Partner quiz Veterans’ Day Force 1

For all questions, consider to the *right*,and *up* positive

1. For each of the following pairs of objects, which one has more inertia?

A. A freight train or a car?

B. A ping pong ball or a baseball?

C. A fast bowling ball or a slow bowling ball?

D. A 20 kg mass or a 10 kg mass?

E. A rock on the earth or a rock in space?

F. A fast baseball or a bowling ball at rest?

2. Identify the following forces as F (applied), T, Fg (weight), Ff (friction), or FN.

A. \_\_\_\_\_ From a rope or a string.

B. \_\_\_\_\_ Opposes weight for objects on surfaces.

C. \_\_\_\_\_ You push down on an object on a table, this increase.

D. \_\_\_\_\_ Caused by gravity.

E. \_\_\_\_\_ Would decrease on the moon.

F. \_\_\_\_\_ Decreases if a surface is smooth.

G. \_\_\_\_\_You place a heavy object onto a board. The board will break if this is too small.

H. \_\_\_\_ Always vertical.

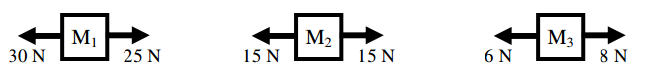
I. \_\_\_\_\_ If a surface is tilted, this changes direction, too.

J. \_\_\_\_\_ Has the units of Newtons.

K. \_\_\_\_ Doesn’t exist for hanging objects.

3. While a force is acting on an object, list three things that can happen

4. Calculate the net force on M1. 5. Calculate the net force on M2. 6. Calculate the net force on M3.



7. Which of the above masses: M1, M2, or M3?

A. \_\_\_\_ Which could be at rest?

B. \_\_\_\_ Acceleration is negative.

C. \_\_\_\_ Acceleration is positive.

D. \_\_\_\_ Has a net force of 0 N.

E. \_\_\_\_ Has a net force (Fnet ≠0)

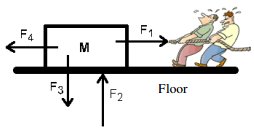
F. \_\_\_\_\_ Has balanced forces.

G. \_\_\_\_\_ Could be changing direction.

H. \_\_\_\_\_ Has unbalanced forces.

I. \_\_\_\_\_ Could be a constant speed.

J. \_\_\_\_\_ Could be slowing down to the left.



8. Two very small people are pulling a box. Identify the four shown forces as Ff (friction); FT; Fg; FN. The “Σ” symbol is sigma and means to add up all of the forces.

A. \_\_\_\_\_ F1— the two men pulling WITH A ROPE.

B. \_\_\_\_\_ F2— the force pushing up by the floor.

C. \_\_\_\_\_ F3— the force pulling down on the mass.

D. \_\_\_\_\_ F4— the force trying to stop the mass from moving.

E. \_\_\_\_\_ Which force is in the negative x-direction?

F. \_\_\_\_\_ Which force is in the positive y-direction?

G. \_\_\_\_\_ Which force is in the positive x-direction?

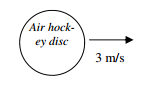
H. \_\_\_\_\_ Which force is in the negative y-direction?

I. Which forces would be used in this equation:

ΣFy = may=

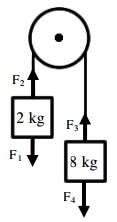
J. Which forces would be used in this equation:

ΣFx = max=

9. Imagine a giant air hockey table, several miles across. Because there is a layer of air everywhere, **there is NO friction**. We will also assume that the disc has no air resistance. The disc is pushed and moves with an initial velocity of 3 m/s to the right. How far will the disc go?

10. Because there is no friction, what will its speed be after 40 seconds?

11. Two masses are attached by a rope that is threaded around a pulley, as shown. Identify the four shown forces as Ff (friction); FT; Fg; FN. **Calculate the acceleration** show work with summation equations. Finding the tension later☺



A. \_\_\_\_ F1 (the force pulling down on the 2 kg mass).

B. \_\_\_\_ F2  (the force of the rope pulling up on the 2 kg mass).

C. \_\_\_\_ F3 (the force pulling up on the 8 kg mass).

D. \_\_\_\_ F4 (the force pulling down on the 8 kg mass).

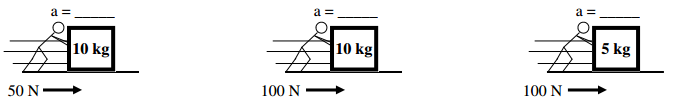
E. Which two forces are equal?

F. Why?

G. Calculate F1.

H. Calculate F4.

12. i) A man pushes on a 10 kg mass with 50 N. Draw FBD’s, Calculate the acceleration of the mass. (mu=0.1) not frictionless.



ii. The man then doubles his force. Draw a FBD, Calculate the new acceleration of the mass.

iii. The mass of the object is then halved. Draw a FBD, Calculate the new acceleration.

13. So, from what you just learned above:

A. If you double the applied force the acceleration:

B. If you half the mass, the acceleration of the object:

C. If you applied four times the force, the acceleration would be:

D. If you doubled the mass of the object, the acceleration would: