LessonTitle: Stories from Graphs Parts I, II — Alg 4.1a

Utah State Core Algebra Content Standard 2.3 Process Standards 1-5

Summary

In this lesson, students must match stories to distance/time graphs and then create stories to go with distance/time graphs. They also match graphs from the Calculators and CBRs by moving toward and away from a wall.

Enduring Understanding	Essential Questions
Coordinate graphs tell stories about numeric patterns and relationships. By using the graph variables and examining the type of line, direction of slant, slope and placement of the line, one can read the stories about the variables and their relationships.	How can a graph tell a story?
Skill Focus	**Vocabulary Focus**
• Interpreting distance versus time graphs	slope, rate of change, x and y axis

Materials CBRs with TI 73 or 83 graphing calculators

Launch ideas

"I used the CBR as a launch. I projected the calculator screen on the screen at the front of the class. Then students tried to match the graph. This was a good introduction so that students could begin to see how the graphs relate distance and time."

"We decided that we would give Part 1 as a launch. Once again, some are going to do this in groups and others will have them work on it individually first then discuss as a whole."

"Have a student draw a random graph on board then as a class discuss what the graph is saying. Change the axis labels and discuss how it changes the story."

Explore ideas

"The students explore using the CBRs. Part III could be homework—do part IV in class the next day. Then have students do."

"Discuss part one and three as a class. The students need to understand how to read a graph and participate in the discussions. Part two and four will be done in small groups. The students need to be working cooperatively in groups, using the equipment appropriately, and recording their data. The teacher needs to check for understanding after parts one and three. Before the students are divided into groups the teacher is responsible for instructing the students on proper usage of the equipment. During parts two and four the teacher will ask groups questions as while circulating."

Summarize

"After students do Stories from Graphs Parts I-IV, have them do "Graphs Tell Stories."

"We feel like questions 7 and 8 are great summaries of the lesson. We will have students explain and justify their answers to these two questions as well as essential question #1. Phil will mail a copy of an extension to us that we might want to use as an extension."

Apply

Assess

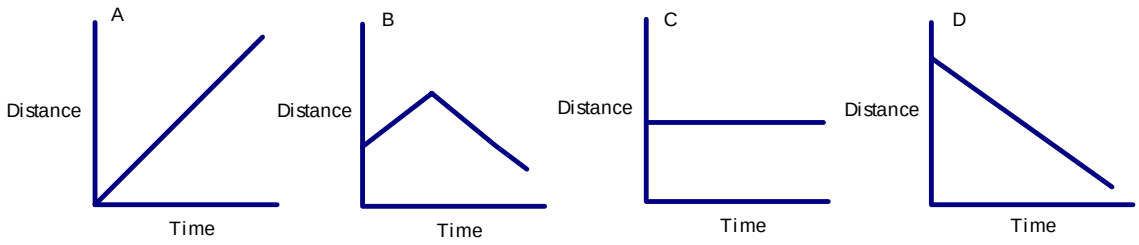
Information:
There are two versions of Part II below.

Alg 4.1a Stories from Graphs (Parts I, II)

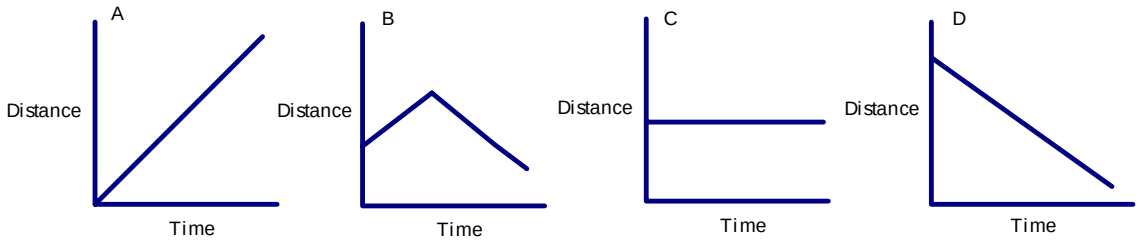
Match the story with the graph that fits.

