



MATH & THE JUICE

🍊 TOPIC: DATA

FOR TEACHERS

Numbers are often a part of a story because they help to deliver an accurate and complete picture of an event. Math often helps drive new discoveries or is used to help people visualize data and results. Math is connected to many current events.

Our materials offer math teachers a direct line to making their subject relevant in student's lives.

DATA VISUALIZATION STANDARD SUPPORTED IN THIS KIT

GRADE 6

6.SP.5 — Summarize numerical data sets in relation to their context

GRADE 8

8.SP.1–4 — Investigate patterns of association in bivariate data (scatter plots, lines of best fit, etc.)

THE JUICE ARTICLES USED

Math Scores Up Slightly,
Reading Continues Decline
in National Report Card

Number of Kids Using
ChatGPT for Homework
Doubles, Survey Says

US Math, Reading Scores
for 13-Year-Olds Plummet
in Wake of Pandemic

BIG QUESTION

How can you communicate and best understand data in relation to their context?



BEFORE YOU READ

WHAT IS DATA? EXPLAIN IN YOUR OWN WORDS.

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HOW IS IT BEST TO COMMUNICATE DATA? DATA IS OFTEN A LARGE COLLECTION OF NUMBERS WITH ASSOCIATIONS TO DIFFERENT CATEGORIES OR RESULTS. IS IT BEST TO JUST LIST ALL THE DATA IN A PARAGRAPH? WHY OR WHY NOT? WHAT IS A BETTER SOLUTION TO COMMUNICATE IN A WAY THAT IS EASIER TO UNDERSTAND?

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DRAW AN EXAMPLE OF HOW YOU WOULD COMMUNICATE THE FOLLOWING DATA:

Study Hours vs. Test Scores

Student	Study Hours	Test Scores
1	1.0	60
2	1.5	62
3	2.0	65
4	2.5	67
5	3.0	69



Student	Study Hours	Test Scores
6	3.5	71
7	4.0	74
8	4.5	75
9	5.0	77
10	5.5	79
11	6.0	80
12	6.5	82
13	7.0	84
14	7.5	85
15	8.0	87
16	1.0	59
17	2.0	64
18	3.0	68
19	4.0	73
20	5.0	76



DRAW HERE:

A large, empty rectangular area defined by a dashed black border, intended for a drawing or illustration.



DURING THE READING

MATH SCORES UP SLIGHTLY, READING CONTINUES DECLINE IN NATIONAL REPORT CARD

In this reading, we will see an example of how data can be communicated clearly in context.

WHAT TREND DO YOU NOTICE IN THE MATH SCORES FROM 2004-2013?:

WHAT TREND DO YOU NOTICE IN THE MATH SCORES FROM 2013-2024?

HOW DO THE TRENDS IN THE GRAPH RELATE TO AND MATCH THE ARTICLE?

WE CAN ASSUME THAT THE LINE IS EITHER A LINE OF BEST FIT OR AN AVERAGE OF THE STUDENTS' DATA. HOW WOULD THIS DATA HAVE BEEN HARDER TO UNDERSTAND IF THE INFORMATION WAS JUST LISTED?



DURING THE READING

NUMBER OF KIDS USING CHATGPT FOR HOMEWORK DOUBLES, SURVEY SAYS

In this reading, we will see an example of how data can be communicated clearly in context.

WHAT WAS THE BENEFIT OF USING A BAR GRAPH TO COMMUNICATE THIS DATA? EXPLAIN IN 2-3 SENTENCES.

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HOW DOES THE GRAPH SUPPORT THE INFORMATION GIVEN IN THE ARTICLE?

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**DURING THE READING****US MATH, READING SCORES FOR 13-YEAR-OLDS PLUMMET IN WAKE OF PANDEMIC**

WHAT TREND DO YOU NOTICE IN THE MATH SCORES FROM 1973-2013?:

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WHAT TREND DO YOU NOTICE IN THE MATH SCORES FROM 2013-2023?

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HOW DO THE TRENDS IN THE GRAPH RELATE TO AND MATCH THE ARTICLE?

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WRITE AT LEAST 1 PARAGRAPH SUMMARIZING THE INFORMATION PROVIDED IN THE GRAPH. HOW WOULD YOU WRITE AN INFORMATIONAL PIECE ON THE DATA SET PROVIDED USING THE CONTEXT PROVIDED?

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FOR TEACHERS

BEFORE THE READING

Let the students know that they can click on the graph and zoom in and out as needed to be able to see the graph better.

DURING THE READING

Encourage students to click on the vocabulary words they are unfamiliar with or need review on. Encourage students to take notes or ask questions about topics they are unsure about. Make sure they are not trying to answer questions before reading the article. Students can read the questions before reading the article to know what to look for.

EXTEND

Allow the students to turn their 1 paragraph writing prompt into a full article. Let them add images or infographics to support their writing and graph.

ADDITIONAL EXTENSION

Let students use a data set to create their own graph and supporting article. Give the students prompts to help them understand what kind of data you want them to collect (bivariate data). Have the students turn in the raw data collection as well. Help the students understand how to best communicate data, and why it is important. Encourage students to draw a line of best fit if they choose a scatter plot to communicate their data.



MATH & THE JUICE

🍊 TOPIC: DATA

BEFORE YOU READ

WHAT IS DATA? EXPLAIN IN YOUR OWN WORDS.

Data is a collection of information in the form of numbers or other measurable information

HOW IS IT BEST TO COMMUNICATE DATA? DATA IS OFTEN A LARGE COLLECTION OF NUMBERS WITH ASSOCIATIONS TO DIFFERENT CATEGORIES OR RESULTS. IS IT BEST TO JUST LIST ALL THE DATA IN A PARAGRAPH? WHY OR WHY NOT? WHAT IS A BETTER SOLUTION TO COMMUNICATE IN A WAY THAT IS EASIER TO UNDERSTAND?

The best way to communicate/show data is in some kind of graph. Listing data is not a good solution because it makes it harder to see trends or understand correlations. When you put data in a proper graph, it allows you to easily see trends and explain relationships.

DRAW AN EXAMPLE OF HOW YOU WOULD COMMUNICATE THE FOLLOWING DATA:

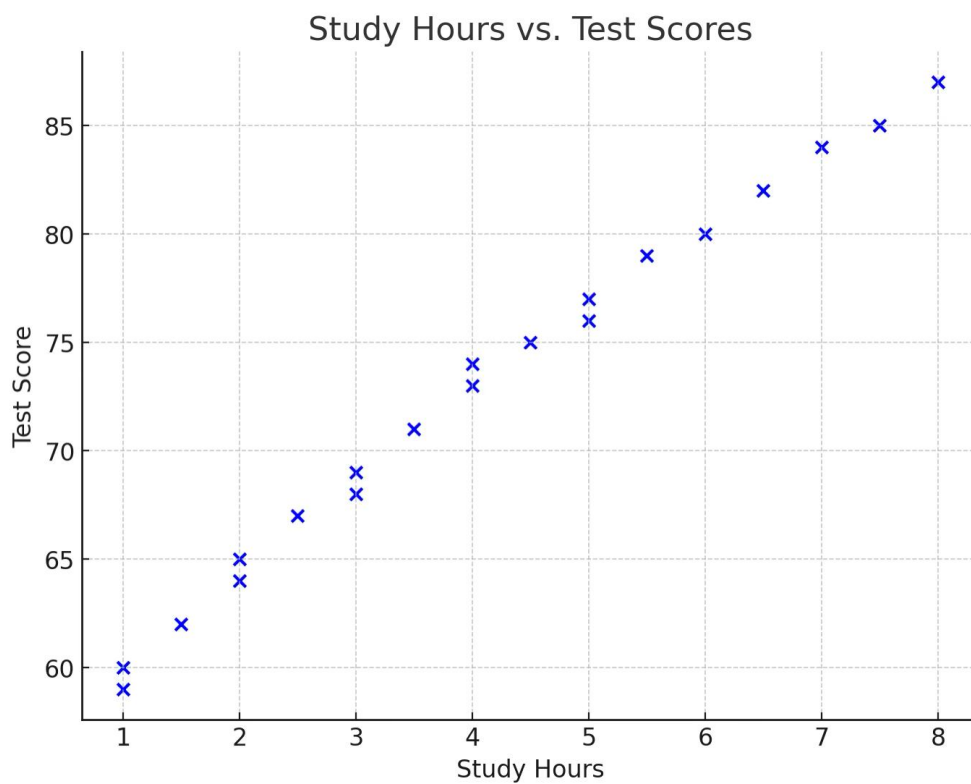
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MATH SCORES UP SLIGHTLY, READING CONTINUES DECLINE IN NATIONAL REPORT CARD

