Forces	1. Speed

CONCEPT 3   **TEST YOURSELF**

RELATIVE MOTION

KNOW »

Q1   A person sets off jogging along a canal path at 12 km/h at the same time as a boat sets off at 10 km/h in the same direction.

(a) How will the motion of the boat look to the person?
(b) How will the motion of the person look to someone in the boat?

Q2   Copy and complete the paragraph below:

The relative speed of objects depends on their _____ motion. If two objects are moving in the same direction, you must find the _____ between the two speeds to find the relative _____ of the two objects. However, if they are travelling in _____ directions, the relative speed is the sum of the two speed; you need to _____ them up.

APPLY »»

Q3   Lifts 1 and 2 both travel at 8 m/s on the outside of a tall skyscraper. What is their relative speed when:

(a) they are both going up?   (b) lift 1 is going up and lift 2 is going down?

(c) they are both going down?   (d) lift 1 is stationary and lift 2 is going up?

Q4   Oliver is throwing a ball for his dog. He throws the ball at a speed of 15 m/s. The dog runs after the ball at a speed of 20 m/s.
Calculate how fast the ball is moving relative to the dog.

Q5   Adam is standing at the top of the down-escalator. Megan is standing at the bottom of the up-escalator. They both go onto the escalators. Both escalators are moving at 0.8 m/s.
Calculate the relative speed of Adam and Megan as they pass each other.

EXTEND »»»

Q6   Joe is walking at a speed of 1 m/s along a moving walkway at the airport. The surface of the walkway is moving at 0.5 m/s in the same direction Joe is walking. Liam is walking the opposite direction to Joe at 0.75 m/s.
Calculate how fast Joe appears to be moving from Liam's point of view.