pulling the sampan to the bank?

(c) (i) If the length of the rope is increased ,
how easier for the workman to pull the sampan forward?

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(ii) Give the reason for your answer in (c)(i)