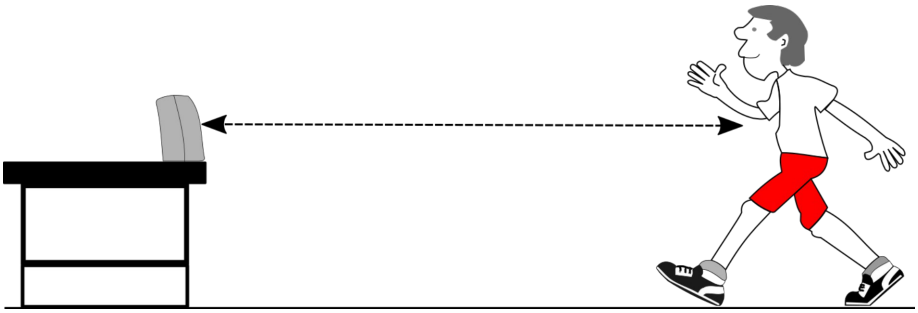
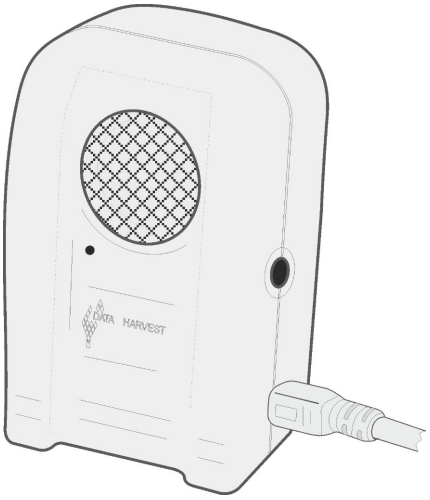
Walk this way

Apparatus

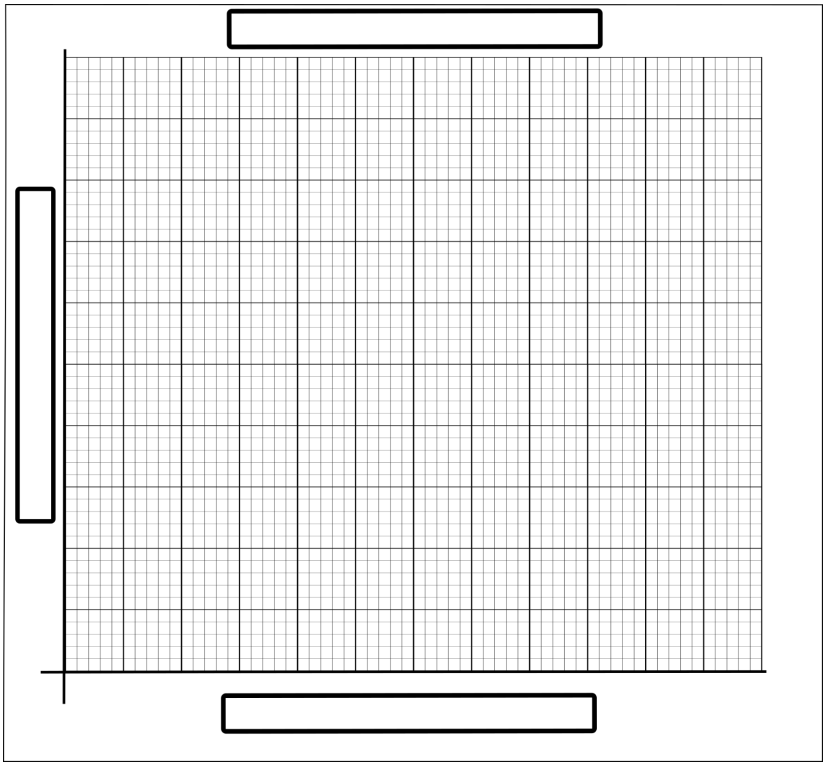
- A motion sensor.
- A clear space to walk back and forth.
- A target for the motion sensor, e.g. a basketball.





Activity 1

1. Start the software.
2. Check the motion sensor is connected and working.
3. Stand in front of the sensor, about 0.5m away.
4. Start recording data.
5. Move away from the sensor and then move back to the sensor.
6. Stop the recording
7. Copy the graph created onto this graph paper.



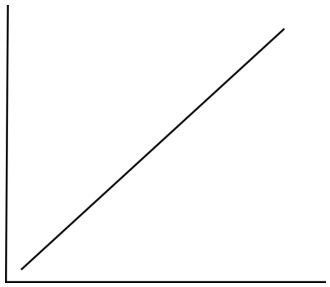
Graph

1. Give the graph you have drawn labels for the axes and a title.
2. Label which is the x axis and which is the y axis.
3. Show on the graph when you walked towards the sensor and when you walked away.

