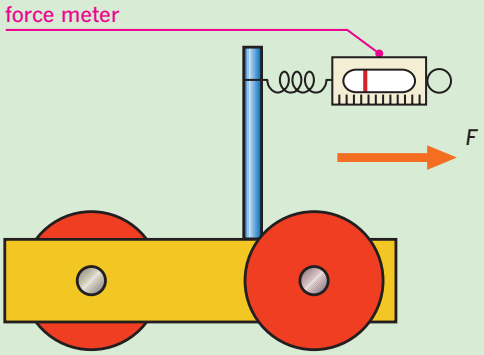
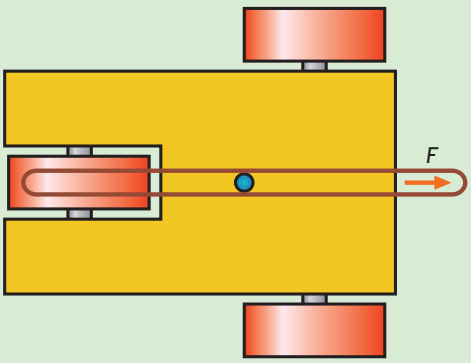
Nature of forces

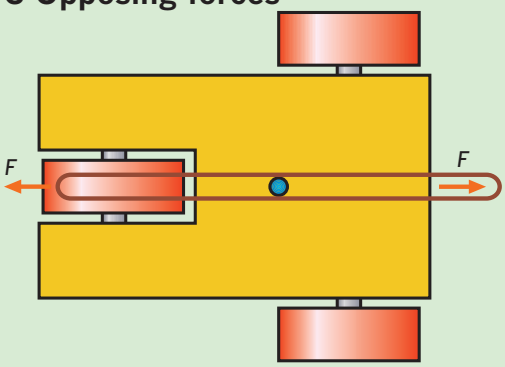
1 Measuring force applied



2 Force applied to a trolley

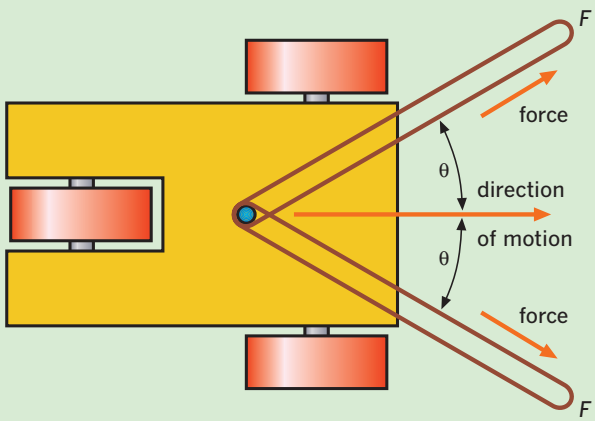


3 Opposing forces



Equilibrium – no motion or constant motion

4 Vector nature of force



Key words

mass
scalar
vector

Nature of forces

- Force is a *vector*, rather than a *scalar*, quantity—i.e. it has both magnitude and direction.
- Scalar quantities, such as *mass* and length, are added using normal arithmetic but vectors are added geometrically using the parallelogram law (page 12) which considers both their directions and their magnitudes.

1 Measuring force applied

- The force applied to a trolley is measured using a force meter or a newton meter.

2 Force applied to a trolley

- When a force F is applied to the trolley it accelerates in the direction of the force.

3 Opposing forces

- If equal forces are applied to the trolley but in opposite directions, the trolley will remain stationary or, if it is already in motion, it will continue in constant motion.

4 Vector nature of force

- If forces are applied at an angle, the resulting motion is calculated using the parallelogram law.
- In this case, equal forces are applied at equal angles to the trolley's axle and the trolley moves in the direction shown.