Name_____ Date_____ Period_____

Ramp 'n Roll

Purpose:
To predict and verify position-time, velocity-time and acceleration-time graphs for a simulation of a ball rolling down a ramp.

Pre-lab Questions:
1. If the ball begins at rest, what is its initial velocity?

2. If the zero-position is on the left hand side of the ramp, what would a positive initial velocity tell you about the ball's motion?

3. If the zero-position is on the left hand side of the ramp, what would a negative initial velocity tell you about the ball's motion?

4. What does negative acceleration mean?

Procedure:
1. Begin this worksheet by examining the illustration of the ball on the ramp, it's initial position and initial velocity. Using pencil, sketch predictions of what this motion will look like on the three different graphs.
2. Describe the motion of the object using words like speed, direction, starting position, and make a motion map.
3. Go to the website:

   http://www.wsst.org/applet/applet.html

4. Select "Edit" to change the track. Click "Done" when you have changed the track to match the set-up for each problem.
5. Press "Start" to roll the ball. The correct position-time graph will appear. Draw the correct graph for position-time, paying careful attention to scaling.
6. Press "Velocity vs. Time" to change to the velocity-time graph. Press "Start" again to roll the ball. Record the correct velocity-time graph.
7. Press "Acceleration vs. Time" and repeat the steps above.
8. When you are finished, select "Position vs. Time" again and edit the next track.
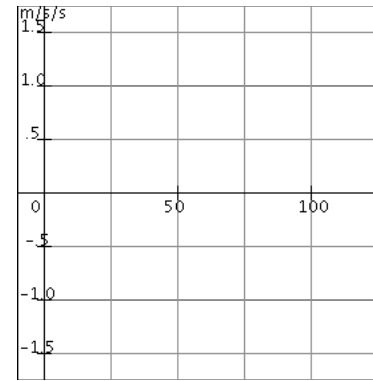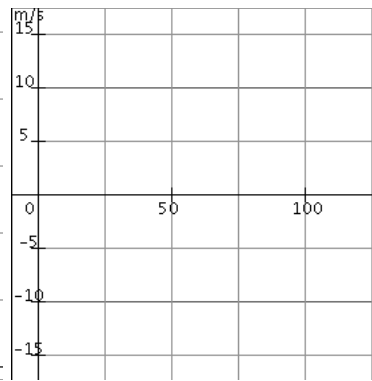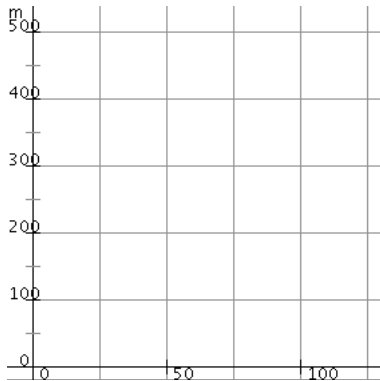
1.
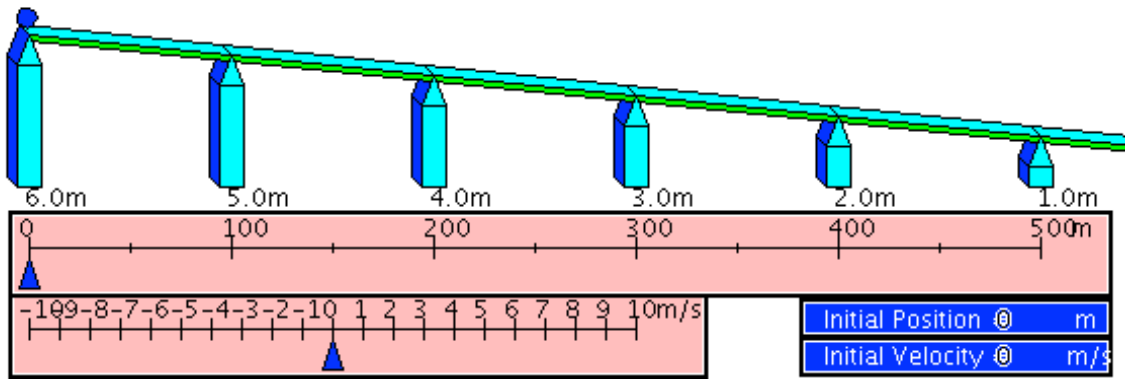
Description:

Predictions:

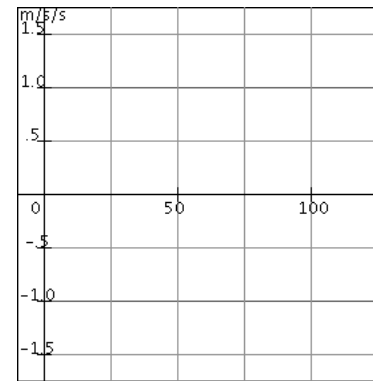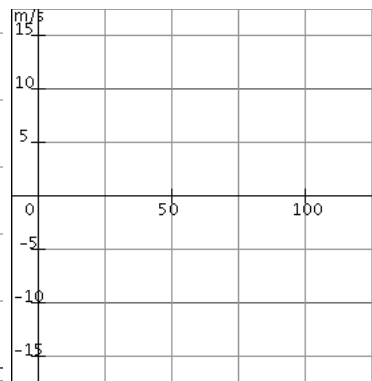| Position-time	Velocity-time	Acceleration-time

Correct Graphs:

Position-time	Velocity-time	Acceleration-time

2.
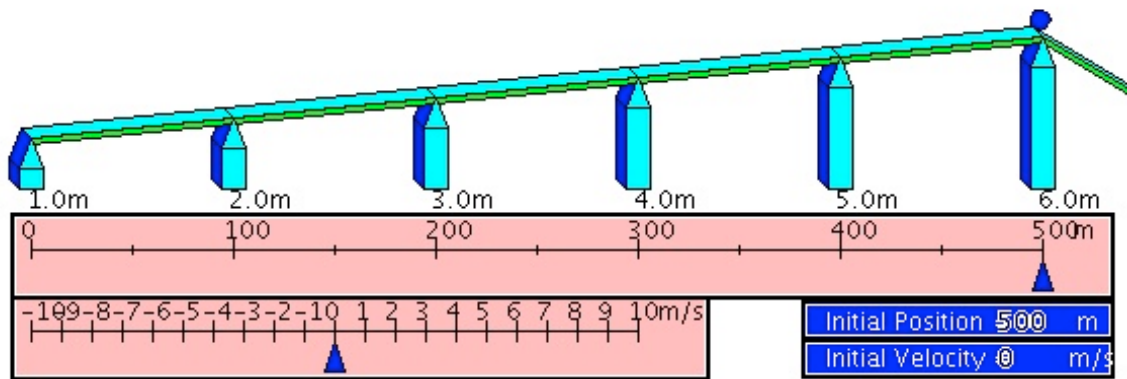
Description:

Predictions:

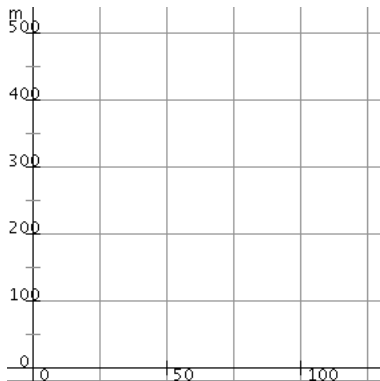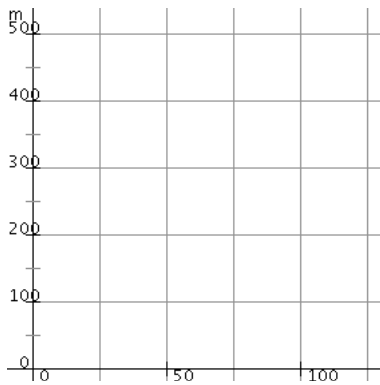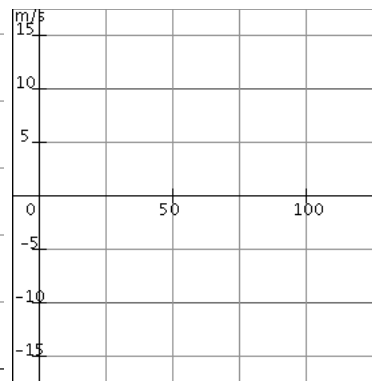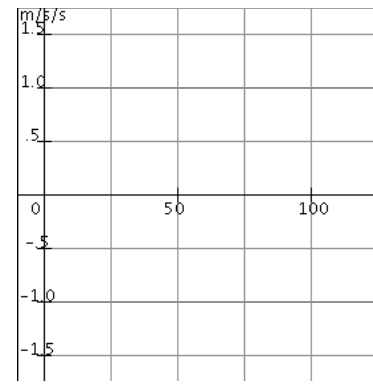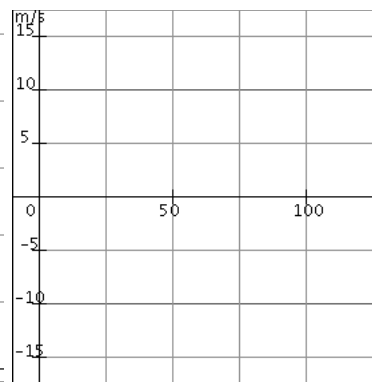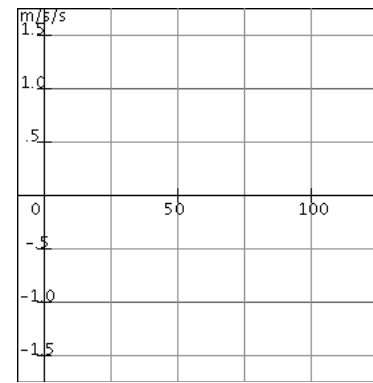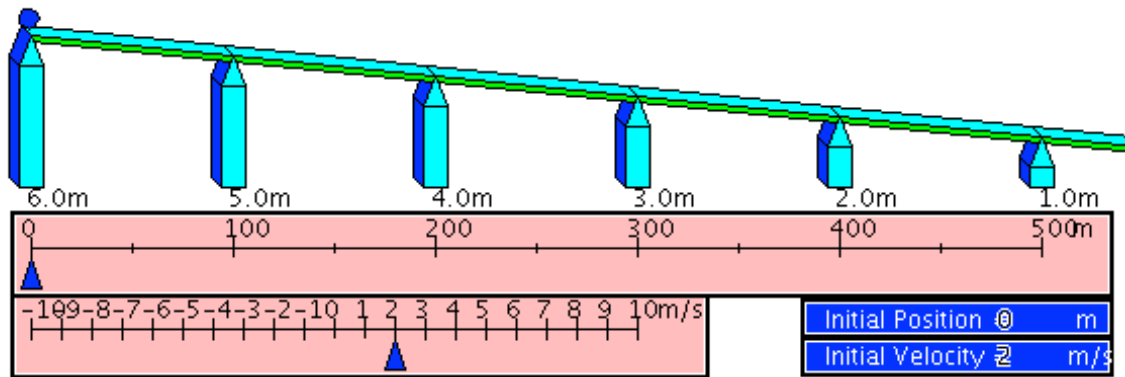| Position-time | Velocity-time | Acceleration-time |

Correct Graphs:
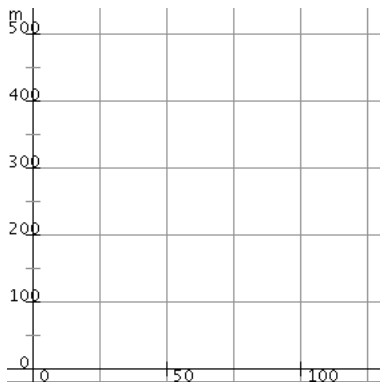
| Position-time | Velocity-time | Acceleration-time |

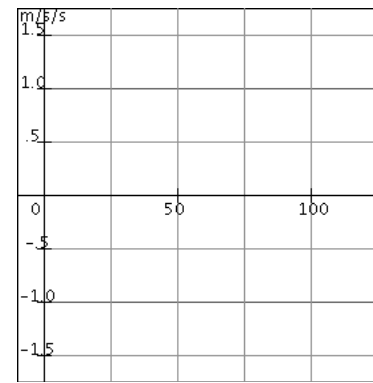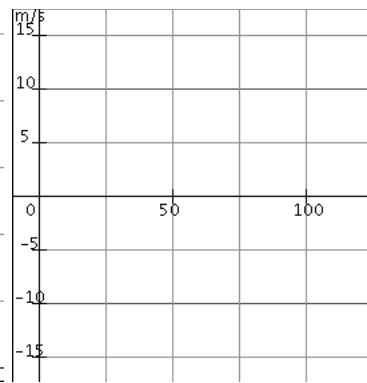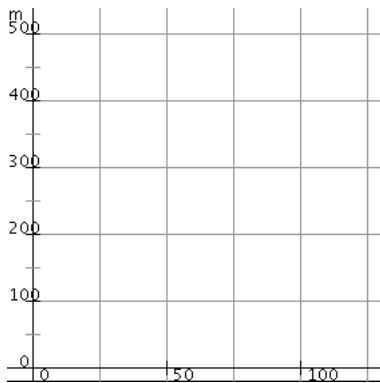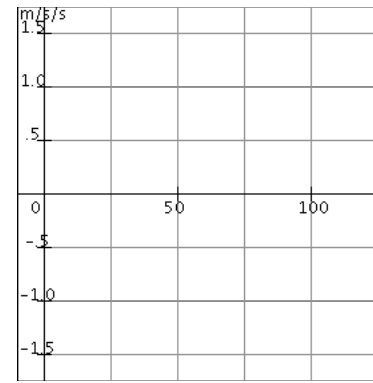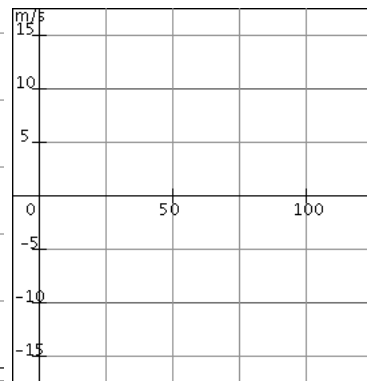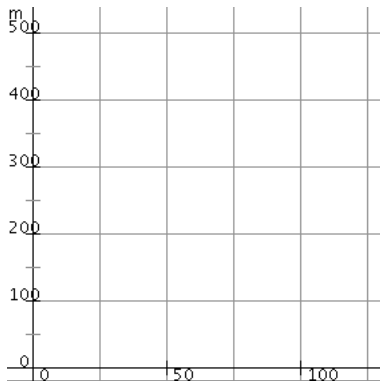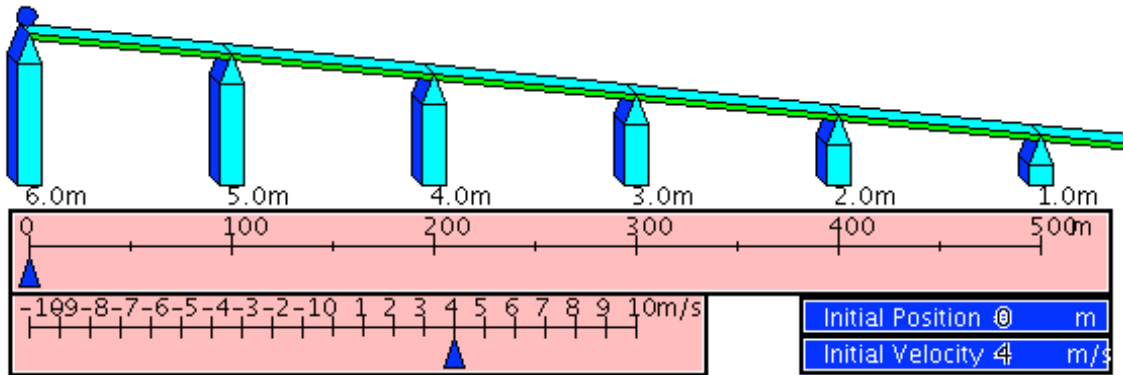Q1: What are the similarities and differences for trials 1 and 2?

