

Introduction to Physical Science ▪ *Reading/Notetaking Guide***Graphs in Science** (pp. 34–41)

This section explains how to plot a line graph, including how to draw the line on the graph. It also explains why line graphs are powerful tools in science.

Use Target Reading Skills

Before you read, look at the red headings in this section of the textbook. Then complete the graphic organizer by writing each red heading and a question about that topic. Answer your questions as you read.

Graphs in Science		
Heading	Question	Answer
The Importance of Graphs		

Introduction to Physical Science ▪ *Reading/Notetaking Guide***The Importance of Graphs** (pp. 35–37)

1. What can graphs reveal about data?

2. What are the three types of graphs that scientists commonly use?

3. Graphs are used to show how the responding variable changes in response to the _____ variable.

4. Is the following sentence true or false? The manipulated variable is plotted on the horizontal axis. _____

Match each term with its definition by writing the letter of the correct definition on the line beside the term in the left column.

Term	Definition
_____ 5. horizontal axis	a. the point showing the location of a piece of data
_____ 6. vertical axis	b. the graph line that runs from left to right
_____ 7. origin	c. a pair of numbers used to determine the position of a point on a graph
_____ 8. coordinate	d. the graph line that runs up and down
_____ 9. data point	e. the point where the x -axis and the y -axis cross

10. Circle the letter of each sentence that is true about plotting a line graph.

- a. The x -axis is the horizontal axis and the y -axis is the vertical axis.
- b. Label the vertical axis with the name of the responding variable.
- c. Include units of measure on only one of the axes.

11. What is a line of best fit?

12. What is a linear graph?

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13. The Data Table contains information about the distance traveled by a car. Use the information in the Data Table to plot a line graph in the square provided.

Data Table

Time (min)	Distance Traveled (km)
10	8
20	16
30	24
40	32

Why Draw a Line of Best Fit? (p. 38)

14. What does a line of best fit emphasize about the data?

15. Circle the letter of each tip that is true about drawing a line of best fit.
- a. Include as many data points as possible directly on the line.
 - b. Try to have the same number of points above the line as below the line.
 - c. Never include a data point directly on the line.
 - d. Draw a straight line if the data points seem to follow along a straight line.

Slope (p. 39)

16. Circle the letter of each sentence that is true about the slope of a graph line.
- a. Slope is the ratio of the vertical change to the horizontal change.
 - b. Slope is the ratio of the rise to the run.
 - c. Slope is the steepness of the graph line.
 - d. Slope tells you how much x changes for every change in y .

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17. What is the formula used to calculate slope?

Using Graphs to Identify Trends (pp. 40–41)

18. What is a nonlinear graph?

19. Circle the letter of each sentence that is true about using graphs.

- a. You can identify trends from a line graph.
- b. You cannot make a prediction from a nonlinear graph.
- c. You can make predictions from a line graph.
- d. You can see how the responding and manipulated variables are related.

20. Is the following sentence true or false? When there are no identifiable trends in a graph, it most likely means that there is no relationship between the two variables.

21. What trend can you see in the graph you made from the data table on the previous page about the distance traveled by a car?
