Edgenuity

Warm-Up | Quantitative Reasoning

Lesson Question

Lesson Goals

Interpret the _____ between two quantities.

Determine appropriate graphs to represent _____ relationships.

Determine the quantitative relationships represented by _____ and tables.

Words to Know

Write the letter of the definition next to the matching word as you work through the lesson. You may use the glossary to help you.

_____ compare	A. an imagined or projected sequence of events
_____ scenario	B. measurable attribute of a thing or event
_____ constant	C. a number or a variable whose value does not change
_____ quantity	D. to explain or show the similarities or differences between items or ideas
_____ rate	E. a ratio comparing quantities measured in different units

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Determining the Winner

[ ] are measurable characteristics of things or events.

Consider the swim meet times shown.

Kara swims almost twice as fast as Beth, and Natalie swims about the same speed as Beth. If Jenn swims faster than Kara, then who is a faster swimmer, Natalie or Jenn?

The results of a 50 m freestyle race are given in the table.

Swimmer	Time (seconds)
Beth	52.4
Jenn	26.2
Kara	28.5
Natalie	51.7

We can tell from the table that [ ] is the fastest swimmer. She has the [ ] time and the fastest speed.

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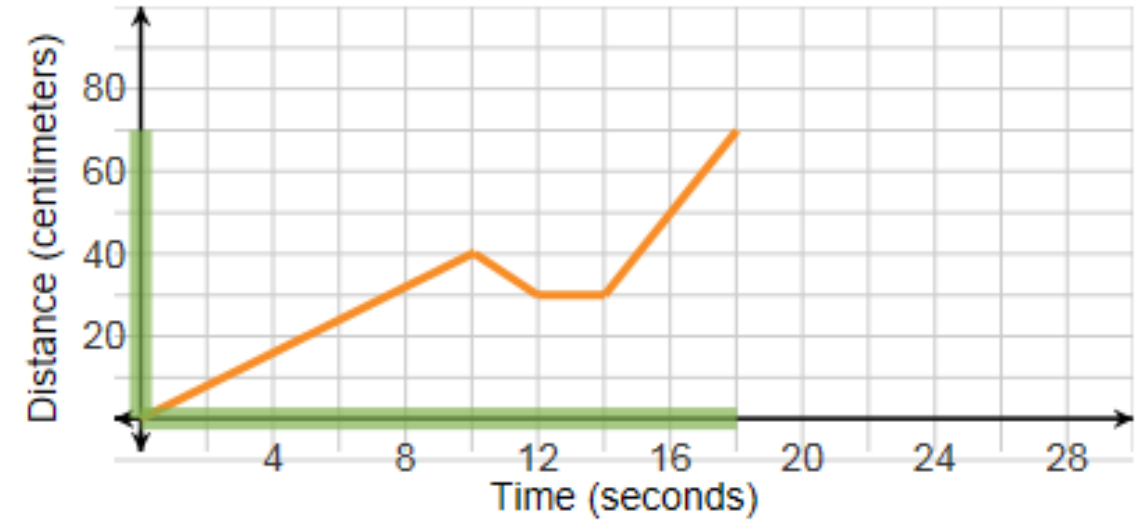
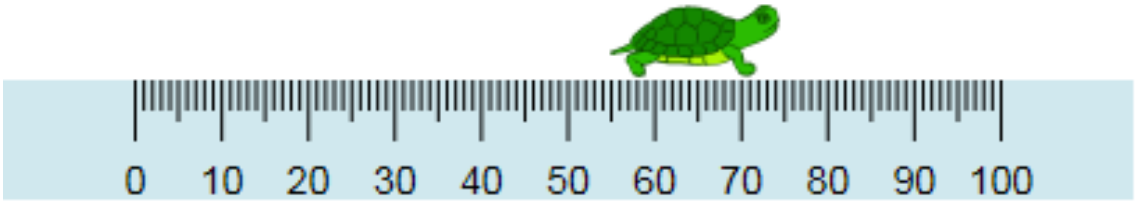
Analyzing Distance and Time

Example:





[ ] is on the horizontal axis, measured in seconds.

[ ] is measured along the vertical axis, in centimeters.

