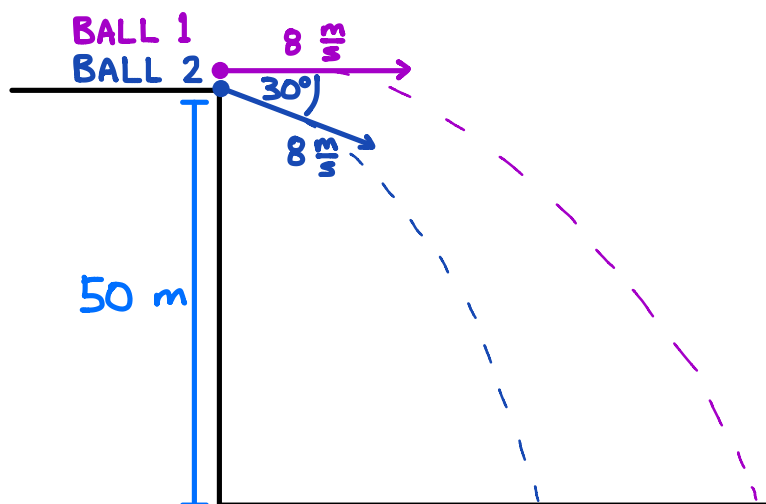


Bob walks 500 m  $25^\circ$  east of south, then 600 m north. What is his total displacement?

A car is initially 6 km east of home. Thirty minutes later, it is 3 km south of home. What is the displacement of the car during the 30 minutes?

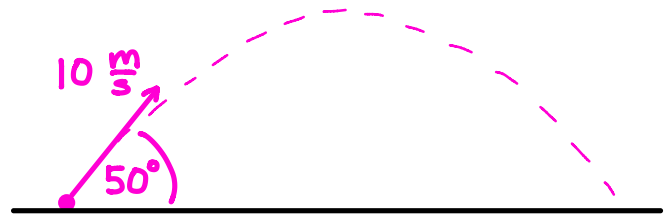
A plane travels with an airspeed of 600 km/h and aims  $40^\circ$  west of north. An 80 km/h wind blows south. What is the velocity of the plane relative to the ground?

Two balls are launched from a 50 m high cliff as shown. Determine the range of each ball.



A ball is launched from level ground at a velocity of  $10 \text{ m/s}$   $50^\circ$  above the horizontal. Determine

- the maximum height
- the range
- the impact velocity



Bob walks 500 m  $25^\circ$  east of south, then 600 m north. What is his total displacement?

$$257 \text{ m } 34.8^\circ \text{ N of E}$$

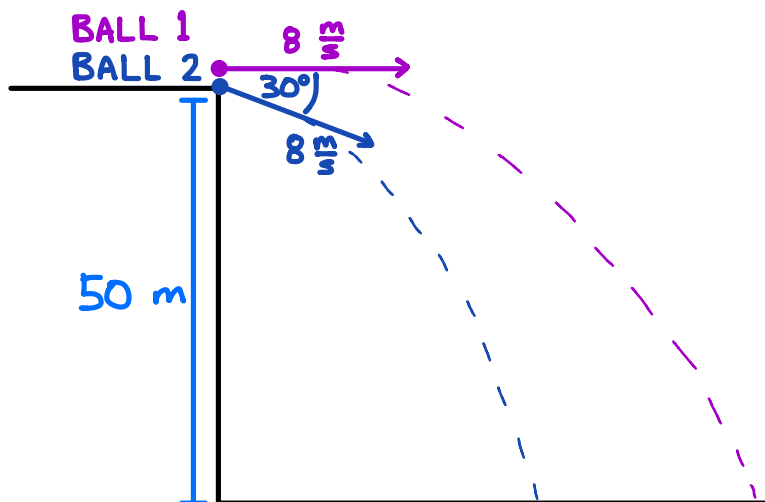
A car is initially 6 km east of home. Thirty minutes later, it is 3 km south of home. What is the displacement of the car during the 30 minutes?

$$6.71 \text{ km } 26.6^\circ \text{ S of W}$$

A plane travels with an airspeed of 600 km/h and aims  $40^\circ$  west of north. An 80 km/h wind blows south. What is the velocity of the plane relative to the ground?

$$532 \frac{\text{km}}{\text{h}} 34.3^\circ \text{ W of N}$$

Two balls are launched from a 50 m high cliff as shown. Determine the range of each ball.



$$d_{1x} = 25.6 \text{ m}$$

$$d_{2x} = 19.5 \text{ m}$$

A ball is launched from level ground at a velocity of  $10 \text{ m/s}$   $50^\circ$  above the horizontal. Determine

- a) the maximum height  $2.99 \text{ m}$
- b) the range  $10.0 \text{ m}$
- c) the impact velocity  $10 \frac{\text{m}}{\text{s}} \quad 50^\circ \text{ BELOW THE HORIZONTAL}$

