

Applications of Newton's Laws

Formative Assessment

Name _____
Date _____ Block _____

Answer completely in the space provided. You may do any work on the back.

1. How much friction is opposing the constant non-accelerated motion of a box being pulled with 300 N of force?

300 N - since no acceleration, forces must be balanced

2. What causes you to push against the passenger door of the car when the car makes a left sharp left turn?

Your inertia - you tend to keep going forward but the car turns in your way

3. The amount of force needed overcome friction and get a block of wood moving is _____ than the force needed to overcome friction to keep it sliding.

more - static is more than sliding

4. How much net force is acting on a falling object that has reached terminal velocity?

zero - air resistance balances the weight

5. When do you exert more pressure on the ground: when you stand on two feet or balance on one foot?

one foot - less surface area, same force

6. How many Newtons does Anna's 40 kg poodle weigh? $g = 10 \text{ m/s}^2$

400 N - using $W = m \cdot g = 40 \text{ kg} \cdot 10 \text{ m/s}^2$

7. John and Patrick are riding on a merry-go-round. John is near the center and Patrick is on the outer edge. Who has the greater linear speed?

Patrick - he is traveling a larger distance every time around, but in the same time

8. What is the name of the force that holds any object in circular motion?

centripetal force

9. A 45 N box has a surface area of 10 cm^2 . What pressure does it exert on the floor?

$4.5 \text{ N/cm}^2 - P = F/A = 45 \text{ N}/10 \text{ cm}^2$

10. What two factors determine the amount of gravitational force an object experiences?

mass of the objects and distance between them

11. What two factors affect the amount of air resistance pushing up against a falling object?

surface area of object and speed of object

12. Draw a free body diagram of a couch being pushed forward with a constant velocity. Label all forces acting on the couch.

arrows should show that push = friction...
weight = normal