Part I

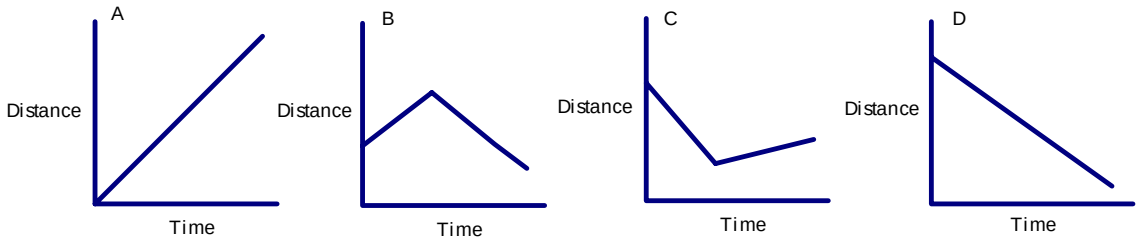
1) Bryn walked away from the house.



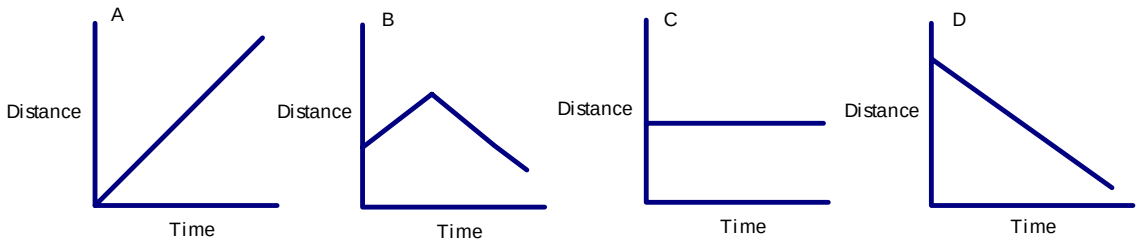
2) Christian walked toward the swimming pool.



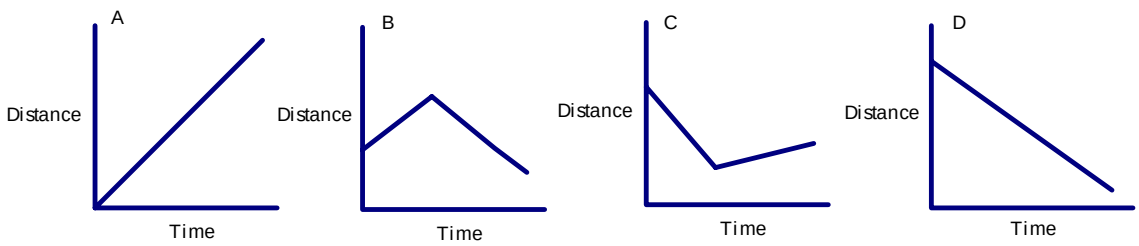
3) Anna ran toward the fence and then away.



4) Ben stood still watching the others move around.



5) All the children raced down the hill together away from the house.



Part II Match the Graph

You will be using the *DIST MATCH application in the CBR™ Ranger* program on the TI 73 calculators to recreate the graphs that are given. Before you recreate the graph, draw the graph, fill in a table, and describe how the person holding the ranger will have to walk to recreate the graph. Each group member should walk *at least* one graph.

Instructions

- Firmly attach the TI 73 to the CBR Ranger.
- Choose the APPS button on the TI 73.
- Choose 2: CBL/CBR.
- Choose 3: RANGER.
- Choose 3: APPLICATIONS.
- Choose 2:FEET.
- Choose 1:DIST MATCH.

1. Group Member walking the graph _____

Fill in the table for the graph you are to match.

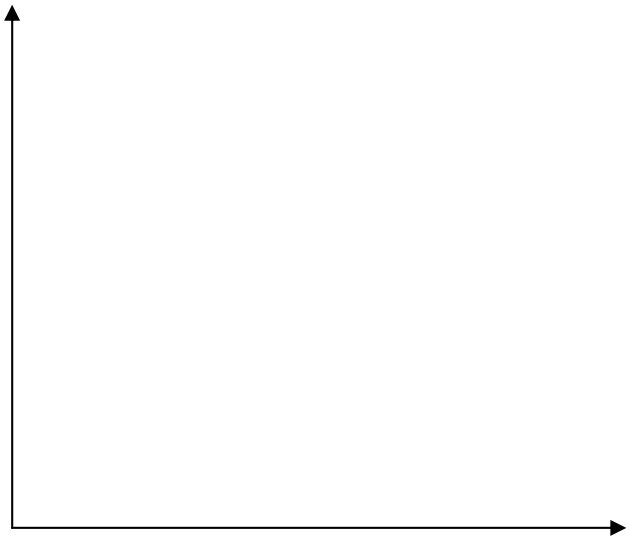
On the axis' below, draw and label the graph you are to match.

