NOTES: Circular Motion Name _____

**Tangent**

A line *tangent* to a circle touches the circle in one point.

3 rules for circular motion:

**Rule #1**

Whenever an object is moving in a circle, the direction of velocity is *tangent to* the circle.

**Rule #2 (centripetal force)**

Whenever an object is moving in a circle, there is a force called then *centripetal force* going towards the center of the circle.

**Rule #3**

If the centripetal force is released, the object will fly off *tangent* to the circle, in the direction of velocity.
It will fly in a *straight line* and not continue to turn.

**1.** Draw a circle and a line *tangent* to that circle.

**2.** Draw an object moving in a circle. Show its *velocity* at four different points in the circle:
Note this: a vector like velocity is *always* represented by a *straight arrow*, *never* a curved arrow!

**3a.** Draw a ball being swung around in a circle by a rope.
Include vectors (arrows) indicating the *velocity* of the ball and the *centripetal force* on the ball:

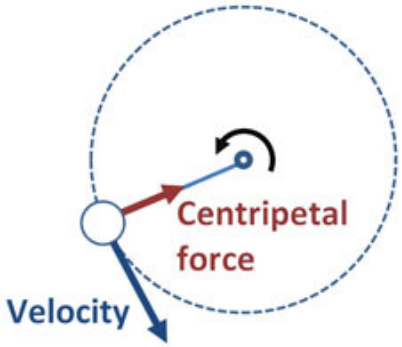
**3b.** What causes the centripetal force on the ball?

**3c.** Show, in your drawing, where the ball will go if it is *let go*:

**4a.** Draw the earth revolving around the sun.
Include vectors (arrows) indicating the *velocity* of the ball and the *centripetal force* on the ball:

**4b.** What causes the centripetal force on the earth?

**5.** Draw a bag full of groceries being flipped around in a circle.
At the *top* of its arc, show the centripetal force and the velocity of the ball:




**True or False**

No force is necessary to keep an object in a circle.
The centripetal force pulls an object away from a circle.
The centripetal force pulls an object into the center of a circle.
Velocity during circular motion is tangent to the circle.
When something is released from circular motion, it continues to curve in a circle.
When something is released from circular motion, it moves straight.

NOTES: Circular Motion Name _____

**Fill in the Blank**

1. The force that pulls an object to the center of a circle is called the _____.

2. If an object is released from circular motion, it will move _____>

**Diagram**

Draw a diagram of an object moving in a circular motion. Label the velocity of the object, and label the centripetal force.

**Questions**

If the sun suddenly disappeared, where would the earth go?

More difficult: why doesn't the earth fall into the sun?