a)position-time
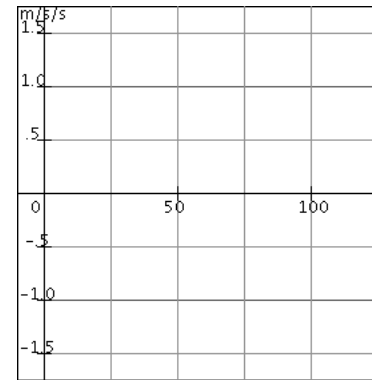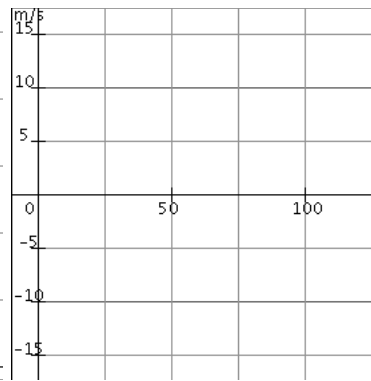
b)velocity-time

c)acceleration-time

3.

Description:

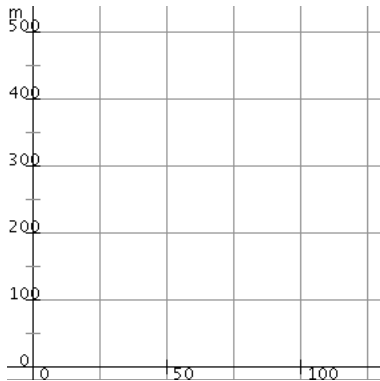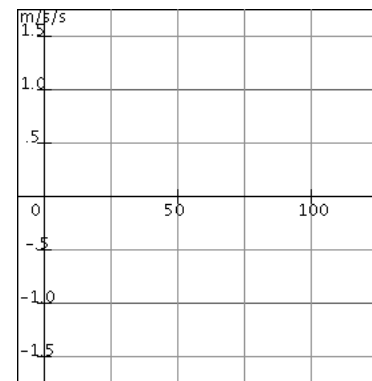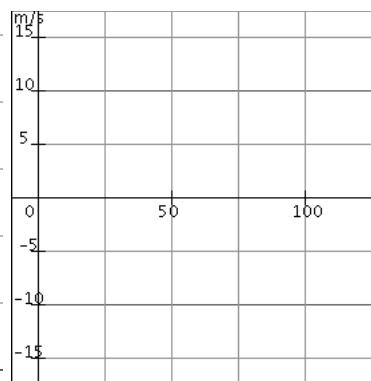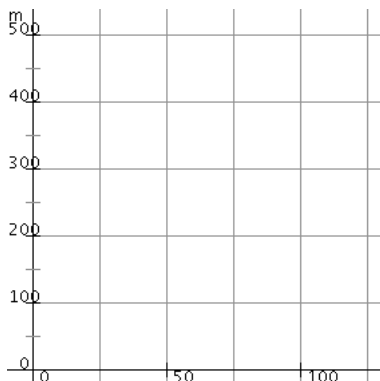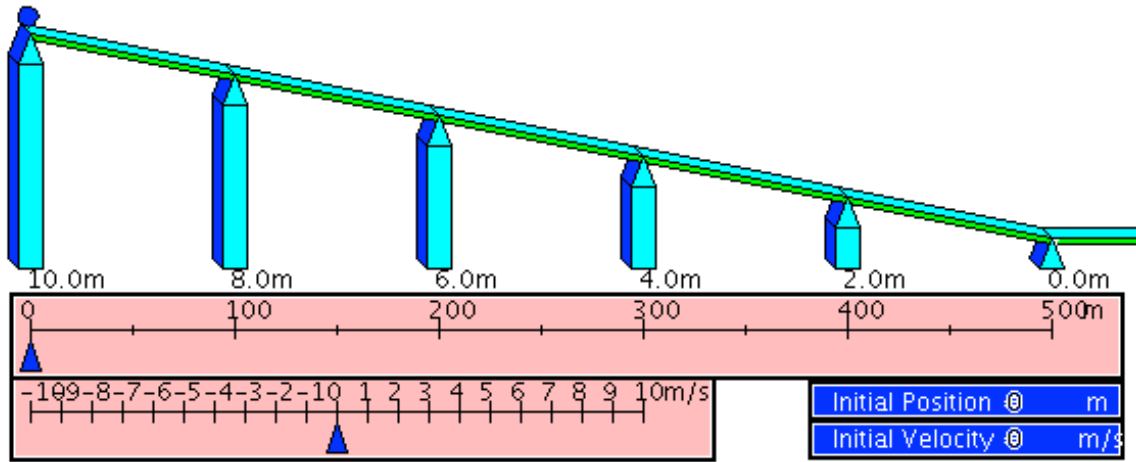**Predictions:**