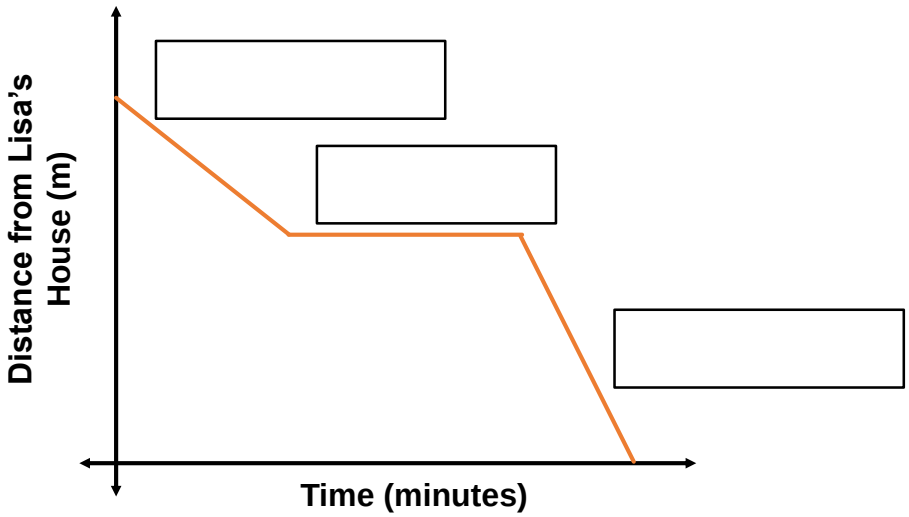
The orange line shows the [ ] between time and distance.

Analyzing Quantities from Graphs

Example: Examine the graph representing Lisa's activity and determine a possible **scenario**, or imagined sequence of events, relating the quantities of distance and time.

- Time in minutes is represented on the _____ axis.
- Distance from Lisa's house is represented on the _____ axis.
- Lisa started away from her house, because it's at the top of the graph.
- At the end Lisa arrives at her house, because it is at the _____ of the graph.
- In general we can say that Lisa started away from her home and traveled to her home.

Label each section of the graph as increasing, decreasing, or constant.



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Are there times when the distance from Lisa's house is not changing, or a **constant**?

There [ ] times when the distance is constant.

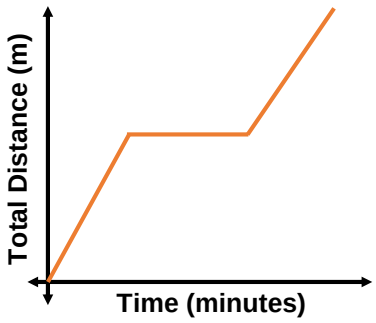
Are there times when Lisa's **rate**, or distance traveled during segments of time, seems faster or slower than others?

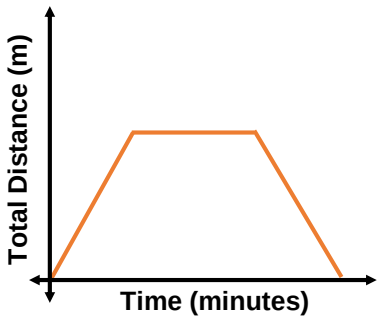
Yes, the third section of the graph goes down very quickly, which means that her speed [ ].

Graphical Misconceptions

Example: For his workout, Miguel ran uphill for a while, reached the top, rested a few minutes to take a drink of water, and then ran back down the hill. **Compare** the graphs below and determine which one accurately represents Miguel's workout.

Circle the correct graph.





When Miguel runs back down the hill, that means distance is still increasing.

He's traveling additional distance. If he's traveling additional distance, the distance needs to go [ ].

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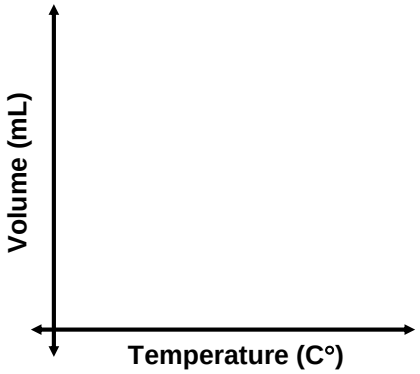
Analyzing a Quantitative Relationship from a Table

Example: Determine and sketch the basic graph that would represent the table of values comparing temperature and volume of a gas.

Temperature (C°)	[ ] (mL)
10	90.7
30	100.9
50	111.1
70	121.3
90	131.5



As the temperature increases by 20° C, the volume also increases by about [ ] mL.

Sketch a line on the graph to show the relationship in the table.

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Coordinating Distance and Time

Example: Alexander and Lena were riding their mountain bikes on local trails. A portion of their activity is represented on the graph.

