**Newton’s Second Law of Motion**

Definition: the acceleration of an object is in the same direction as the net force

*Force equals ­­­­­­­\_\_\_\_\_\_\_\_\_times \_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*F = \_\_\_\_\_\_\_*

Review: ­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a measurement of how quickly an object is changing velocity.

F = ma basically means that the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ comes from its mass and its acceleration.

Units:

Force:

1N= \_\_\_\_\_\_\_\_\_

Mass: \_\_\_\_\_\_\_

Acceleration: \_\_\_\_\_\_\_\_\_

**( I do)**

1. What force would be required to accelerate a 40 kg mass by 4 m/s2?

**G**iven: M= 40kg A= 4m/s2

**U**nknown: Force

**E**quation: (for the unknown): F=MA

**S**ubstitute: F= (40kg) (4m/s2)

**S**olve: F= 160N

**(WE do) Guided Practice**

1. What force would be required to accelerate a 80 kg mass by 12 m/s2?

**G**iven: M= A=

**U**nknown:

**E**quation:

**S**ubstitute: F= ( ) ( )

**S**olve: F= \_\_\_\_\_\_N

1. A 4.0 kg shotput is thrown with 30 N of force. What is its acceleration?

G:

U:

E:

S:

S:

**INDEPENDENT PRACTICE *Please use GUESS format***

1. A force of 16 N causes a mass to accelerate at 5 m/s2. Determine the mass.

G:

U:

E:

S:

S:

1. How much force is needed to accelerate a 66 kg skier to 3.6 m/s2?

G:

U:

E:

S:

S:

Weight- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*W=\_\_\_\_\_\_\_\_\_*

UNITS:

Weight: (W) \_\_\_\_\_\_\_\_

Mass(m) \_\_\_\_\_\_\_

Gravity(due to acceleration)

Gravity = \_\_\_\_\_\_\_\_\_

1. Mrs. J. mass is **56.8 kg.**  What is her weight?

**G**iven

**U**nknown:

**E**quation:

**S**ubstitute:

**S**olve:

1. A person with a mass of 90 kg has a weight of \_\_\_\_\_?

**G**iven

**U**nknown:

**E**quation:

**S**ubstitute:

**S**olve:

1. A person with a mass of 50 kg has a weight of N.

**G**iven

**U**nknown:

**E**quation:

**S**ubstitute:

**S**olve:

**Air Resistance**

If the object is falling downward, air resistance acts ­­­\_\_\_\_\_\_\_\_\_\_\_\_on the object.

Q: *If the friction of the air and the pull of gravity were in perfect balance, what would the skydiver be doing?*

*A: The skydiver would be going a \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ (moving with no acceleration) down towards the ground until it hit the ground.*

***Air Resistance = \_\_\_\_\_\_\_\_\_\_\_\_\_***

***Terminal Velocity***

An object reaches its terminal velocity when the force of \_\_\_\_\_\_\_\_\_\_\_ = the force of \_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the force that opposes the sliding motion of two surfaces

Static Friction :

Sliding Friction

Rolling Friction