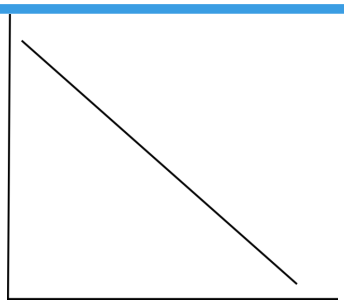
Activity 2

Examine each of the graphs below

1. Stand in front of the motion sensor and start recording.
2. By a combination of walking towards and away from the motion sensor copy each of the graphs in the software.
3. Once you are happy you can make a copy of the graph, write a set of instructions for someone else to use to follow. One is impossible, mark clearly which one.



Instructions



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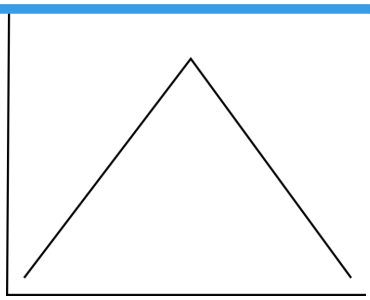

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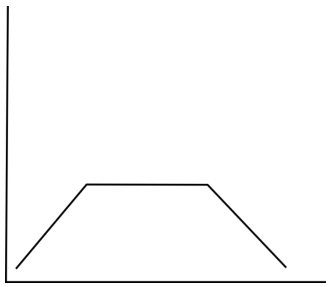
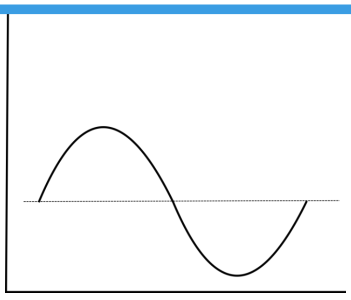


Instructions

Instructions



Instructions

Activity 3

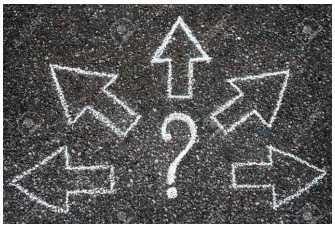
A set of instructions written by someone else asks you to,

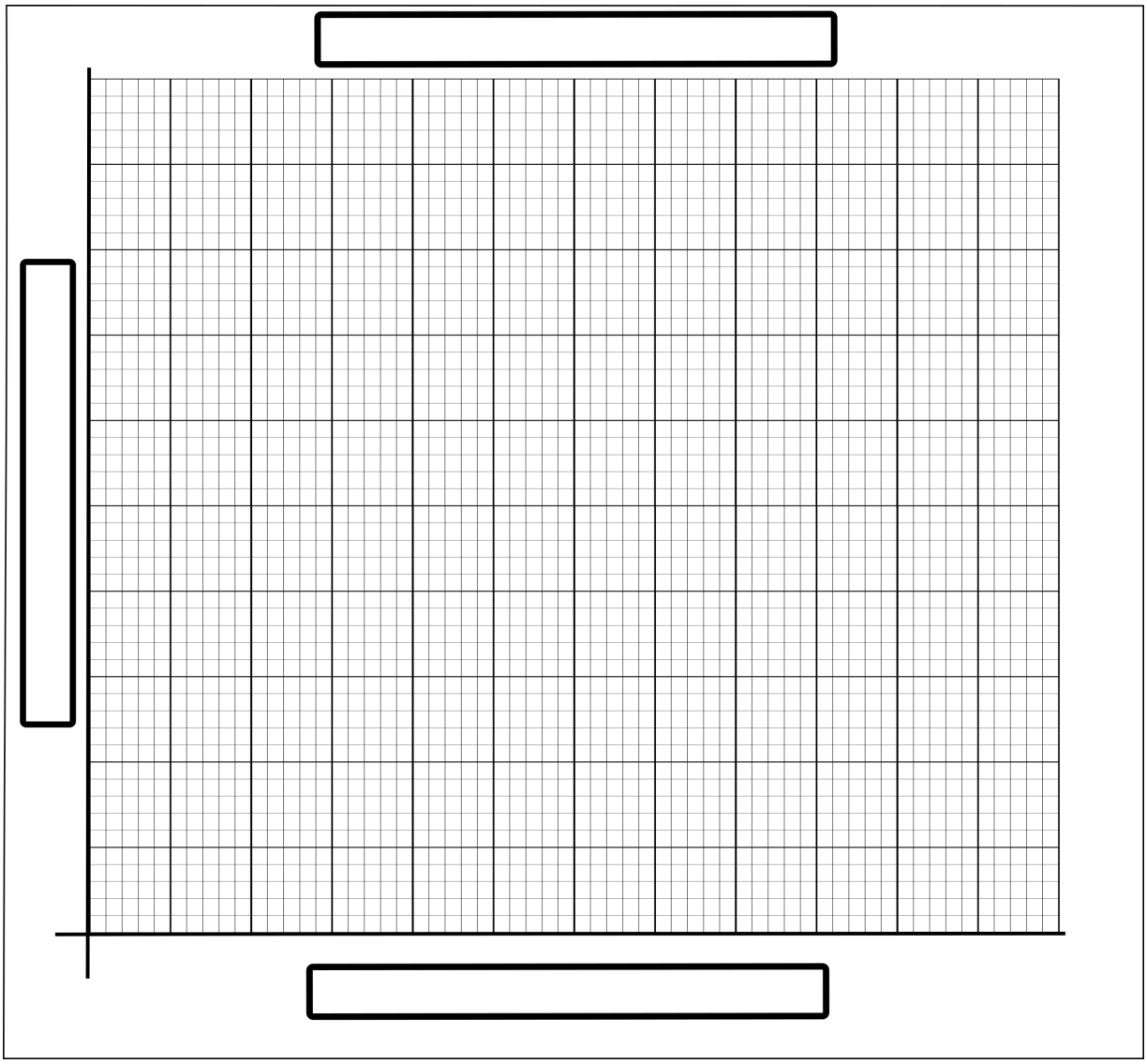
1. Walk quickly away from the motion sensor.
2. After 10 steps stop, count to 10 (seconds).
3. Walk slowly back towards the sensor and .....
4. When you are back at the start, stand still for 10 (seconds)