Position-time	Velocity-time	Acceleration-time

Correct Graphs:

Position-time	Velocity-time	Acceleration-time

Q2: What are the similarities and differences for trials 1 and 3?

    a)position-time

    b)velocity-time

    c)acceleration-time

4.

Description:

Predictions:

| Position-time | Velocity-time | Acceleration-time |

Correct Graphs:

| Position-time | Velocity-time | Acceleration-time |

Q3: What are the similarities and differences for trials 3 and 4?

     a)position-time
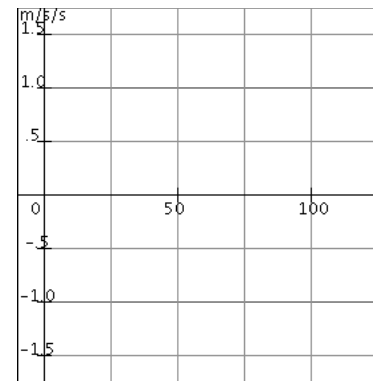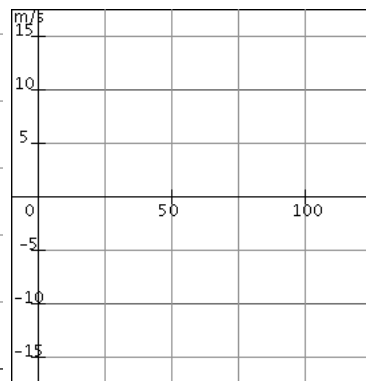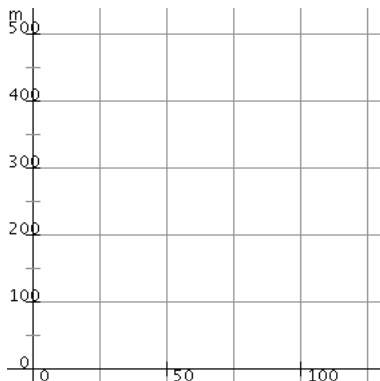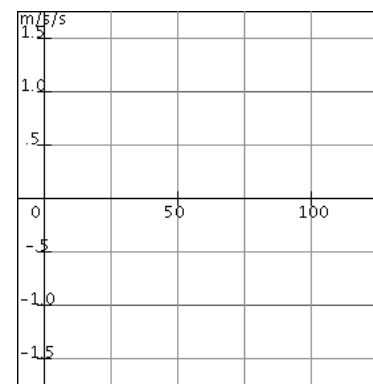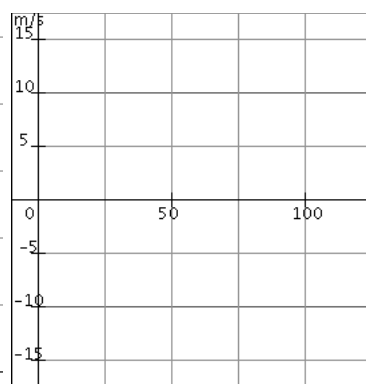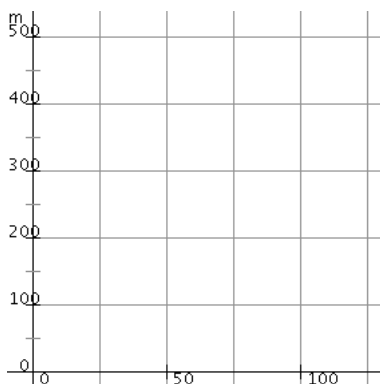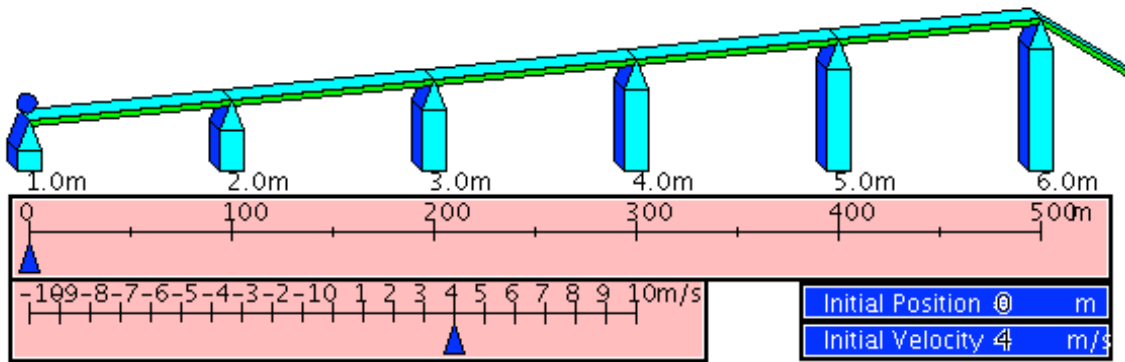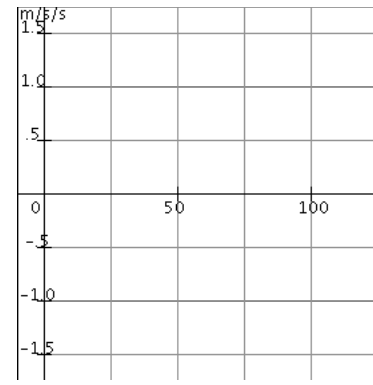
     b)velocity-time

