Newton’s 3\textsuperscript{rd} Law of Motion states:

According to Newton’s 3\textsuperscript{rd} Law all forces act in ______________.

In figure 17 what is the action force and what is the reaction force?

Is motion required for action and reaction pairs? Explain a scenario in which it is not.

If action and reaction pairs acted on the same object the net force would always be ______________.

Using the example of the swimmer explain why the net force isn’t 0 if an equal and opposite force is exerted.
If you drop a ball off a ledge Earth pulls gravity toward it. The ball exerts

Why can’t you see the earth move when a ball is dropped? (Hint use Newton’s 2nd Law)

In the examples below what is the action force and what is the reaction force

1) The rabbit jumping in the air

2) The bat hitting the ball

3) The shuttle taking off

4) Hitting your hand on the table

is a property of a moving object that depends on the object’s mass and velocity.

The equation for momentum is

For example an 80 kg basketball player is driving to the lane at a velocity of 8m/s. What is his momentum?
Draw a picture using the speed and mass of a truck and a car and that shows why a truck is harder to stop than a car.

When a moving object strikes another object ________________ or ________________ of the momentum is transferred to the new object.

Observe figure 19 in your text. It shows the cue ball (white ball) strike the billiard ball (red ball). When the white ball hits the red ball the white ball stops. The red ball then starts to move with the same momentum the white ball had. This illustrates the law of _________________.

How is Newton’s 3rd Law related to the Law of the Conservation of Momentum? (Hint use the billiard ball example from figure 19 figure 20)