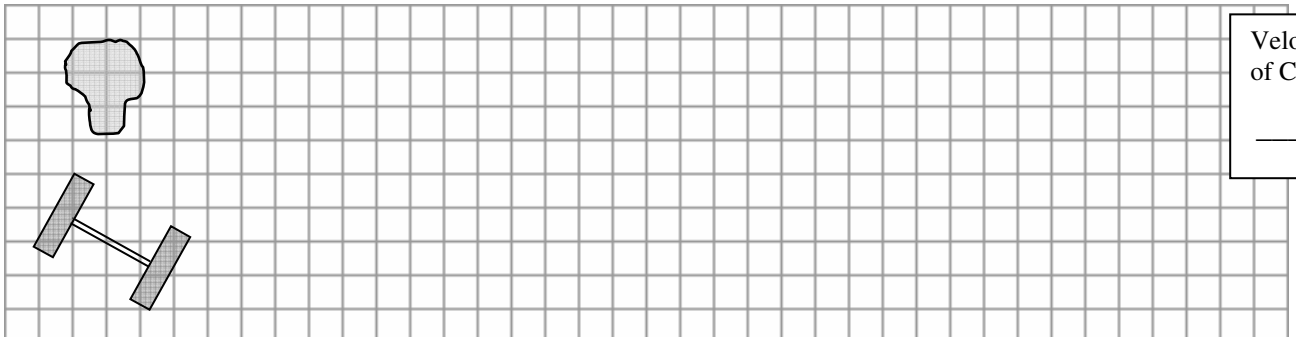
Center of Mass, Worksheet 2 **Name: _____**
2008 **Period:_____**

1(a) In the grid below, each box represents 1 meter and each object is moving to the right at 3 meters per second. Draw a dot on each object where you think the approximate center of mass is (assume uniform density).

1(b) If the clock starts at time = 0, show the location of the center of mass at each second for the next four seconds.

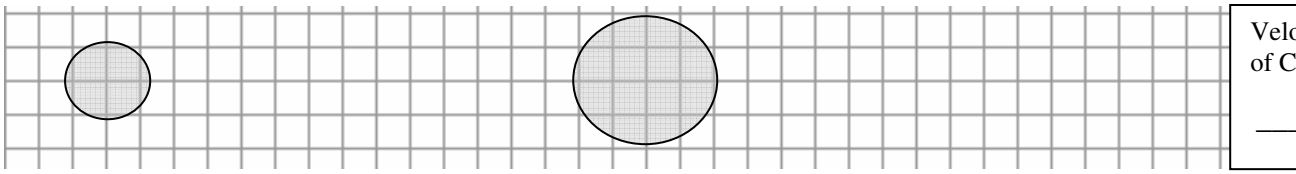
1(c) Compute the velocity of the center of mass and fill in the box.



Velocity of CM = _____ $\frac{m}{s}$

2(a). Think of these two objects below as one **system**. One object has 3 times more mass than the other one. Draw a dot where you think the center of mass of this system is.

2(b). Each object in this system remains **at rest**. Show the location of the center of mass of the system at each second for the next 4 seconds. Compute the velocity of the center of mass.

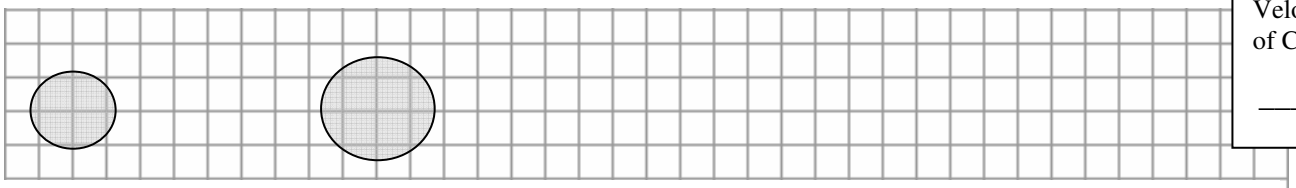


Velocity of CM = _____ $\frac{m}{s}$

3(a). Think of these two objects below as one **system**. One object has twice the mass of the other object. Draw a dot where you think the center of mass of this system is.

3(b). Each object in this system is moving to the **right at 4 m/s**. Show the location of the center of mass of the system at each second for the next 4 seconds.

3(c) Compute the v_{cm}.

