Three forces act on an object. In which direction does the object accelerate?



An object is <u>lowered</u> by a rope at a <u>constant speed</u>. The net force on the object is

(vis dowņ and constant)

- A: upward
- B: downward
- C: zero
- D: not enough information given.

A constant force is exerted on a cart that is initially at rest on an air track. Friction between the cart and the track is negligible. The force acts for a short time interval and gives the cart a certain final speed.



To reach the same final speed with a force that is only half as big, the force must be exerted on the cart for a time interval

- a) four times as long as
- b) twice as long as
- c) equal to
- d) half as long as
- e) a quarter of

that for the stronger force.

A constant force is exerted for a short time interval on a cart that is initially at rest on an air track. This force gives the cart a cer- tain final speed. The same force is exerted for the same length of time on another cart, also initially at rest, that has twice the mass of the first one.



The final speed of the heavier cart is

a) one-fourth
b) four times
c) half
d) double
e) the same as

that of the lighter cart.



Three people are pulling on a ring in a 2-D tug of war. The figure shows a plan view of the situation.

No one is winning - the ring is sitting still.

The pulls are configured as shown (teams 1 and 2 are each pulling with a force of 100 N. Team 3 pulls with unknown force T3)



What is the net force on the ring?A) 0 NB) 200 NC) 200 $sin(\theta) N$ D) Not enough info to decide.

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How hard is team 3 pulling?

A) 100 N B) 200 N C) 141 N D) 71 N E) 0 N

Consider a person standing in an elevator that is accelerating upward. The upward normal force N exerted by the elevator floor on the person is

- a. larger thanb. identical to
- c. smaller than

the downward weight W of the person.

Consider a horse pulling a buggy. Is the following statement true?

The weight of the horse and the normal force exerted by the ground on the horse constitute an interaction pair that are always equal and opposite according to Newton's third law.

a. yes b. no An object is held in place by friction on an inclined surface. The angle of inclination is increased until the object starts moving. If the surface is kept at this angle, the object

a. slows down.

- b. moves at uniform speed.
- c. speeds up.
- d. none of the above