

- Arthur and Betty start walking toward each other when they are 100. m apart. Arthur has a speed of 3.0 m/s and Betty has a speed of 2.0 m/s. Their dog, Spot, starts from Arthur's side at the same time and runs back and forth between them. By the time Arthur and Betty meet, what is Spot's displacement?
- A car is 200. m from a stop sign and traveling toward the sign at 40.0 m/s. If the driver realizes they must stop the car at this time. It takes 0.200 s for the driver to apply the brakes. What must the constant acceleration of the car be after the brakes are applied so that the car would come to rest at the stop sign?
- An object is dropped from a bridge. A second object is thrown downwards 1.00 s later. They both reach the water 20.0 m below at the same instant. What was the initial speed of the second object?
- A swimmer heading directly across a river 200. m wide reaches the opposite bank in 6.0 min 40. s. She is swept downstream 480. m. What is the speed of the current?
- A 60.0-kg person rides in an elevator while standing on a scale. The scale reads 400. N. What is the acceleration (magnitude and direction) of the elevator?
- A child throws a ball with an initial speed of 8.00 m/s at an angle of 40.0° above the horizontal. The ball leaves her hand 1.00 m above the ground. How far from where the child is standing does the ball hit the ground?
- Object A is acted on by only object B. The mass of object A is 20.0 kg and its acceleration is 4.00 m/s^2 west. Object B is acted on by two forces, the force of object A on object B and another unknown force. If mass of object B is 40.0 kg and the acceleration of object B is 3.00 m/s^2 west, what is the unknown force?
- The three forces shown in the figure act on an object. What fourth force must act on the object so that the object does not accelerate?

