Name:

**Motion Lesson 3 - Velocity**

**Book Reading Worksheet**

**Velocity**

 Sometimes knowing only the \_\_\_\_\_\_\_\_\_\_ of an object isn’t enough. You also need to know the \_\_\_\_\_\_\_\_\_\_ of the object’s \_\_\_\_\_\_\_\_\_\_\_. Together, the \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_ in which an object is moving are called \_\_\_\_\_\_\_\_\_\_. Velocity is a description of \_\_\_\_\_\_\_\_ speed and direction of \_\_\_\_\_\_\_\_\_\_. Velocity is a \_\_\_\_\_\_\_\_\_\_.

If you have ever seen a \_\_\_\_\_\_\_\_\_ of a Cheetah chasing it’s \_\_\_\_\_\_\_, you know that a cheetah can change \_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_ very quickly. To represent the cheetah’s \_\_\_\_\_\_\_\_\_, you could use \_\_\_\_\_\_\_\_\_\_\_ vectors. You would need \_\_\_\_\_\_\_\_ of varying lengths, each vector corresponding to the cheetah’s \_\_\_\_\_\_\_\_\_\_ at a particular instant. A \_\_\_\_\_\_\_\_ vector would represent a \_\_\_\_\_\_\_\_ speed, and a shorter one would show a \_\_\_\_\_\_\_\_\_\_\_ speed. The vectors would also point in different \_\_\_\_\_\_\_\_\_ to represent the cheetah’s \_\_\_\_\_\_\_\_\_\_\_ at any moment.

 A \_\_\_\_\_\_\_\_ in velocity can be the result of change in \_\_\_\_\_\_\_\_, a change in \_\_\_\_\_\_\_\_\_\_, or both. Figure 9 moves in a straight line (\_\_\_\_\_\_\_\_\_ direction) at a \_\_\_\_\_\_\_\_\_ speed. The sailboat can be described as moving with \_\_\_\_\_\_\_\_\_ motion, which is another way of saying it has constant \_\_\_\_\_\_\_\_\_\_. The sailboat may change its \_\_\_\_\_\_\_\_\_\_\_ simply by speeding up or \_\_\_\_\_\_\_\_\_ down. However, the sailboat’s velocity also changes if it changes its \_\_\_\_\_\_\_\_\_\_. It may continue to move at a constant \_\_\_\_\_\_\_\_\_\_\_, but the change of \_\_\_\_\_\_\_\_\_\_\_\_ a change in \_\_\_\_\_\_\_\_\_\_.

**Combining Velocities**

Sometimes the \_\_\_\_\_\_\_\_\_\_\_\_\_ of an object involves more than one \_\_\_\_\_\_\_\_\_. Two or more velocities add by \_\_\_\_\_\_\_\_\_\_ addition. The velocity of the river \_\_\_\_\_\_\_\_\_ to the riverbank (X) and the \_\_\_\_\_\_\_\_\_\_\_\_ of the boat relative to the river (Y) in Figure 10A \_\_\_\_\_\_\_\_\_\_\_. They yield the velocity of the riverbank (Z). This \_\_\_\_\_\_\_\_\_ is 17 km/h downstream.

 In Figure 10B the relative \_\_\_\_\_\_\_\_\_\_\_ of the current (X) and the boat (Y) are at \_\_\_\_\_\_\_\_\_\_ angles to each other. Adding these velocity \_\_\_\_\_\_\_\_\_\_\_ yields a resultant velocity of the boat relative to the \_\_\_\_\_\_\_\_\_\_\_\_ of 13 km/h (Z). Note that this \_\_\_\_\_\_\_\_\_\_ is at an angle to the riverbank.