

Force and Motion Practice

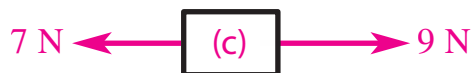
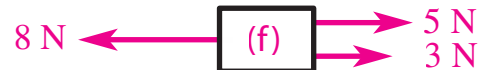
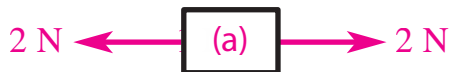
1 Describe what is meant by

(a) balanced forces

(b) unbalanced forces

(c) resultant force

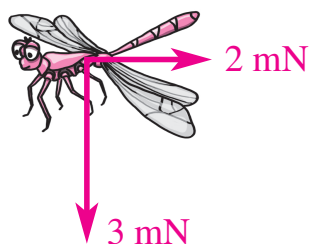
2 What is the resultant force on each block below? For each one give the strength and direction of the resultant force.



3 Add one extra force to each block above so that the forces on every block are balanced.

4 Explain what you did to work out the resultant force on each block in Q2.

5 Two of the four forces on the dragonfly are shown in the diagram. The resultant force is 1 mN upwards. Draw the extra forces and label their strengths.



- 6 Describe what will happen to
- (a) a stationary suitcase with balanced forces,
 - (b) a moving trolley with balanced forces,
 - (c) a moving trolley with a resultant force pushing forwards (in its direction of motion),
 - (d) a moving trolley with a resultant force pushing backwards (against its motion),
 - (e) a moving trolley with a resultant force pushing it sideways.

- 7 Fill in the table to say what will happen to each object. Choose your answers from **speeds up, slows down, stays still, steady speed, turns**.

Object and motion	Relevant force(s)	What happens
Truck driver 'puts foot down [*] '	engine force $>$ friction	
Planet moving away from star	gravity force	
Cow sleeping in a field	weight = support force	
Moving express train	engine force = friction	

★ this means they press the accelerator pedal as far as it will go.

- 8 Add contact, weight and drag forces (where needed) on a basketball thrown upwards
- (a) as it is being thrown,
 - (b) just after letting go,
 - (c) at the top of its motion.



- 9 A bungee jumper steps off a bridge. Give the direction of the resultant force when
- (a) the bungee has just gone taut (it begins to stretch),
 - (b) at the bottom of their motion,
 - (c) as the bungee goes slack on the way up.