     c)acceleration-time

5.

Description:

Predictions:

| Position-time | Velocity-time | Acceleration-time |

Correct Graphs:

| Position-time | Velocity-time | Acceleration-time |

Q4: What are the similarities and differences for trials 1 and 5?

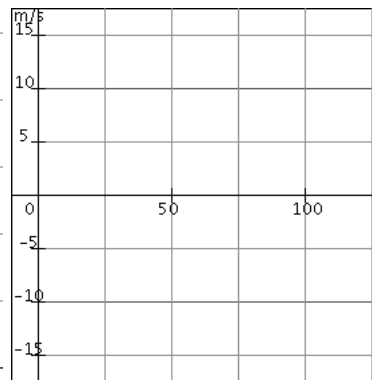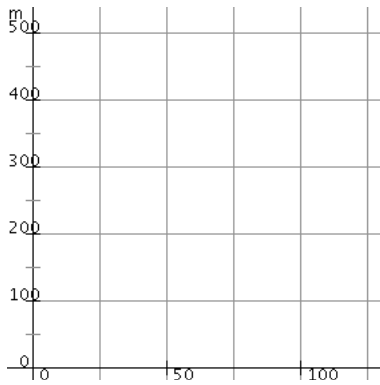a)position-time

b)velocity-time

c)acceleration-time

6.

Description:

Predictions:

Position-time	Velocity-time	Acceleration-time

Correct Graphs:

Position-time	Velocity-time	Acceleration-time

7.

Description:

Predictions:

Position-time   Velocity-time   Acceleration-time
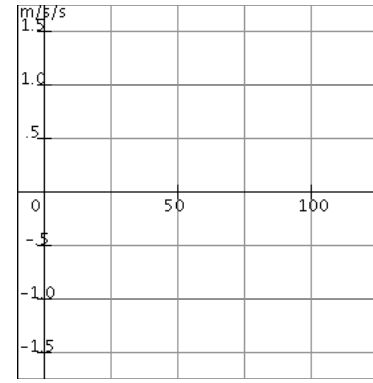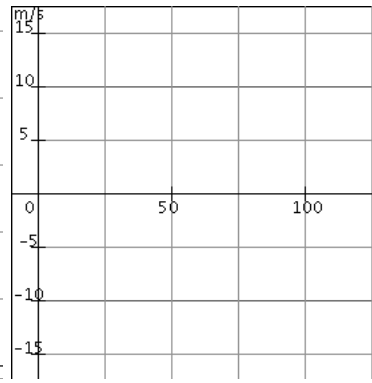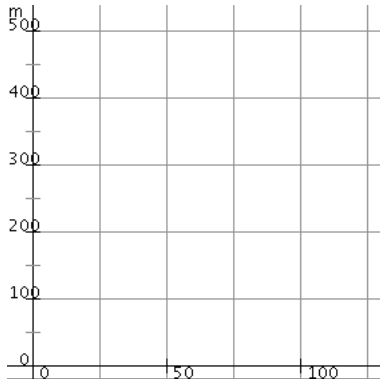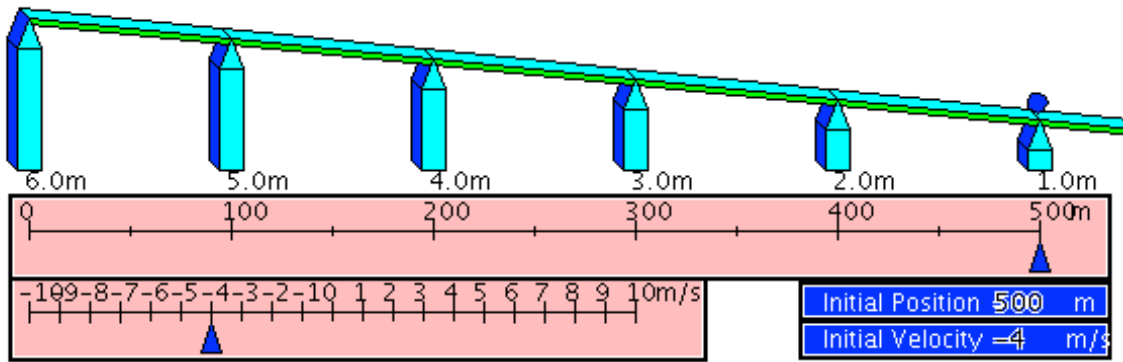

