Name __Key 2020__ Per ____

OBJECTIVE: Review vocabulary from Obj 3-5

Fill-in-the-blank!

1. A ___force___ is a push or pull and is measured in __Newtons.__

Describe an example:

2. I push to the right with a force of 50 Newtons, while my friend pushes to the right with a force of 25 Newtons. The ___net force___ is 75 Newtons to the right.

Insert a picture describing this concept using opposite forces. Label using numbers.

25 N ←→ 30 N   Net Force is 5 N→

3. ___Balanced forces___ are equal and opposite on the same object. For example, two people playing tug-of-war, both pulling with the same amount of force.

Insert a picture describing this concept. Label using numbers.

10 N ←————   ————→ 10 N   Net Force = 0 N

Can an obj be in motion when the forces are balanced?
Yes....

4. Compare and contrast balanced and unbalanced forces.
Both forces, Net force can determined
Bal → Net F = 0 N, no accel.   Unbal → Net F ≠ 0 N, accel.

5. ___Friction___ is the force that opposes motion between two surfaces that are touching each other.

Do you like friction? How does it help us? Challenge us?

Give an example of each type of friction:
a. Static - push couch but it won't move
b. Sliding - push couch causing it to slide
c. Rolling - put couch on cart (wheels) & push
d. Fluid - swimming
   i. Air resistance - obj falling in atm

6. The ___Universal Law of Gravitation___ states that all objects in the universe exert an attractive force on each other. The force depends on the mass of the two objects and the distance between the two objects. $F = \dfrac{G \cdot m_1 m_2}{r^2}$

The gravitational force (increases/decreases) as the mass increases.
The gravitational force (increases/decreases) as the distance between the objects increases.

7. When ___gravity___ is the only force acting on an object, the object is in free fall. It is abbreviated by the letter g and is equal to 9.8 m/s².

8. What are the two main forces acting on a falling object.

↓ gravity
↑ air resistance

9. __Terminal__ __Velocity__ is the constant velocity of a falling object when the force of air resistance equals the force of gravity.
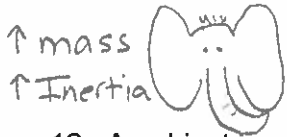
10. Describe the path of a projectile. Explain.

11. An objects resistance to a change in motion is __inertia__.

The greater the mass, the greater the __inertia__.

Insert a picture of two differently massed items, and label "more inertia" and "less inertia".

↑mass   ↓mass
↑Inertia   ↓Inertia

an unbal Force
seatbelt

12. An object in motion will stay in motion unless acted upon by ~~a net force~~. This is __Newton's 1st Law of Motion__.
Describe an example of this law from your real life.
I am in motion in the car. When the car slams on the brakes, I'll remain in motion until a seatbelt applies an unbal force stopping me.

13. According to __Newton's 2nd Law of Motion__, the greater the mass of an object, the greater the force must be to accelerate that object.

Create your own math problem using the equation F=ma. Solve it.
How hard would you have to push your 40 kg dog to accelerate it at a rate of 1 m/s²? F = (40 kg)(1 m/s²) $\boxed{F = 40 N}$

14. The force of an object due to gravity is called its __Weight__.

Write your weight in pounds. __158__ lbs

Convert to kilograms (1 kg = 2.2 lbs) $\frac{158 \, lb}{} \cdot \frac{1 \, kg}{2.2 \, lb} = \boxed{71.8 \, kg}$

Use the equation Weight = mass x gravity (W = mg) to find your weight in Newtons.
$W = (71.8 \, kg)(9.8 \, m/s^2)$ $\boxed{W = 704 \, N}$

15. Compare and contrast weight and mass.
- both deal w/ amount of matter
- w depends on g, while mass does not

16. For every action, there is an equal and opposite reaction. This is __Newton's 3rd Law of Motion__. These action-reaction forces are acting on different objects.

How does this law apply to a person wearing roller skates pushing off of a wall?
Force of person pushing on wall = force of wall on the person

17. __Momentum__ is a property of all moving objects that describes how much force is needed to change its motion. It is a product of mass and velocity → p = mv

The larger the mass, the (greater/weaker) the momentum.
The larger the velocity, the (greater/weaker) the momentum.