

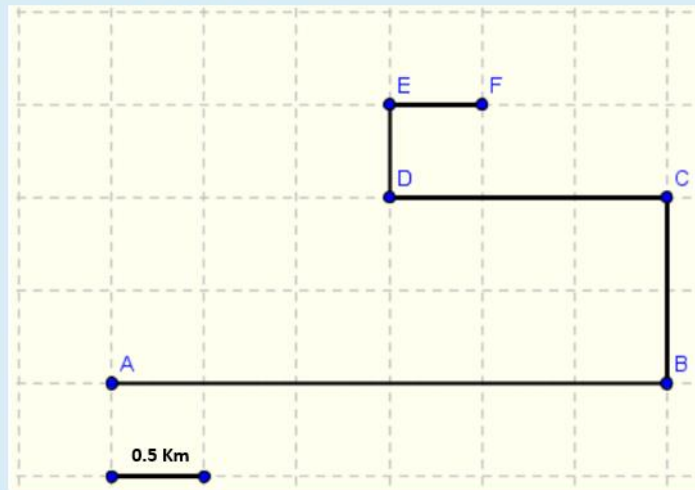
Sample Question Paper – Physics Test

Which of the following equations is dimensionally correct?

Select one:

- a. Acceleration = $M^0L^2T^{-2}$
- b. Acceleration = $M^1L^1T^{-2}$
- c. Acceleration = $M^0L^1T^{-2}$
- d. Acceleration = $M^2L^2T^{-2}$

An object moves along the grid through the points A, B, C, D, E, and F as shown below.



a) The distance covered by the moving object is km.

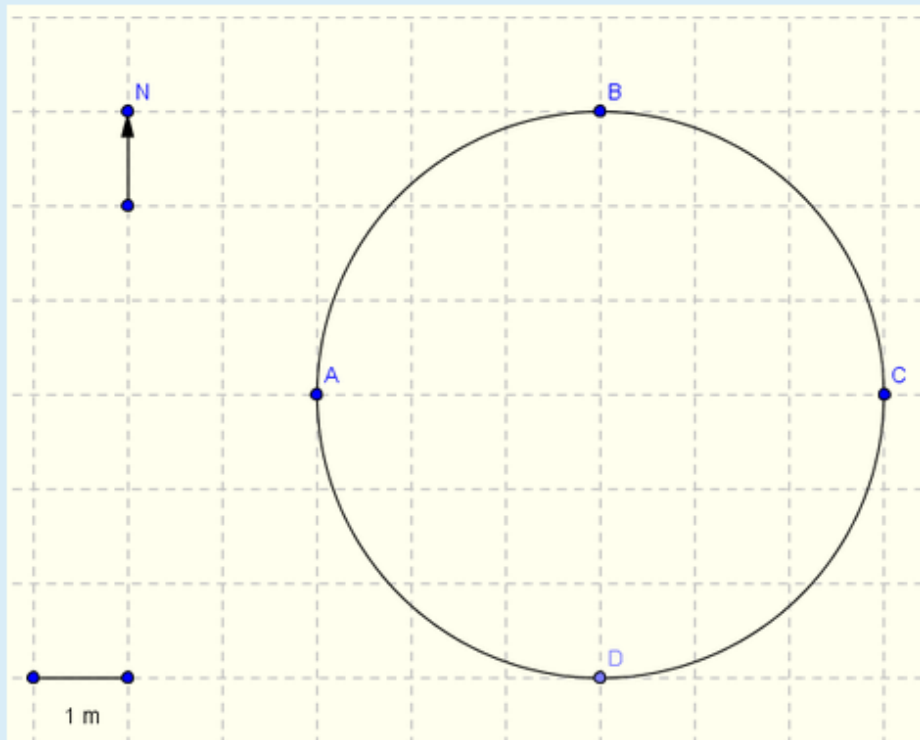
b) The magnitude of the displacement of the object is km.

A person throws a ball upward into the air with an initial velocity of 20.0 m/s. Calculate

(a) how high it goes m.

(b) Ignore the air resistance, how long the ball is in the air before it comes back to the hand s.