In this reading, we will see an example of how data can be communicated clearly in context.

WHAT TREND DO YOU NOTICE IN THE MATH SCORES FROM 2004-2013?:

There is an increase in math scores.

WHAT TREND DO YOU NOTICE IN THE MATH SCORES FROM 2013-2024?

There is a decrease in math scores.

HOW DO THE TRENDS IN THE GRAPH RELATE TO AND MATCH THE ARTICLE?

The article is bringing up the concerning trend in math scores in the United States. The graph shows the clear decline in math scores and when it started to support the claim in the article.

WE CAN ASSUME THAT THE LINE IS EITHER A LINE OF BEST FIT OR AN AVERAGE OF THE STUDENTS' DATA. HOW WOULD THIS DATA HAVE BEEN HARDER TO UNDERSTAND IF THE INFORMATION WAS JUST LISTED?

If there was just a massive list of data it would have been hard to see where increases or decreases were happening. It also would take a really long time to look through all the data points to even try to understand it. It would have been hard to believe the article because the list of data would not have so clearly supported the article. By using the line of best fit or average, the data is clearly summarized and easy to read.

DURING THE READING**NUMBER OF KIDS USING CHATGPT FOR HOMEWORK DOUBLES, SURVEY SAYS**

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WHAT WAS THE BENEFIT OF USING A BAR GRAPH TO COMMUNICATE THIS DATA? EXPLAIN IN 2-3 SENTENCES.

The bar graph makes it very easy to identify the different opinions of the students because you can compare the data how you would like. You can look at the specific topics to compare students' opinions by the clear color coding. The colored bars also make it very easy to see how the opinion changes across the different topics asked about.

HOW DOES THE GRAPH SUPPORT THE INFORMATION GIVEN IN THE ARTICLE?

The article is showing that while students might have used AI tools to help them with homework, they aren't using it for everything. A lot of people have been concerned about the use of AI by students, but students polled showed that they are not using AI to "cheat" as much as adults may have previously thought. Students have a clear decline in using AI for things that may be considered cheating.

DURING THE READING**US MATH, READING SCORES FOR 13-YEAR-OLDS PLUMMET IN WAKE OF PANDEMIC**

WHAT TREND DO YOU NOTICE IN THE MATH SCORES FROM 1973-2013?:

There is an increase in math scores.

WHAT TREND DO YOU NOTICE IN THE MATH SCORES FROM 2013-2023?:

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HOW DO THE TRENDS IN THE GRAPH RELATE TO AND MATCH THE ARTICLE?

The article is talking about the major negative impact that Covid has on students. You can visualize this impact through the negative trends shown in the graph.

WRITE AT LEAST 1 PARAGRAPH SUMMARIZING THE INFORMATION PROVIDED IN THE GRAPH. HOW WOULD YOU WRITE AN INFORMATIONAL PIECE ON THE DATA SET PROVIDED USING THE CONTEXT PROVIDED?

Both reading and math scores have decreased over the past 10 years for 13 year olds. Scores had been on a steady increase until around 2012. At this point the decline began, but got worse around the start of Covid in 2020. I would like to pull some other historical information to write a full informational piece on this data. I would be curious to research what was going on in the educational world in 2012. Was this an educational shift or a societal shift? I would use this historical information to then try to understand why the trend began around 2012.