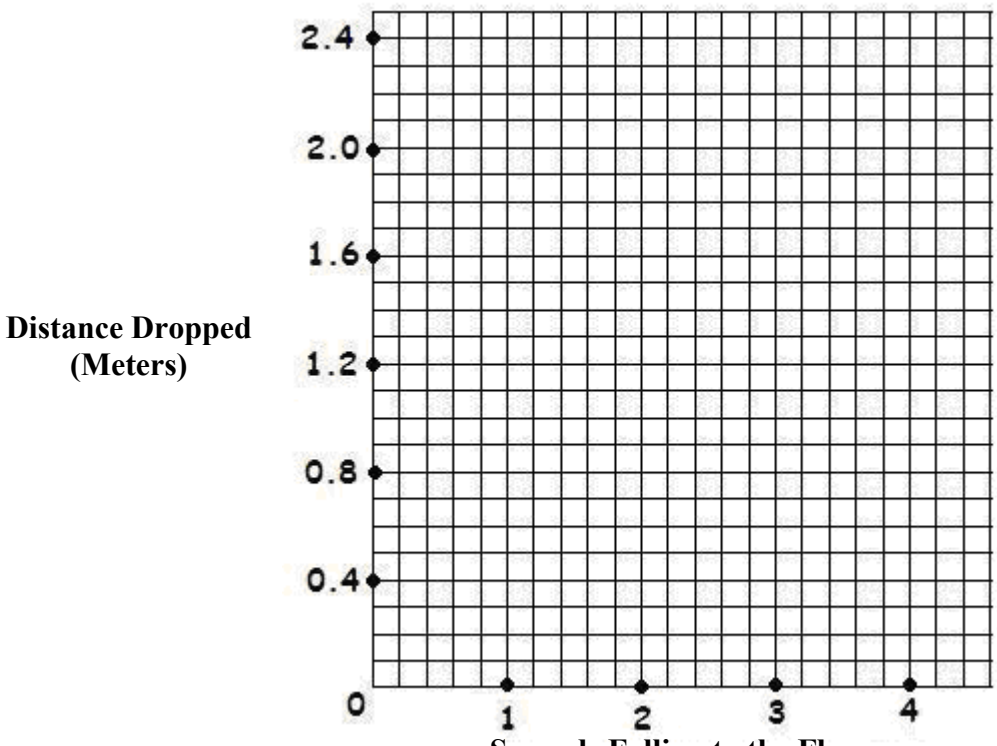
Name _____ Class Period _____

Directions: Add a small paperclip to the base of a paper helicopter. Drop the helicopter from various heights and time how many seconds it takes to fall to the floor. Collect data and fill out the table below.

Bottom of Helicopter Dropped From…	Time (Seconds) For Helicopter to Hit the Floor		Average Time (Seconds)
	Trial 1	Trial 2	
0.4 m			
0.8 m			
1.2 m			
1.6 m			
2.0 m			
2.4 m			

Create a scatter plot below of the Class Data. Note that the position of the manipulated and responding variables has been switched so that the slope of the line will show the average speed of the helicopter.

Average Speed (m/s) of a Helicopter



ARCONIC

1. Which variable is the "manipulated variable" in this experiment? Circle one:

Height of the drop ***Seconds***

2. Which line on the graph represents a faster speed? Circle one.

The steeper line ***The flatter line***

3. What does it mean when the slope becomes flatter over time?

4. Write "Greatest Speed" on your graph to show where the paper helicopter has the greatest speed.

5. _____ Seconds. How many seconds does it take for a helicopter to catch the air and spin? Analyze the class graph.

6. Write "Slowing Down" on your graph to show where the paper helicopter begins to slow down.

7. What does a straight slope indicate about the speed of a helicopter?

8. When during the fall does the lift force exactly equal the weight force? Analyze the graph.

9. Would your velocity keep increasing forever if you were to fall out of an airplane? Or, would your velocity reach a certain limit and remain constant? (Obviously, the air resistance would be affecting you at all times and the splat would eventually stop you.)

Velocity would keep increasing until the splat ***Velocity would increase to a certain limit***

10. What would happen to your velocity if you were to fall from an equally high altitude over the moon? Remember that there isn't any air on the moon.

Velocity would keep increasing until the splat ***Velocity would increase to a certain limit***

Each rotor is 4 cm x 12 cm

Cut along solid lines

4 cm x 12 cm

Gently Bend Forward

Gently Bend Back

Cut

Fold around central shaft

Shaft