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DepED
DEPARTMENT OF EDUCATION

Lesson Exemplar for Science

Quarter 3
Lesson
5

Lesson Exemplar for Science Grade 4
Quarter 3: Lesson 5 (Week 5)
SY 2024-2025

Development Team

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SCIENCE/QUARTER 3/ GRADE 4

I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. Content Standards	*The learners learn that:* 1. Science processes help in observing and predicting how things move. 2. Gathering scientific information helps explain the behavior of objects and materials.
B. Performance Standards	*By the end of the quarter, learners* use simple equipment and processes to measure and record data related to movement and describe and predict the way things around them move using more scientifically technical language and concepts, such as speed and force. They demonstrate an understanding that science processes are used to gain deeper understanding about forces and energy that cannot be seen directly, including the properties of magnet, light, sound, and heat. Learners apply their observation skills and objectivity to identify where energy is evident in their local communities and how it is used by people.
C. Learning Competencies and Objectives	***Learning Competency 1: The learners construct and label simple graphs of different speeds including stationary and uniform speeds, both fast and slow.*** *The learners will be able to:* Lesson Objective 1: construct a simple distance vs. time graph; Lesson Objective 2: identify if an object is stationary or moving at a uniform speed using the line graph.
C. Content	Describing Motion Using Distance vs. Time Graphs ● How to construct and label a simple line Graph
D. Integration	Edukasyon sa Pagpapahalaga (ESP) – Patience and respect for others are very important because not everyone can do the same task at the same speed. Math – The skills learned in Grade 2 math include measuring distance using a meter stick and measuring time using a stopwatch. Physical Education (PE) – Along with agility, balance, and coordination, speed is a concept that students need to understand to help them develop physical fitness. Movement and positioning concepts are necessary as well. Health and Medicine – It is important to accurately measure the prescribed dosage of medicines to be effective and avoid overdosing.

II. LEARNING RESOURCES
• Teachers, F. T. (2019, July 15). *Five tools for reflection.* For The Teachers. https://www.fortheteachers.org/friday-five-tools-for-reflection/ • Third Space Learning. (2023, July 9). *Speed Distance Time - GCSE Maths - Steps, Examples & Worksheet.* https://thirdspacelearning.com/gcse-maths/ratio-and-proportion/speed-distance-time-triangle/

III. TEACHING AND LEARNING PROCEDURE		NOTES TO TEACHERS
A. Activating Prior Knowledge	**DAY 1** **Short Review (10 minutes)** Drill Instructions: Recite the definition of the word flashed on the card. **Distance** **Position** **Speed** **Motion** **Travel Time**	You can use flashcards to help the learners review the terms used to describe the concepts of motion. If a TV or a projector is available, you can flash the words on the screen instead.
B. Establishing Lesson Purpose	**DAY 1** **1. Lesson Purpose (15 minutes)** In presenting the importance of using line graphs for showing how fast objects are, use this dialogue: "Have you ever wondered how we can show whether a car is going faster or slower, even without watching it move? Imagine you're racing your friend on your bikes. How can you tell who's getting further ahead, without constantly looking back? Today, we're going to learn a special trick to track how far something travels over time. This trick will let us create a picture, called a	If you have a TV or a projector, you can show the YouTube video of cars traversing the highway below. Ask the learners if they think that each car has a different speed than the other cars. Then tell them that they can see how fast an object moves just by making a graph.

	graph, that shows us exactly how fast and slow things are moving – even if we only see them at the beginning and end!" **2. Unlocking Content Area Vocabulary** ● **Title:** It describes the content or purpose of the graph. ● **Axes:** The line graph contains two axes, i.e., the x-axis (horizontal) and y-axis (vertical). The x-axis typically represents the independent variable (e.g., time), while the y-axis represents the dependent variable (e.g., distance). ● **Labels:** The name given to the x-axis and y-axis. ● **Line:** It is the line segment that is used to connect two or more data points.	Cars Moving On Road Stock Footage - Free Download (youtube.com) You can flash the definition of these words before the **Explicitation** to prompt the learners of the terms used to describe the parts of a line graph.
C. Developing and Deepening Understanding	**Describing Motion Using Distance vs. Time Graphs (5 days)** **How to construct and label a simple line Graph** **DAY 1** **1. Explicitation** Introduce the importance of line graphs in visualizing and interpreting motion. You can begin with a simple question: *"Can you think of a time when you had to travel somewhere? How far was it, and how long did it take?"* Also, briefly review key terms: "distance" and "time." Emphasize that distance is the amount of space between two points, and time is the duration it takes to cover that distance. Then, ask them: *"How can we represent the journey from home to school on paper? What information do we need?"* **a. Storytelling (15 minutes)** Imagine you're watching a race. Cars zip across the track, creating a blur of color and speed. But how do you truly know who's winning? What if we could capture the excitement of the race, not just in snapshots but in a story of movement? That's exactly what line graphs do for motion! Think of each car in the race as a dot on a line. As time ticks by, those dots trace their journeys across the graph, revealing secrets about their speed, distance, and even how they change pace. It's like painting a picture of the race with numbers—a language that unlocks the mysteries of motion.	