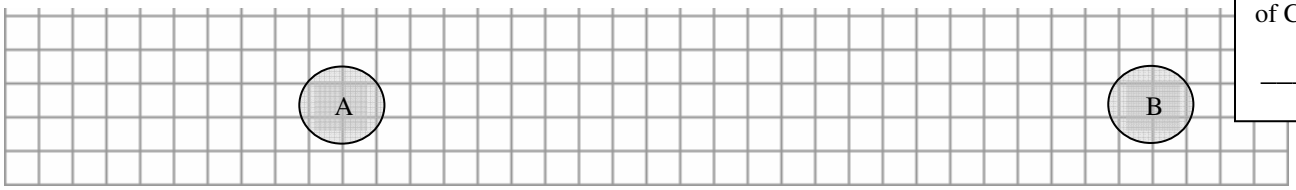


Velocity of CM = _____ $\frac{m}{s}$

4(a) Think of these two objects below as one **system**. The objects have equal mass. Draw a dot where you think the center of mass of this system is.

4(b) Object B is at rest. Object A is moving to the **right at 4 m/s**. Show the location of the center of mass of the system at each second for the next 4 seconds.

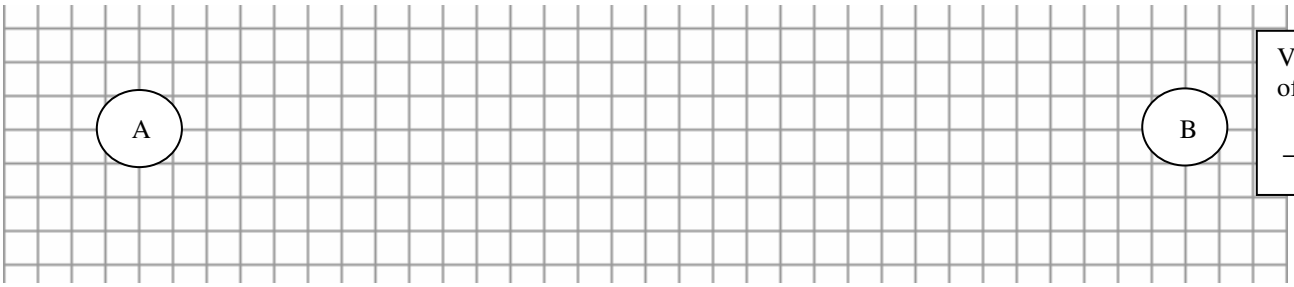
4(c) Compute the v_{cm}.



Velocity of CM = _____ $\frac{m}{s}$

5(a). Think of these two objects below as one **system**. The objects have equal mass. Draw a dot where you think the center of mass of this system is.

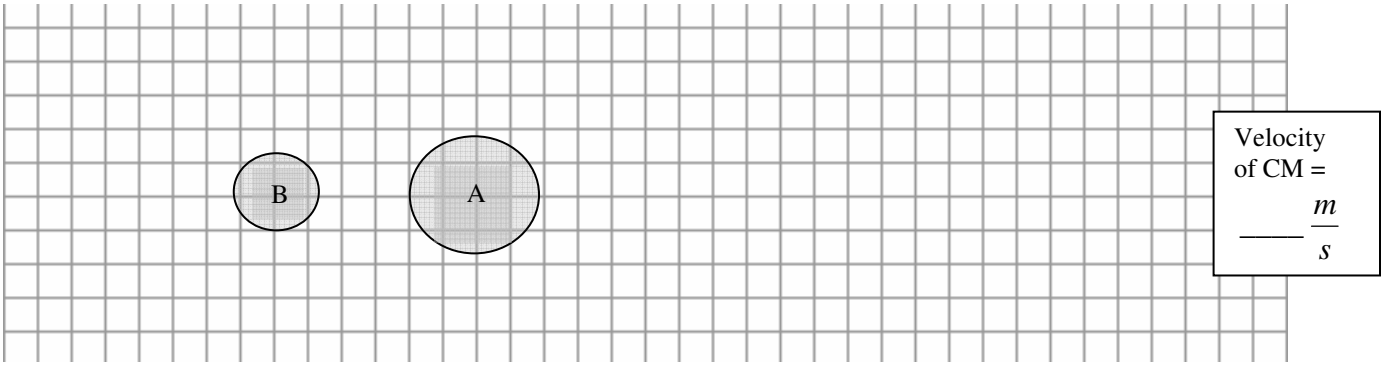
5(b). **Object A is moving right at 5 m/s. Object B is moving left at 1 m/s**. Show the location of the center of mass of the system at each second for the next 4 seconds. Compute the v_{cm}.



6(a). Think of these two objects below as one **system**. One object has twice the mass of the other object. Draw a dot where you think the center of mass of this system is.

6(b). **Object A is moving right at 5 m/s. Object B is moving left at 1 m/s**. Show the location of the center of mass of the system at each second for the next 4 seconds.

6(c) Compute the v_{cm}.



7(a). Think of these two objects below as one **system**. Object A is 2 kg and object B is 3 kg. Draw a dot where you think the center of mass of this system is.

7(b). **Object A is moving right at 3 m/s. Object B is moving left at 2 m/s**. Show the location of the center of mass of the system at each second for the next 4 seconds.

7(c) Compute the v_{cm}.