Physics 11 Unit 2 – Worksheet #5 - Newton's 2nd Law and Forces review

Name: _____

1. Weight is measured in _____ and also called _____

2. If you go to the moon, which changes, mass or weight? _____

3. The two names for "g" are . . .

_____ and _____

4. Write out Newton's three laws in your own words. If you can't remember them Google is your friend.

5. The coefficient of friction usually has a range of _____to _____.

Slippery surfaces have a coefficient around _____ and grippy surfaces have a coefficient of around _____

6. A 4.5 kg block sits on a flat frictionless table. The block is pulled to the right by a 21 N force. Find the acceleration of the block.

7. A 60 kg box sits on the floor. The coefficient of friction is 0.36
A 400 N horizontal force is applied to the box. Find the acceleration of the box.

8. A 500 kg rocket sitting on the launch pad has a thrust of 16,000 N. Find the acceleration of the rocket.

9. A 2500 kg rocket sitting on the launch pad has a thrust of 47,000 N. Find the acceleration of the rocket.

10. A 500 kg rocket (near the surface of the Earth) has an acceleration of 67 m/s^2. Find the required thrust.

11. A 500 kg rocket (near the surface of the Earth has a thrust of 4100 N. Find the acceleration of the rocket.

12. A 50 kg girl riding in an elevator is accelerating up at 3.4 m/s^2. Find the force required from the floor to cause this acceleration.

13. A 75 kg person riding in an elevator is accelerating down at 2.2 m/s^2. What would a scale under the persons feet read?

14. A seat belt is rated for 10,000 N breaking strength. What is the maximum acceleration of a 95 kg human possible without breaking the seatbelt?

Harder problems

15. A 76 kg person is travelling in a car at 120 km/hr. If the seatbelt can exert 11,000 N of force before failing, what is the shortest time distance the car can stop in without the seatbelt failing?

16. The coefficient of friction between the road and the tires of a 2200 kg car is 0.65
What is the maximum acceleration of the car?