An object moves from point A to B to C to D along the circle shown in the figure below.



a) The distance covered by the moving object is m

b) The magnitude of the displacement of the object is m

Suppose a car merges into freeway traffic on a 200-m-long ramp. If its initial velocity is 10.0 m/s and it accelerates at 2.00 m/s^2 , how long (in seconds) does it take to travel the 200 m up the ramp?

Answer:

Vector 1 is 7 units long and is at 70° . Vector 2 is 5 units long and is at 155° . Vector 3 is 3 units long and is at 225° . Which vector has equal magnitude components?

Select one:

- a. Vector 1
- b. Vector 2
- c. Vector 3
- d. None of the above

Vector **A** points north and vector **B** points east. If $\mathbf{C} = \mathbf{B} - \mathbf{A}$ then vector **C** points:

Select one:

- a. south of west
- b. south of east
- c. north of east
- d. north of west

Vector **A** is 3.0 units in length and points along the positive x axis; vector **B** is 5.0 units in length and points along a direction 150° from the positive x axis. What is the magnitude of the resulting vector when vectors **A** and **B** are added?

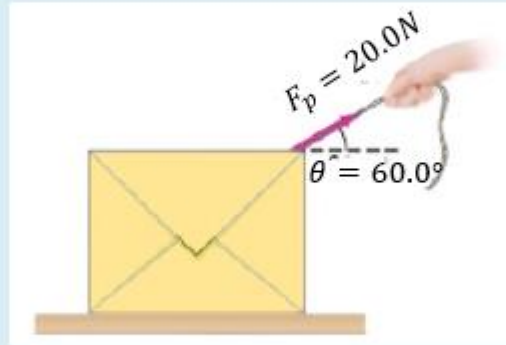
Find the sum of the following two vectors: (i) 50 units due east and (ii) 100 units 30° south of west.

units degrees south of west.

What average net force (in newtons) is required to bring a 800-kg car to rest from a speed of 120 km/h within a distance of 80 m?

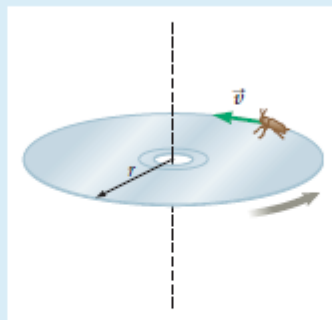
Answer:

A box of mass 15.0 kg is pulled by the attached cord, as shown in figure, along the smooth surface of the table. The magnitude of the force exerted by the person is $F_p = 20.0\text{ N}$, and it is exerted at a 60.0° angle. Calculate the acceleration (in m/s^2) of the box.



Answer:

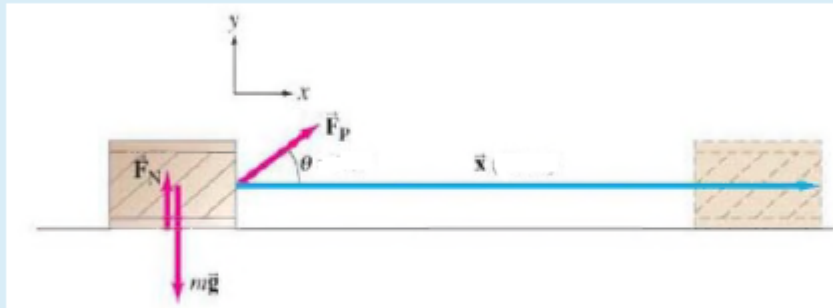
A bug is sitting on the edge of a compact disc of radius $r = 10.0\text{ cm}$. The bug undergoes uniform circular motion as the CD spins.



(a) If the bug traverses this circle exactly 5 times in precisely 1 second, what is the period of the motion? seconds.

(b) What is the bug's speed? m/s

A person pulls a 50-kg crate $x=50$ m along a horizontal floor by a constant force $F_p = 100$ N, which acts at a 60° angle as shown in the figure. The floor is smooth and exerts no friction force.



Determine

(a) the work done by each force acting on the crate Joules.

(b) the net work done on the crate Joules.