

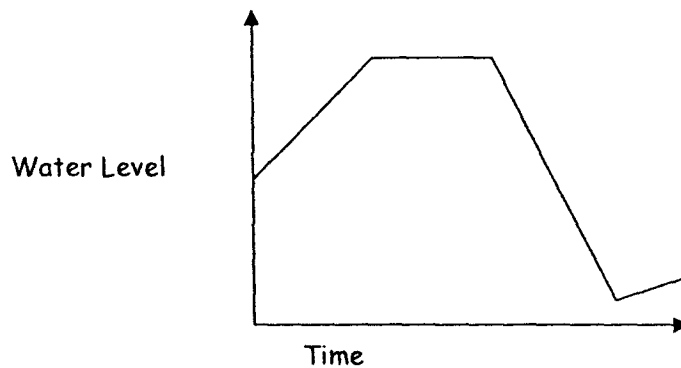
Exploring Motion

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Activity One: Graphs as Telling Stories

The graph below tells a story. Use the space below to create your own story that relates the information conveyed by the graph. Feel free to be as creative as you like, but please **BE AS SPECIFIC AS POSSIBLE (BASAP)**

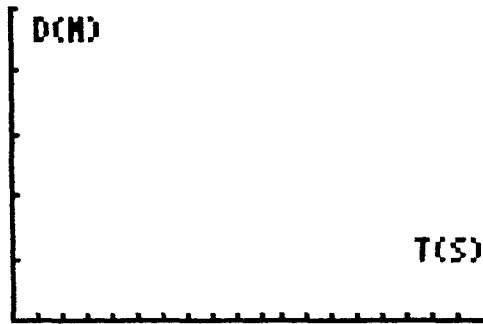


My Story:

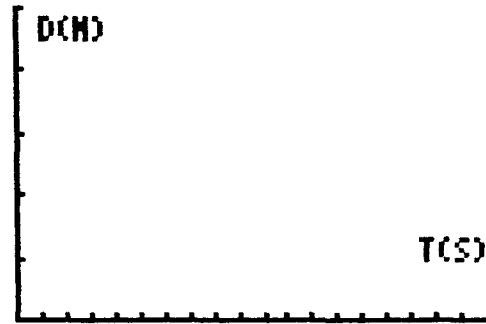
Other interesting story ideas:

Activity Two: Exploring Motion with TI-73s and CBRs

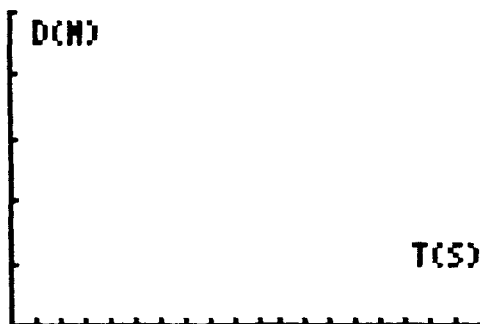
- In this activity, you will be using the TI-73 calculators and sonic motion detectors called Calculator Based Rangers (CBR) to explore motion.
- You will work with a partner to produce line graphs that relate distance (from the motion detector) and time (preset for fifteen seconds). Feel free to experiment by facing the wall, the ceiling and the floor (or any combination you feel like trying).
- You should experiment with different types of movement. Try walking slow or fast in front of the CBR, try running, try standing still, jumping, turning around, moving sideways, swinging your arms, etc.
- Copy the results of your motion explorations onto the graphs provided below. Be sure to write a DETAILED description of the movement that produced each graph. (BASAP)



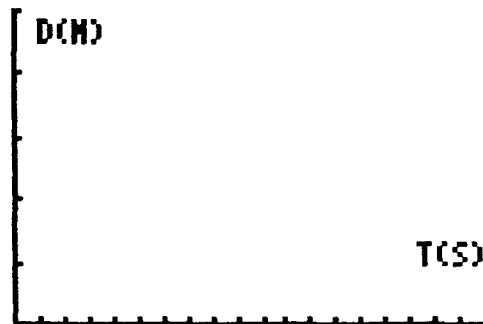
Description:



Description:

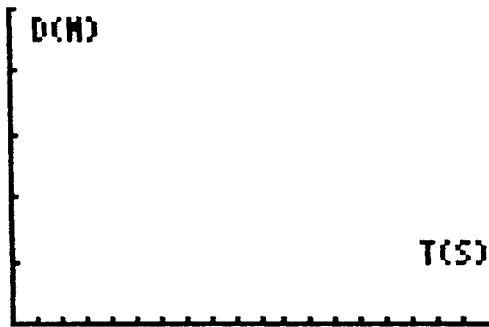


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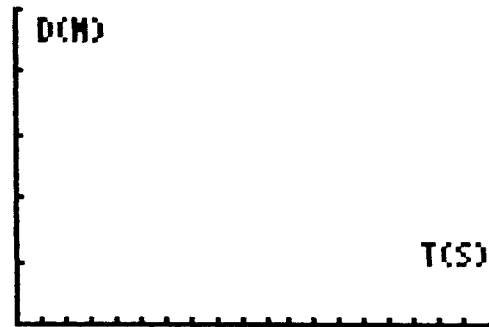


Description:

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Description:



Description:

Now that you have explored some motion, use the graphs and descriptions that you have just done to answer the following questions.

1. When the distance to the Ranger increases, the graph looks like...
2. When the distance to the Ranger decreases, the graph looks like...
3. When I walk fast, the graph looks like...
4. When I walk slowly, the graph looks like...
5. When I stand still, the graph looks like...
6. The part of the graph that tells how far I am from the motion detector is...
7. The TIME is shown on the graph in seconds. Where?

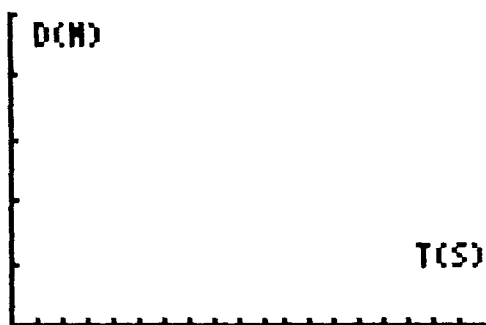
Activity Three: Match the Graph

- In this activity, you will again be using the TI-73 Calculators and the CBR to develop a plan for your movement so that the path of your motion matches a random distance-time graph.
- Working with a partner, you will examine a graph, extract the necessary information, and develop a 'motion plan' that will allow your motion to match the graph you see. Again, BASAP in your plan. Feel free to incorporate sledding, biking, skateboarding...into your plan!
- Using what you have learned in Activity Two, your plan needs to include a direction for the walker, the speed the walker needs to travel, and the times when the walker should change speed and/or direction.
- Make your plan BEFORE you start walking in front of the motion detector. Make sure to note any changes you would need to make in your motion plan as a result of your work.

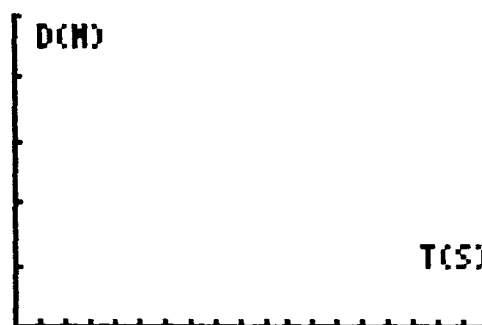
Use the graphs given below to illustrate the graph you were asked to match and your detailed motion plan.

Each plan should tell:

- Which direction you walked
- How fast you walked
- When you changed direction or speed of your walking

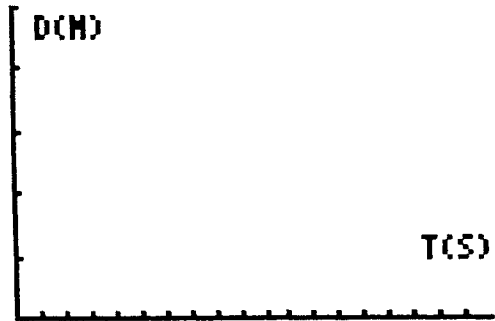


Motion Plan:

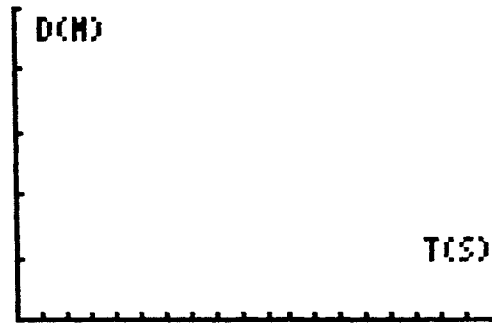


Motion Plan:

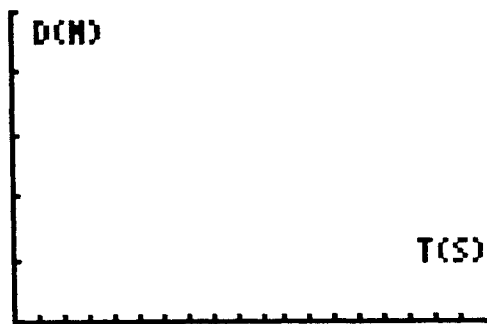
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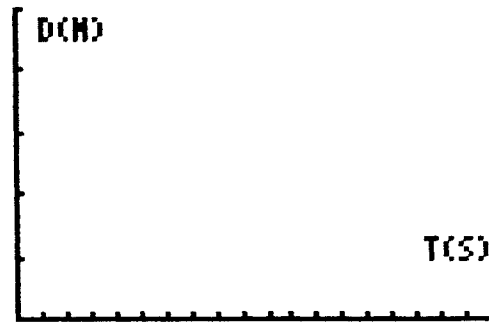
Motion Plan:



Motion Plan:



Motion Plan:



Motion Plan:



Activity Four: Letter Walk and Free-form shapes

- After you have become comfortable with the equipment and with the ideas of motion necessary to produce different types of line segments, we want to explore some deeper issues and questions about motion.

What would be the motion plan to create the letter 'M'?

What would be the motion plan to create the letter 'W'?



What would be the motion plan to create the letter 'O'?

What would be the motion plan to create a set of hills on a roller coaster?