Correct Graphs:

Position-time   Velocity-time   Acceleration-time
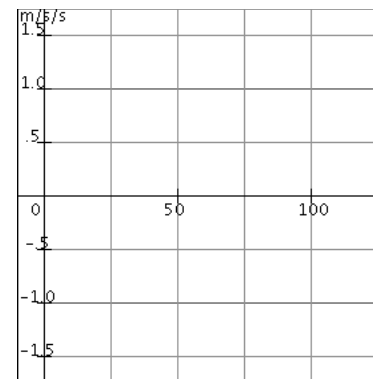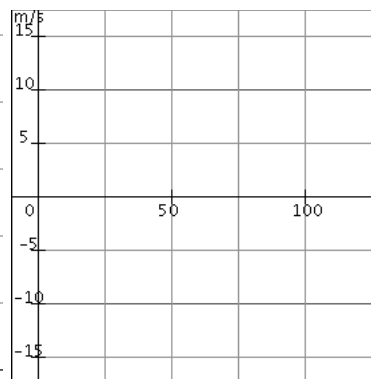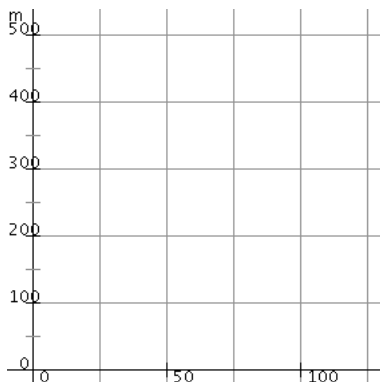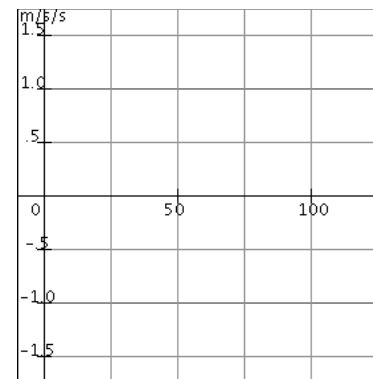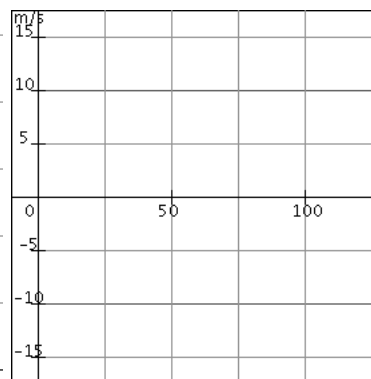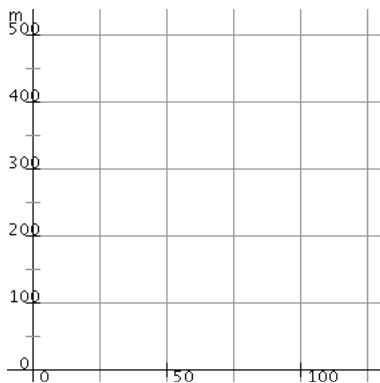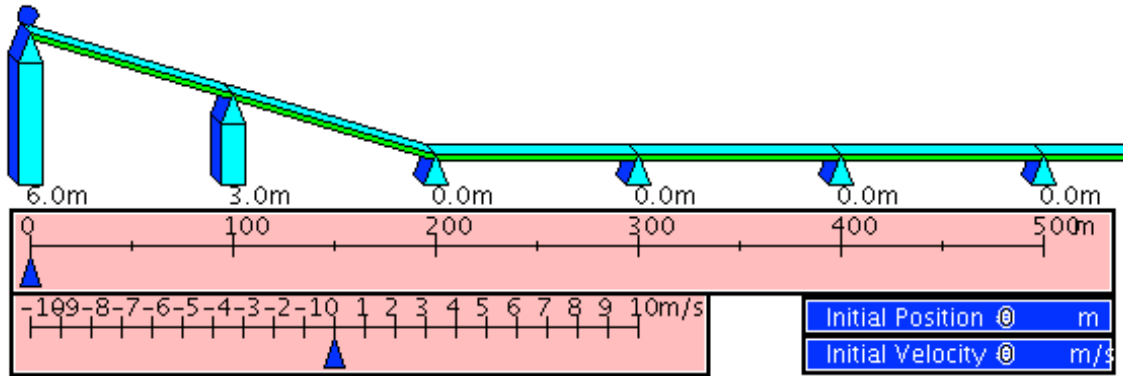

