

FORCES REVIEW

- 1) _____ The law of inertia applies to
A. moving objects
B. objects at rest
C. both moving and nonmoving objects
- 2) _____ Friction acts in a direction that
A. opposes the motion of an object
B. adds to the motion of an object
C. does not affect the motion of an object
- 3) A trailer has a mass of 455kg. What is its weight in newtons? _____
- 4) A jumbo jet has a mass of 15,000kg and each of its four engines provide 15,000N of thrust.
-What is the acceleration of the jet? _____
- 5) _____ An object weighs 30N on Earth. A second object weighs 30N on the moon. Which object has the greater mass?
A. the one on Earth
B. the one on the moon
C. they have the same mass
- 6) _____ If the force applied to an object is constant the mass of the object is _____ to its acceleration.
A. directly proportional
B. indirectly proportional
C. not proportional
- 7) Miranda throws a 0.4kg ball at 17m/s at Taylor who catches it with a force of -200N. How long does it take the ball to stop?
- 8) An 80kg box is falling with a force of 340N while the air resistance is 175N.
-What is the net force of the box? _____

- What is the acceleration of the box? _____
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- 9) _____ When the net force acting on an object is zero, the object maintains a _____.

- A. constant acceleration
- B. constant mass
- C. constant velocity
- D. constant deceleration

- 10) _____ A student hits a nail with a hammer. During the collision, there is a force:

- A. on the hammer, but not the nail
- B. on the nail, but not the hammer
- C. on the nail and the hammer

11) Dalton got his truck stuck in the mud. His tires were pushing forward with a force of 1,500N and his friend pushes forward with a force of 400N while the mud is pushing back against his truck is pushing backwards with a force of 1750N.

- What is the net force? _____

-If the mass of the truck is 1,275kg, what is the truck's acceleration? _____

12) Steve fires a gun that shoots a bullet that accelerates from rest to 250m/s in 0.05s. If the mass of the bullet is 0.02kg, what is the acceleration of the 1.2 kg gun?

- 13) _____ If the mass of a cart is halved and the force stays the same, the acceleration of the cart:

- A. quadruples
- B. doubles
- C. halves
- D. stays the same

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14) _____ I push a box with 10N of force at a constant velocity of 5m/s, the force of friction is:

- A. 0N
- B. 10N
- C. 50N

15) At the start of the Aerosmith roller coaster the electromagnets launch the 11,000 kg train from rest to take off speed in 0.8s. If the force of the catapult is 360,000N, how fast is the takeoff speed?

16) Kim, whose mass is 57 kg, jumps off the front of a boat with an acceleration of 2.5 m/s^2 . This causes the boat to accelerate at 0.22 m/s^2 .

- What is the net force of the boat? _____

- What is the acceleration of the boat? _____

17) Two exactly similar footballs are sitting on tees right next to each other. If the first one is kicked by an NFL kicker (someone that can exert a huge force) and the other one is kicked by 2nd grader, the first ball flies farther. Which law is represented here?

18) When you slam on your brakes, your passenger moves forward into his seatbelt. Which law is represented here?

19) A train travels at a constant rate of 20 m/s. after it goes through the station and receives more passengers it takes more force to maintain this speed. Which law is represented here?

20) When you fire a rifle, it slams back into your shoulder. We call this recoil. Which law is represented here?

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21) Trying to move a boulder is almost impossible. However, once you get it rolling it's even more impossible to stop. Which law is represented here?

22) Olivia is pulling Grant to the east with 425 N of force while Tristen is pulling her west with a force of 505N. If Tiffany accelerates at 1.55 m/s^2 , what is her mass?

23) Roshod, whose mass is 68 kg, was running toward the end zone when the safety hit him with a force of 555 N. What is his acceleration?

24) Griffin was mad about not being on the lunch list so he slammed his 3.4 kg bag down with an acceleration of 4.3 m/s^2 . How much force did slam it down with?

25) If Jose catches a .15kg baseball going 41m/s and stops it in .35s. How much force did he exert to stop the ball?