

Building Understanding for Graphs with the CBR

Connect a CBR to either a TI-84 or the TI-84 Emulator. Project the screen on a large screen or interactive whiteboard.

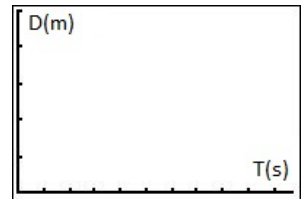
Situation 1. A student will produce a distance-time graph by starting at about 0.5 meters from the CBR and walk away from the CBR when the CBR begins collecting data. Make a sketch of the graph that is produced.

How can you tell from the graph that the student is walking away from the CBR?

Distance is labeled on the y-axis. Time is on the x-axis. What is happening to the distance as time increases?

How can you tell from the graph where the student started his/her walk?

How can you tell from the graph where the student ended his/her walk?



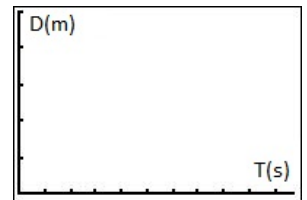
Walking Away from the CBR

Situation 2. Another student will produce a distance-time graph by starting at about 0.5 meters from the CBR and walk away from the CBR at a slower speed than situation 1 when the CBR begins collecting data. Make a sketch of graph that is produced.

How is the graph different from Situation 1?

How is the graph the same as Situation 1?

How do you know that the student walked at a slower speed than Situation 1 by looking at the graph?



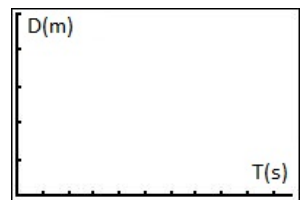
Walking Away from the CBR at a slower speed than Situation 1

Situation 3. Another student will produce a distance-time graph by starting at about 0.5 meters from the CBR and walk away from the CBR at a faster speed than Situation 1 when the CBR begins. Make a sketch of the graph that is produced.

How is the graph different from Situation 1?

How is the graph the same as Situation 1?

How do you know that the student walked at a faster speed than Situation 1 by looking at the graph?



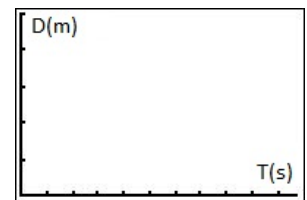
Walking Away from the CBR at a faster speed than Situation 1

Situation 4. Another student will produce a distance-time graph by starting about 5-6 meters from the CBR and walk toward the CBR when the CBR begins collecting data. Make a sketch of the graph produced.

How can you tell from the graph that the student is walking toward the CBR?

Distance is labeled on the y-axis. Time is on the x-axis. What is happening to the distance as time increases?

How can you tell from the graph where the student started his/her walk?

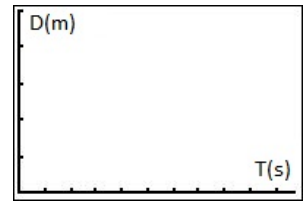


Walking Toward the CBR

How can you tell from the graph where the student ended his/her walk?

Situation 5. Another student will produce a distance-time graph by starting at about 5-6 meters that is less steep than Situation 4. Describe how the student must move to produce this new graph.

Walk the prediction. Make a sketch of the graph that was produced.



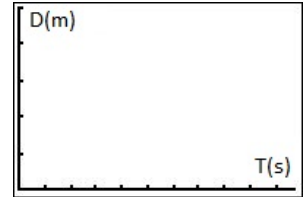
Making a less steep line than Situation 4

Situation 6. Another student will produce a distance-time graph by starting at 3 meters from the CBR and try to stand absolutely still when the CBR begins to collect data. Make a sketch of the graph produced.

How is this graph different from all the previous 5 situations?

How does the graph illustrate that the student did not move?

Can you tell where the student stood?



Standing at one location

Situation 7. Another student will produce a distance-time graph by starting at 2 meters from the CBR, walking away from the CBR slowly for 4 seconds and then stop for the rest of the time. Make a sketch of the graph produced.

How is this graph different from all the other situations?

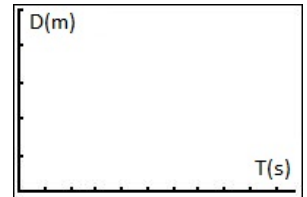
Describe what the different parts of the graph tell you about the walk.

Describe the position of the student when he/she stopped.

Describe how long the student walked.

Describe how far the student walked.

Describe how long the student stopped.



Walking away from the CBR and stopping.

Situation 8. Another student is to produce a distance-time graph by starting and staying at 4 meters for 3 seconds and then walk slowly toward the CBR. Make a sketch of the graph produced.

How is this graph different from all the other situations?

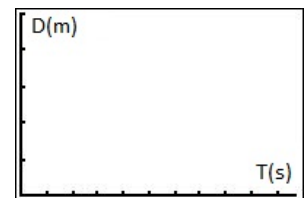
Describe what the different parts of the graph tell you about the walk.

Describe the position of the student when he/she stopped.

Describe how long the student stopped.

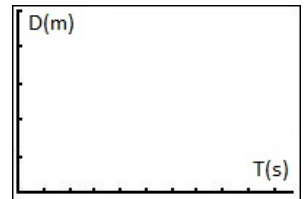
Describe how long the student walked.

Describe how far the student walked.



Standing still and then walking toward the CBR

Situation 9. Another student will produce a distance-time graph by starting at 1 meters from the CBR, walking away from the CBR slowly for 3 seconds, stopping for 3 seconds and then walking backwards for the rest of the time. Make a sketch of the graph produced.



Walking away, stopping and walking backwards

How is this graph different from all the other situations?

Describe what the different parts of the graph tell you about the walk.

Describe the position of the student when he/she stopped.

Describe how long the student walked away from the CBR.

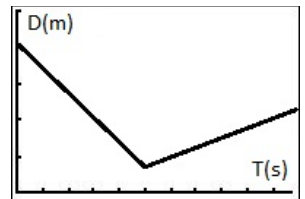
Describe how far the student walked away from the CBR.

Describe how long the student stopped.

Describe, from the graph, how you know the student walked backwards?

Describe, from the graph, how you know the student walked backwards at a different speed.

Situation 10. Another student will produce a distance-time graph as illustrated at the right.



How will you produce this graph?

Describe what the student must do to produce this graph.

Analyze how successful the student was in producing the graph. Can it be made better?