So why are line graphs so important in understanding motion?

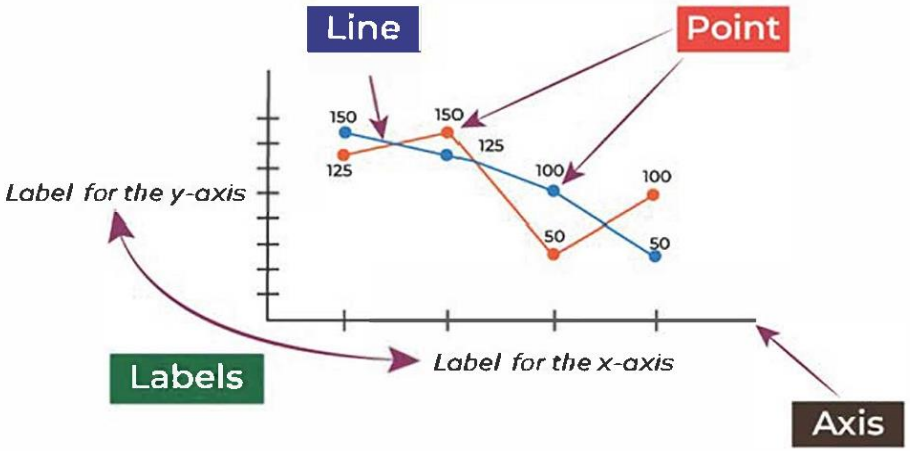
- They make the invisible visible.
- They tell stories of motion.

DAY 2

b. Class Interaction

A line graph is a unique type of graph that is commonly used in science. It is particularly useful for displaying trends and changes over a continuous interval or period.

Before making our first line graph, let us first know its parts.



- **Title:** It describes the content or purpose of the graph.
- **Axes:** The line graph contains two axes, i.e., the x-axis (horizontal) and y-axis (vertical). The x-axis typically represents the independent variable (e.g., time), while the y-axis represents the dependent variable (e.g., distance).
- **Labels:** The name given to the x-axis and y-axis.
- **Line:** It is the line segment that is used to connect two or more data points.
- **Data Point:** A data point represents a specific value or measurement for a given variable at a particular point in time.

2. Worked Example

a. Our First Line Graph

Using the sample data below, guide the learners in making their first line graph. This data shows the speed of a car as it runs towards the north.

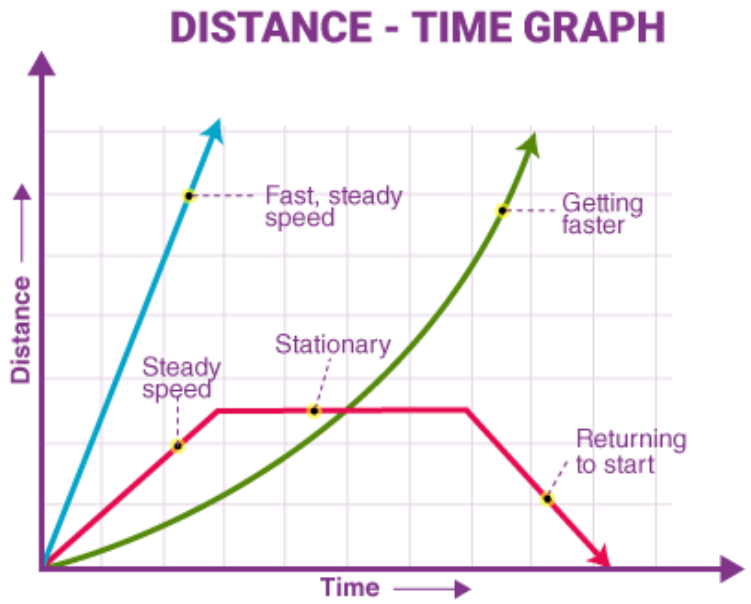
Time (s)	Distance (m)
0	0
1	2
2	4
3	6
4	8
5	10

How to draw line graphs:

1. **Label the axes**: Add labels to the x-axis and y-axis. You can also include the unit of measurement.
2. **Determine the variables**: The first and foremost step to creating a line graph is to identify the variables you want to plot on the x-axis and y-axis.
3. **Choose appropriate scales:** Based on your data, determine how many units each grid line or division represents. The x-axis and y-axis must have equal intervals based on your chosen scale.
4. **Plot the points:** Plot the individual data points on the graph according to the given data. The time goes on the x-axis, and the corresponding position goes on the y-axis.
5. **Connect the points:** After plotting the points, you have to connect those points with a line.
6. **Add Title:** After completing the graph, you should provide a suitable title.
7. **Interpret the graph.** Look for patterns, such as constant speed or periods of rest. Consider the slope of the graph, as it provides information about the speed of the object.
8. **Review and Revise**

Guide question:
What does the graph show us about the speed?

Interpreting Distance-Time Graphs
For a better understanding, the teacher may consider presenting this kind of graph (this is just an example) and describing what the graph shows us about speed.



Guide questions:
1. What are some things you notice about the graph? What do the axes and the lines represent?
2. What does it mean when the line goes up quickly? How about when it's flat?

DAY 3

3. Lesson Activity

a. Graph it!

Meet Turbo Turtle! He's not your average turtle. Today is the Great Reef Race, and Turbo is determined to prove he's the fastest underwater swimmer in his class. He sets off from the starting line, zipping through the coral tunnels and seaweed forests. But watch out for Mr. Stingray, who likes to zoom past and splash Turbo with his tail!

Time (min)	Distance (m)
0	0
1	5
2	10 *(Mr. Stingray splashes Turbo, making him lose his goggles!)*
3	15 (*Turbo realizes his goggles are gone so goes back to find them.)*
4	10 *(Turbo finds his goggles!)*
5	15
6	20
7	25

Graph Turbo's data and describe his motion throughout the race.

Process questions:

1. What does the graph show about Turbo's speed at the beginning?
2. What happens to the line at 3 minutes?
3. Does Turbo ever catch up to his classmates?

b. Who Ran Faster?

James and John were walking to school when they decided to race against each other. Using the data below, make a line graph of both James's and John's motion in one plot. Follow the steps in making a line graph and find out who ran faster between the two.

Clue: The line graph that is steeper than the other is the one that moves faster.

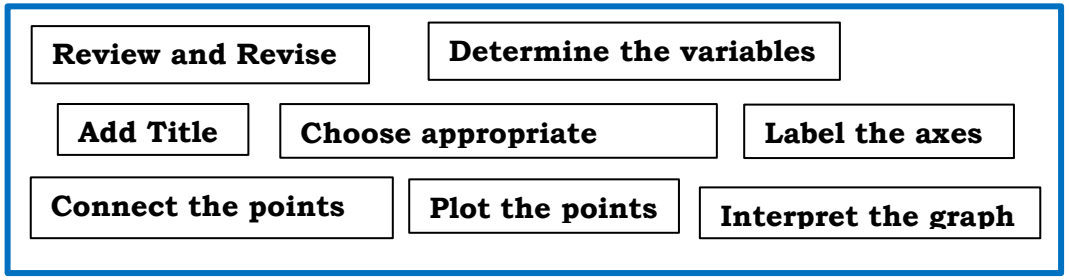
Time (s)	*James' distance (m)*	*John's distance (m)*
0	*0*	*0*
1	*0.5*	*1*
2	*1.0*	*2*
3	*1.5*	*3*
4	*2.0*	*4*
5	*2.5*	*5*
6	*3.0*	*6*
7	*3.5*	*7*
8	*4.0*	*8*

D. Making Generalizations

DAY 4

1. Learners' Takeaways

In a sheet of paper, let the students write and arrange the steps in making a simple line graph. You can show the steps on the board or on the screen, but not in order, to guide them.

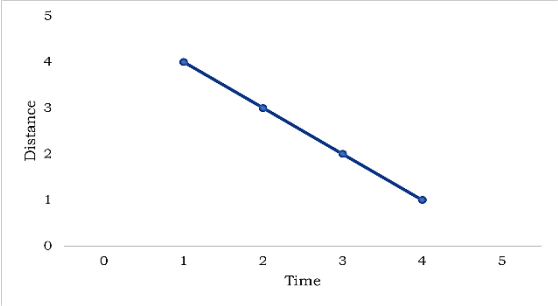


Answer Key:

1. Label the axes
2. Determine the variables
3. Choose appropriate scales
4. Plot the points
5. Connect the points
6. Add Title
7. Interpret the graph
8. Review and Revise

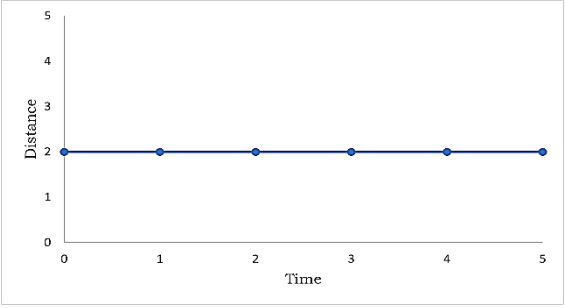
IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION		NOTES TO TEACHERS
A. Evaluating Learning	**Formative Assessment** A. Examine the distance vs. time graphs below and identify which among them is *stationary*, *moving at a constant speed*, or *going back*.	Teachers may encourage learners to have a quiz notebook to monitor learners' academic progress. The quiz notebook may also serve as homework notebook.

1.



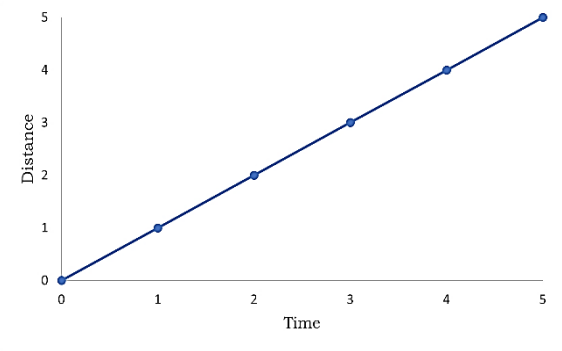
Answer:

2.

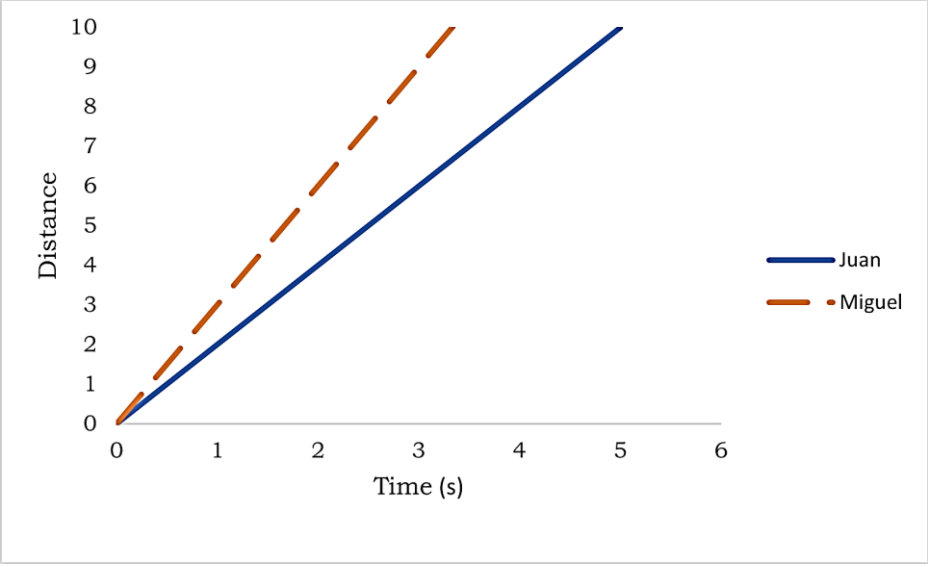


Answer:

3.



Answer:

<table>
<tr>
<td></td>
<td colspan="3">B. Analyze the graph below and identify who runs faster: Juan or Miguel.
 

Answer: _____</td>
<td></td>
</tr>
<tr>
<td rowspan="5">B. Teacher's Remarks</td>
<td>Note observations on any of the following areas:</td>
<td>Effective Practices</td>
<td>Problems Encountered</td>
<td rowspan="5"></td>
</tr>
<tr>
<td>strategies explored</td>
<td></td>
<td></td>
</tr>
<tr>
<td>materials used</td>
<td></td>
<td></td>
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<tr>
<td>learner engagement/ interaction</td>
<td></td>
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<tr>
<td>others</td>
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</table>

C. Teacher's Reflection	*A reflection guide or prompt can be on:* ▪ *principles behind the teaching* *What principles and beliefs informed my lesson?* *Why did I teach the lesson the way I did?* ▪ *students* *What roles did my students play in my lesson?* *What did my students learn? How did they learn?* ▪ *ways forward* *What could I have done differently?* *What can I explore in the next lesson?*	