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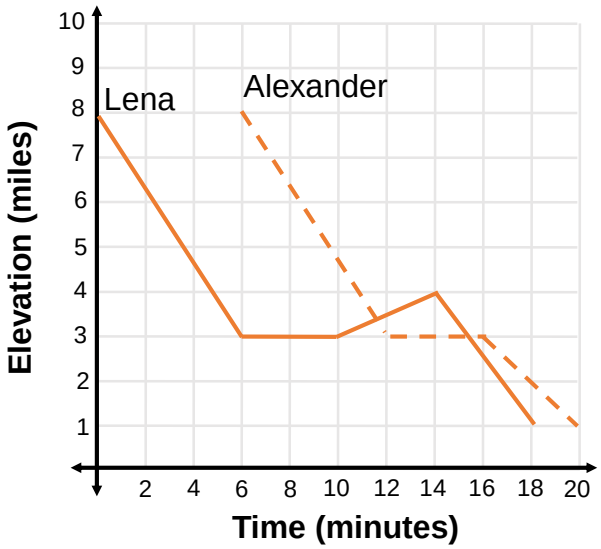


Do the friends start at the same time and position?

- They don't start at the same time, because Alexander started [ ] minutes after Lena.
- They both started at [ ] miles in elevation, but we do not know if it's the same trail or mountain.

Is there a time when they cross paths?

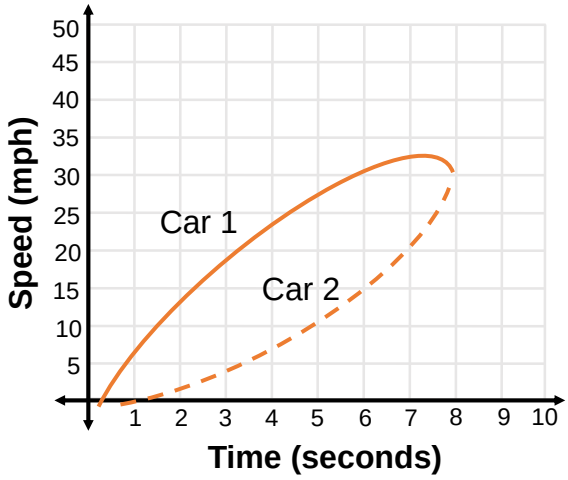
- Although there are [ ] points where the graphs intersect, the graphs show how time and [ ] are changing together. The intersections don't mean that they were meeting up together.

Who takes the longest time to get from 8 miles to 1 mile above sea level?

- It took Lena 18 minutes to get from 8 miles to 1 mile in elevation, and it took Alexander [ ] minutes to get the same distance. So it took [ ] the longest amount of time.

Comparing Speed and Time

Example: Compare the plotted graphs of two cars' speed versus time, with both cars starting from the same location.



What can be determined about the speed of Car 1 compared to Car 2 over the first 6 seconds?

- After 6 seconds, Car 1 is at [ ] mph and Car 2 is going [ ] mph, so we can say that Car 1 is going quite a bit [ ] than Car 2 and would have gotten further along the course.

Do the cars intersect? Explain

- At the [ ] second mark, the lines on the graph do intersect. However, the only thing the graph tells us is that at the 8 second mark, both cars we're going approximately 26 miles per hour. So we don't know if the cars intersect.

Summary | Quantitative Reasoning

Lesson Question

What is quantitative reasoning?

Answer

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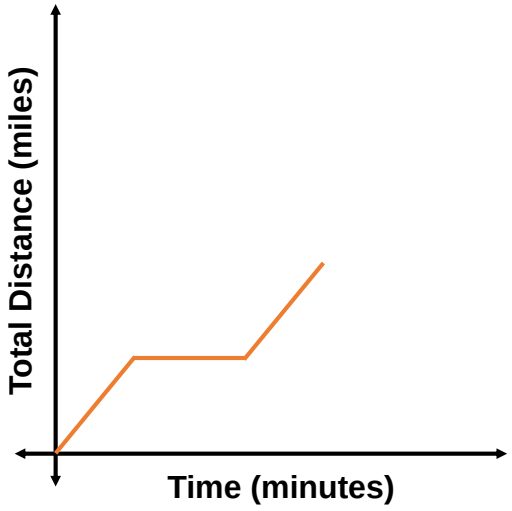
Review: Key Concepts

- _____ are measurable attributes of objects or phenomena.
- Quantitative reasoning compares changes in one quantity to _____ in another quantity.
- Quantitative reasoning allows for interpretation and _____ of real-world scenarios.



Summary | Quantitative Reasoning

Use this space to write any questions or thoughts about this lesson.