Time (s)	Distance (ft)
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Describe how your group member will have to walk to recreate the graph.

2. Group Member walking the graph _____

Fill in the table for the graph you are to match.
On the axis' below, draw and label the graph you are to match.

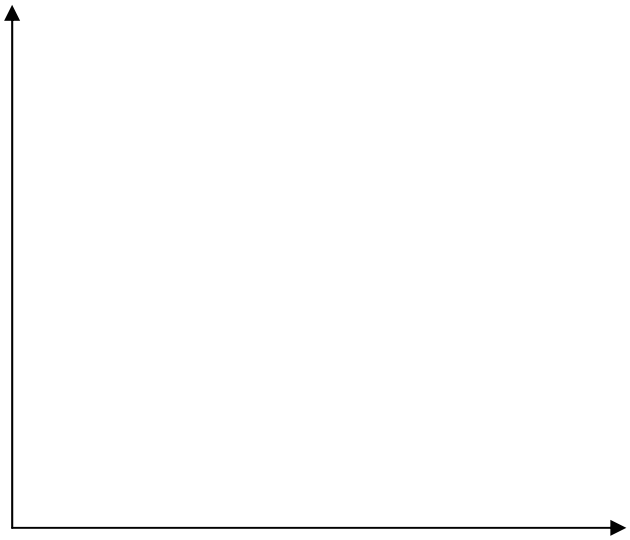


Time (s)	Distance (ft)
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Describe how your group member will have to walk to recreate the graph.

3. Group Member walking the graph _____

Fill in the table for the graph you are to match.
On the axis' below, draw and label the graph you are to match.

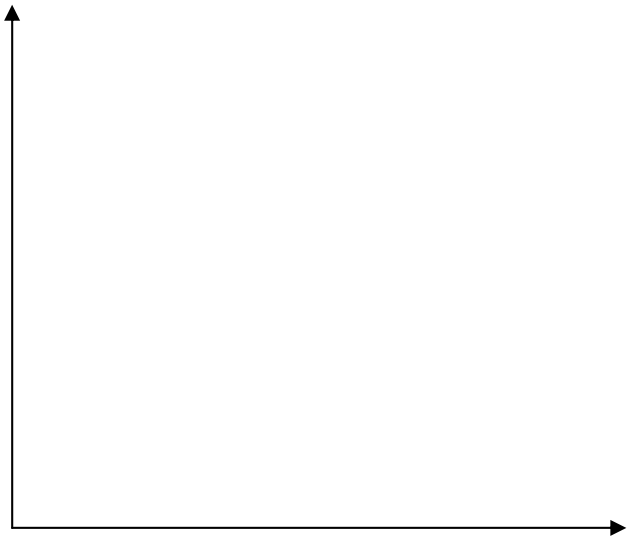


Time (s)	Distance (ft)
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Describe how your group member will have to walk to recreate the graph.

4. Group Member walking the graph _____

Fill in the table for the graph you are to match.
On the axis' below, draw and label the graph you are to match.

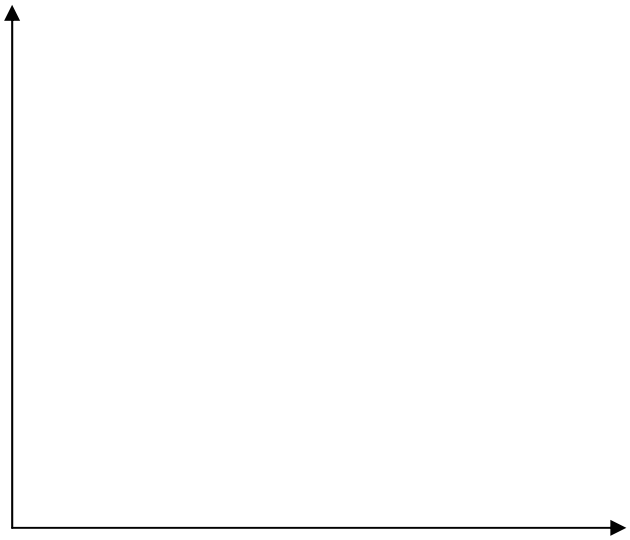


Time (s)	Distance (ft)
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Describe how your group member will have to walk to recreate the graph.