Q5: What are the similarities and differences for trials 6 and 7?
    a)position-time

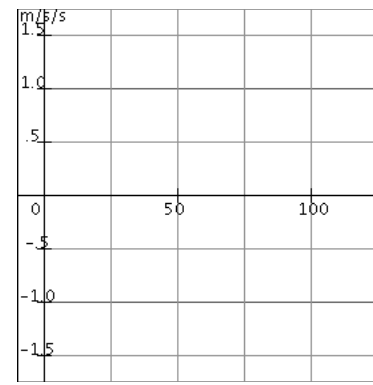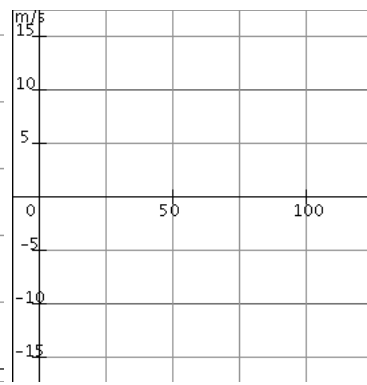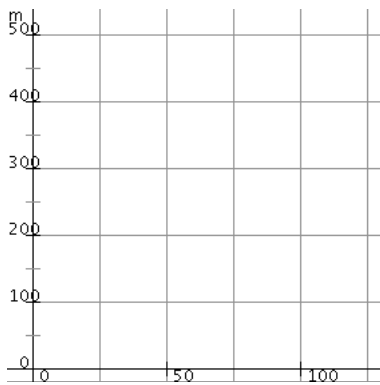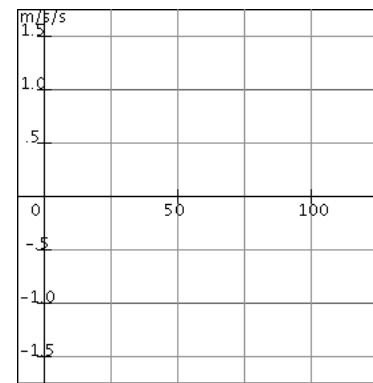   b)velocity-time

    c)acceleration-time

8.

Description:

Motion Map:

Predictions:

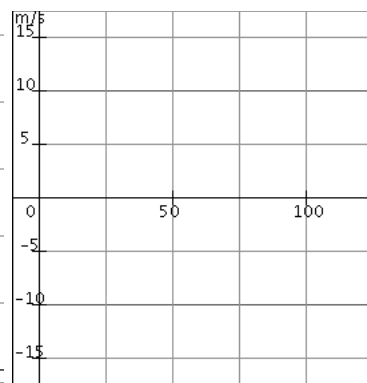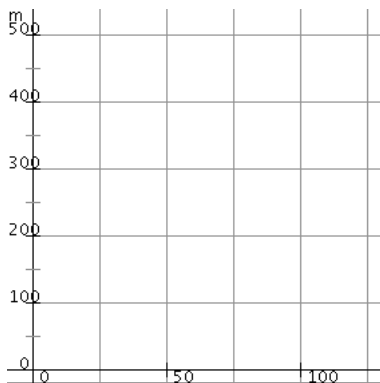| Position-time	Velocity-time	Acceleration-time

Correct Graphs:

Position-time	Velocity-time	Acceleration-time

9.
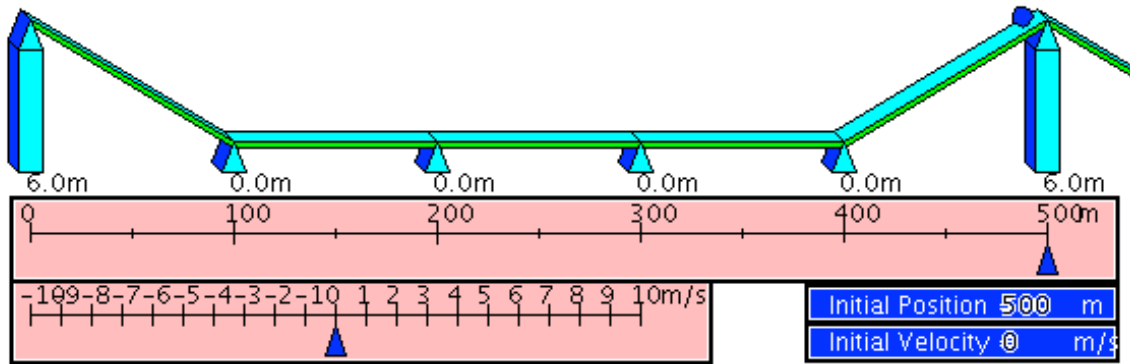
For this set-up, only consider the ball's travel to the zero-position and back again.

Description:

Predictions:

Position-time	Velocity-time	Acceleration-time

Correct Graphs:

Position-time	Velocity-time	Acceleration-time