Use the graph below to sketch out how you think the journey will look. Label it with the stages of the instructions.

Use the motion sensor and follow the instructions in Activity 3 to test your answer.

If your prediction for the journey was wrong, explain why.





Activity 4

Your friend has said they will come over after school. To get to your place they will have to walk and cross two very busy roads that have traffic controls. You know they always walk quickly to the first road and then more slowly.

Draw a distance time graph of how you think their walk will look as a graph. Label up the stages of their journey

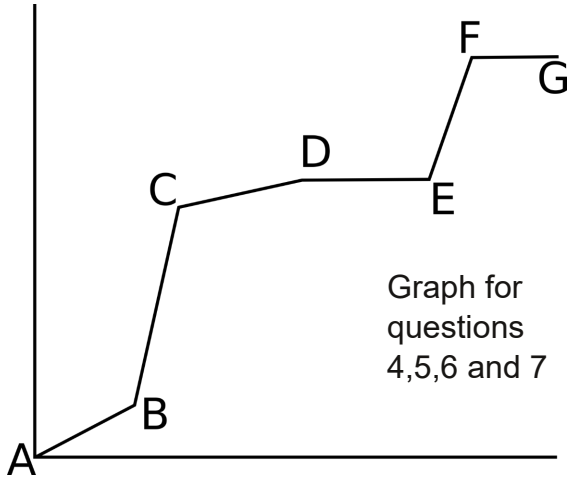
Activity 5

Your friend has arrived, they were late! they reached the first crossing, and after having waited to cross remembered they had left something behind and to run back to their house and back to the crossing.

Draw a distance time graph of how you think their walk actually looked as a graph. Label up the stages of their journey

Questions

1. Standing still produces a graph with a ..... line.
2. Moving away from the motion sensor produces a graph with a ..... line.
3. How would you tell from a graph when someone was moving.
   a). Faster
   b). Slower
4. Describe the journey shown in the following distance time graph. Use the letters to identify the stages in the journey.

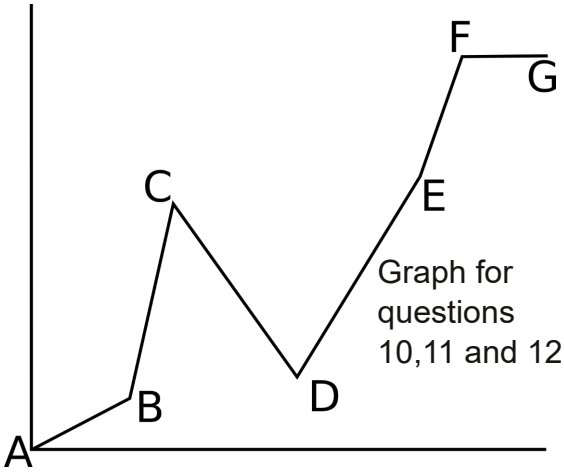


Graph for questions 4,5,6 and 7

5. Which pair of letters show slow speed? .....
6. Which pair of letters show fast speed? .....
7. If G is 10 metres from the start at A, estimate how far you are from the start at B,C,D,E and F

B..... C..... D..... E..... F .....

8. A positive slope on a graph shows.....
9. A negative slope on a graph shows .....



Graph for questions 10,11 and 12

10. Which letters on the graph show changes in direction? .....
11. Which pair of letters show no movement? .....
12. Which pair of letters show the slowest speed? .....
13. When you use the values tool what two things does it tell you? .....

    .....
14. Why is time on the x axis and distance on the y axis? .....