5. Group Member walking the graph _____

Fill in the table for the graph you are to match.
On the axis' below, draw and label the graph you are to match.



Time (s)	Distance (ft)
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Describe how your group member will have to walk to recreate the graph.

Part II Use the CBR to match graphs.

You will be using the *DIST MATCH application in the CBR™ Ranger* program on the TI 73 calculators to recreate the graphs that are given.

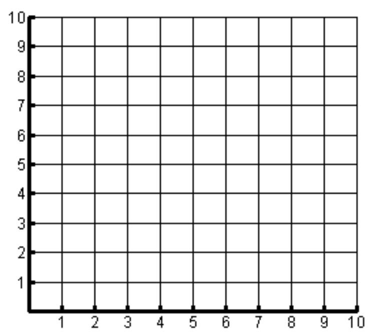
Instructions

- Firmly attach the TI 73 to the CBR Ranger.
- Choose the APPS button on the TI 73.
- Choose 2: CBL/CBR.
- Choose 3: RANGER.
- Choose 3: APLICATIONS.
- Choose 2:FEET.
- Choose 1:DIST MATCH. Get your first graph onto the calculator screen.

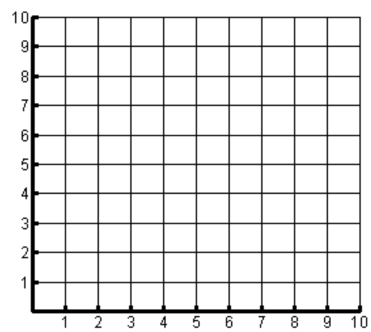
Try to match the graph. Decide how far away from the wall you should stand to begin. Hold the CBR so that the CBR sensor is up and directed toward the wall. Press start. Then walk toward or away from the wall trying to match the graph on the calculator screen.

Each member of your group should walk to match at least one graph on the calculator.

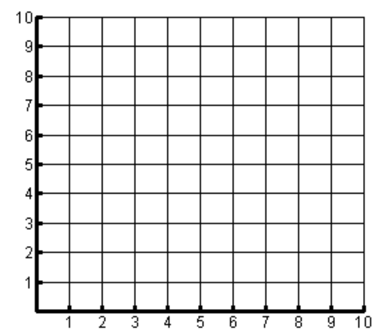
1) Sketch each graph below.
2) Write the story for the graph—describe how your group member will have to walk to recreate the graph. For example, "*start 5 feet away and walk slowly toward the wall*."



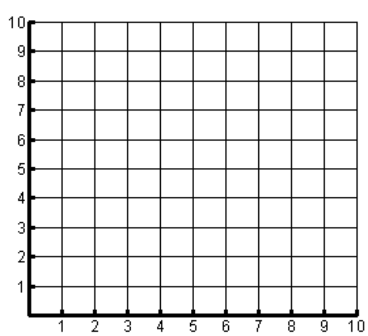
Story:



Story:



Story:



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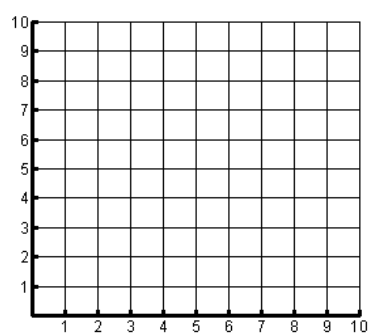

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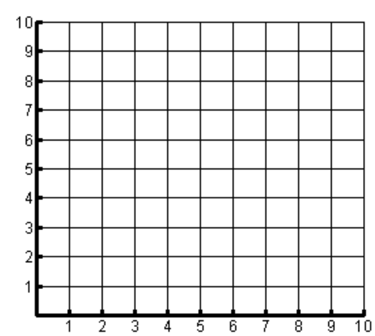

Story: