Moving Man Activity showing alignment with Guidelines

Guideline used

1. Define specific learning goals and use these to guide your design.

Learning goals: Students will able to accurately interpret and draw position, velocity and acceleration graphs for common situations and explain their reasoning.

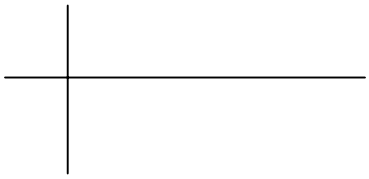
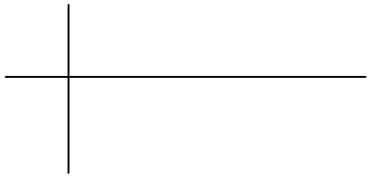
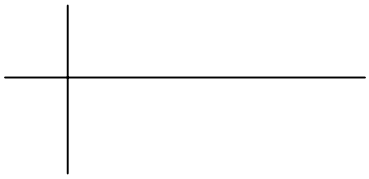
Set-up: Students working in-class with lab partners.

1. Investigate *Moving Man* by having the man move using the sliders. Use the playback features to look at the graphs. While you make observations talk about the reasons the graphs look the way they do.

2. Require students to use sense making and reasoning
3. Build upon and connect to students' prior knowledge
5. Design collaborative activities
6. Give only minimal directions on sim use.

2. Make a chart like the one below on your own paper. Without using *Moving Man*, sketch what you think the graphs would look like for the following scenario and explain your reasoning.

2. Require students to use sense making and reasoning
3. Build upon and connect to students' prior knowledge
4. Connect to and make sense of real-world experiences.
7. Require supporting reasoning/sense-making in words

Scenario: The man starts at the tree and moves toward the house with constant velocity	
Position - time graph 	Explain your reasoning for the graph's appearance
Velocity - time graph 	Explain your reasoning for the graph's appearance
Acceleration - time graph 	Explain your reasoning for the graph's appearance

3. Now, use the *Moving man* simulation to verify or correct your predicted graphs and reasoning with a different color pen.

2. Require students to use sense making and reasoning
6. Give only minimal directions on sim use
8. Help students monitor their understanding.

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4. Make new charts for each of the following scenarios. Predict what you think the graphs will look like, and then use *Moving man* to verify or correct your predicted graphs and reasoning with a different color pen.

a. The man starts three meters from the house and accelerates towards the tree.
b. The man stands still while he talks on his cell phone at the middle of the sidewalk, then walks toward the house at a constant rate trying to get better cell reception. He comes to a sudden stop when the coverage is good (about a meter before the house) and stands still to finish his conversation.
c.. The man starts close to the house, stands still for a little while, then walks toward the tree at a constant rate for a while, then the slows to a stop.

2. Require students to use sense making and reasoning
3. Build upon and connect to students' prior knowledge
4. Connect to and make sense of real-world experiences.
6. Give only minimal directions on sim use
7. Require supporting reasoning/sense-making in words
8. Help students monitor their understanding

5. Look at your graphs, reasonings and the corrections from questions 2 and 3. Talk about why some of your predictions were wrong and how your ideas about motion have changed.

2. Require students to use sense making and reasoning
5. Design collaborative activities
8. Help students monitor their understanding.

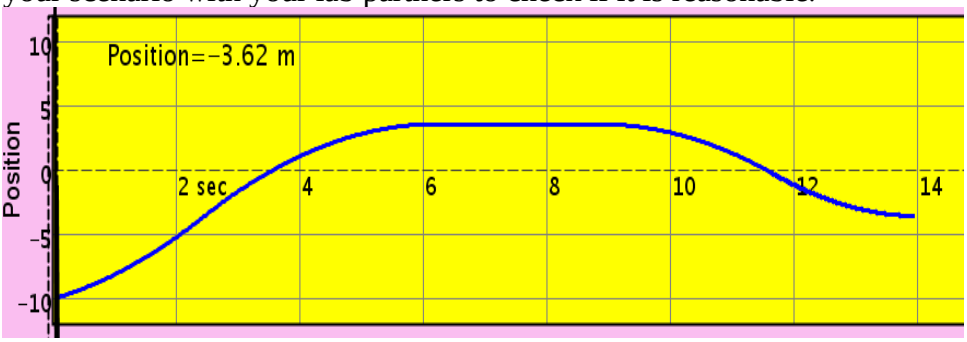
6. Sketch the position, velocity and acceleration graphs for the following scenario: *A man wakes up from his nap under the tree and speeds up toward the house. He stops because he is worried that he dropped his keys. He stands still as he searches his pockets for his keys. Once he finds them, he continues calmly to walk toward the house and then slows to a stop as he nears the door.*

4. Connect to and make sense of real-world experiences.

7. With your lab partners, write a motion scenario that you could test. Test it, and then write a description of how you used the program to generate the graphs. Sketch the graphs.

4. Connect to and make sense of real-world experiences.
5. Design collaborative activities
7. Require supporting reasoning/sense-making in words

8. Individually write a possible scenario for the following graph. Then compare your scenario with your lab partners to check if it is reasonable.



2. Require students to use sense making and reasoning
5. Design collaborative activities
8. Help students monitor their understanding.