



Product Overview

AN INNOVATIVE CORE PROGRAM FOR TEACHING K-5 OKLAHOMA ACADEMIC STANDARDS FOR SCIENCE

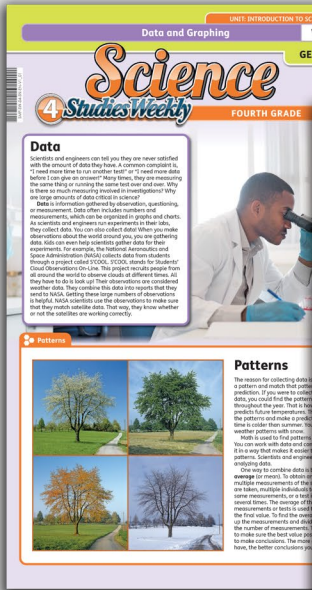
Our student-friendly periodical format pairs with a robust online learning platform that includes engaging articles, videos, interactive elements, and Google Classroom and LMS integrations.

- Ready for in-class or remote learning
- Hands-on with open-and-go lessons
- Powered by guiding questions
- Fully aligned with NGSS
- Language Arts ready
- Student-friendly
- Fun!



OBSERVE. CONNECT. ANALYZE.

DOMAIN-SPECIFIC VOCABULARY



SCAFFOLDED KNOWLEDGE AND SKILLS

Graphs
Another way to find patterns in data is by graphing. A graph is a picture of data. It is usually easier for the human mind to find patterns in pictures than in lists or lists of numbers. Trends, patterns, and outliers can be spotted more easily when the data is graphed. Outliers are data points that are different from all the rest.

There are four types of graphs commonly used in science and in math: line plots, bar graphs, line graphs, and pie graphs. Can you find the outlier in each graph?

Pet survey

Favorite type of pet	Number of students
Dog	10
Cat	12
Bird	15
Fish	18
Other	2

Line Plots
A line plot is a graph that uses a number line to display data. To figure out the first number on the number line, you must put your data in order from least to greatest. The lowest number is the start of the number line. The highest number is the last number on the number line. Then, fill in the numbers between the highest and lowest.

To record your data, put an X over the number line above the matching number. If a number appears in the data you add another X. For example, if the number 300 occurs four times, there would be four Xs above 300. This is a way to see patterns in the data and to find the outliers.

Number of pages in our favorite books

Number of pages	Number of books
100	1
150	2
200	3
250	4
300	5
350	6
400	7
450	8
500	9
550	10
600	11
650	12
700	13
750	14
800	15
850	16
900	17
950	18
1000	19

Line Graphs
A line graph is another type of graph that has two lines that run perpendicular to each other. The lines are called the axes of the graph. The x-axis is the line that runs horizontally, or across. The y-axis is the line that runs vertically, or up and down. After plotting all the data, a line is drawn connecting each dot from the lowest x-value to the highest.

A line graph helps visualize a quick change in value by observing the slope of the line. The slope of the line is the slope of a hill. A steeper slope means a quicker change has happened. Look at the two graphs. Which one shows a quicker change over time? How is this graph different from a line plot?

Average test scores

Month	Average Score
Aug	75
Sep	78
Oct	80
Nov	82
Dec	85
Jan	88
Feb	90
Mar	92
Apr	95
May	98

Homework turned in

Month	Number of Homeworks
Aug	10
Sep	12
Oct	15
Nov	18
Dec	20
Jan	22
Feb	25
Mar	28
Apr	30

Favorite ice cream flavor

Flavor	Number of Students
Vanilla	10
Chocolate	15
Strawberry	20
Orange	25
Apple	30
Other	35

Bar Graphs
Have you seen a bar graph? They are common. A bar graph displays data using bars of different heights and sometimes, different colors. Imagine you had your friends take a survey about which flavor of ice cream they liked best. You could graph the results in a bar graph like this one.

Looking at the data, it is easy to see what your friends' favorite ice cream flavor was (pink). Chocolate (blue) and vanilla (yellow) were the next favorites (blue/yellow). You could use this information to buy more chocolate chip ice cream when you have your friends to your birthday party. Bar graphs are one of the best types of graphs to use when you are trying to compare different groups.

Pie Charts
What is your favorite P.E. activity? Do you always try to get the biggest piece? Scientists can put data into a chart that looks like a pie divided into pieces. These graphs are called pie charts.

Because they make circles change, each piece of the graph is equal to the percent of the total. For example, for that chart, the entire circle or "pie" represents 100 percent of your class. An entire whole pie is the most popular answer. Imagine you are trying to decide what game to play in P.E. You could take a class survey and graph it on a pie chart. The graph shows that the largest percent of students like football. Based on your data, you would play football in P.E. this week.

What should we play in P.E.?

Activity	Percentage
Football	44%
Basketball	18%
Tennis	30%
Baseball	8%

BASED ON THE 5E MODEL

Variables
When scientists make graphs, they first identify the variables. Variables are the parts of the test that change.

There are two kinds of variables: independent variables and dependent variables. The variable the scientist changes is called the independent variable. When scientists are doing an experiment, they only change one thing. If more than one thing is changed, the data will not be correct. The dependent variable will change as the scientist changes the independent variable. The dependent variable is what is being measured during the investigation. Scientists make hypotheses based on these variables. A hypothesis is an unconfirmed solution to a problem. To make a hypothesis, you use this format: "If I change _____, then _____ will happen."

You want to know how the amount of water will affect the size of a plant. The amount of water is the independent variable, because this is the item in the experiment you will change. The size of the plant is the dependent variable, because that is the variable you will be measuring.

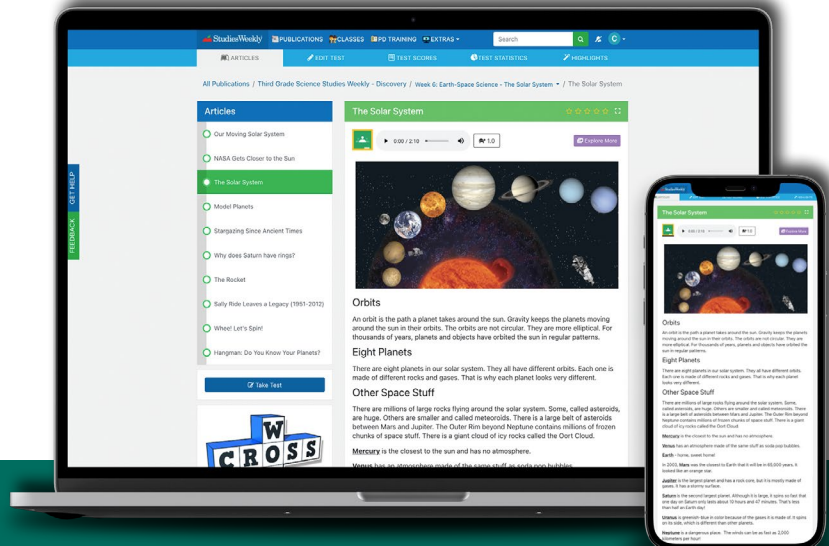
After you know how much water to use, you have another question: how much fertilizer is best for your plants? What would be the independent and dependent variable in this experiment? What is your hypothesis?

If I change _____ then _____ will happen.

GRADE-LEVEL LEXILED

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