

# Math Challenge #7

First Name: _____	Last Name: _____	Grade: _____
Teacher: _____	Parent's email: _____	

## Data and Information

Welcome to Math Challenge #7. In this challenge, we focus on working with data and information. In today's information-driven world, understanding how to collect, organize, and evaluate data is integral to solving real-world problems. In mathematics, data literacy enhances our ability to grasp key concepts such as statistics, probability, and patterns, while fostering critical thinking skills. Enjoy this data literacy focus challenge!

**Kinder & First Grade: solve at least 3 problems.**  
**Second & Third Grade: solve at least 7 problems.**  
**Fourth Grade and above: solve at least 12 problems.**

*Answer*

<p>1. Deanna is sorting the following items into the proper basket. How many items belong to the even number basket?</p> <div style="display: flex; justify-content: space-around; align-items: center; margin: 20px 0;"> <div style="text-align: center;"> <p>4    5    7    15</p> <p>8    3    11</p> <p>10    9    2</p> </div> <div style="text-align: center;"> </div> </div>																														
<p>2. The tally chart below shows the number of different fruits students brought for lunch.</p> <p><b>Fruits Brought for Lunch</b></p> <table border="1" style="border-collapse: collapse; margin-bottom: 10px;"> <tr><td style="padding: 2px;">Apples</td><td style="padding: 2px;">    </td></tr> <tr><td style="padding: 2px;">Bananas</td><td style="padding: 2px;">   </td></tr> <tr><td style="padding: 2px;">Oranges</td><td style="padding: 2px;">    </td></tr> <tr><td style="padding: 2px;">Grapes</td><td style="padding: 2px;">    </td></tr> </table> <p>a. Which fruit was brought the most?</p> <p>b. How many apples and bananas were brought altogether?</p>	Apples		Bananas		Oranges		Grapes		<p>a.</p> <p>b.</p>																					
Apples																														
Bananas																														
Oranges																														
Grapes																														
<p>3. In her notebook, Sanjana lists 12 animals she encountered during her summer trip. She is working on a table showing these animals being categorized according to their number of legs. Help Sanjana complete the tally marks and answer the questions.</p> <div style="display: flex; align-items: flex-start; margin-top: 10px;"> <div style="border: 1px solid red; padding: 5px; margin-right: 20px;"> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">Penguin</td><td style="padding: 2px;">    </td><td style="padding: 2px;">Dog</td></tr> <tr><td style="padding: 2px;">Duck</td><td style="padding: 2px;">    </td><td style="padding: 2px;">Chicken</td></tr> <tr><td style="padding: 2px;">Cat</td><td style="padding: 2px;">    </td><td style="padding: 2px;">Fish</td></tr> <tr><td style="padding: 2px;">Snail</td><td style="padding: 2px;">    </td><td style="padding: 2px;">Cow</td></tr> <tr><td style="padding: 2px;">Horse</td><td style="padding: 2px;">    </td><td style="padding: 2px;">Ostrich</td></tr> <tr><td style="padding: 2px;">Snake</td><td style="padding: 2px;">    </td><td></td></tr> <tr><td style="padding: 2px;">Rabbit</td><td style="padding: 2px;">    </td><td></td></tr> </table> </div> <table border="1" style="border-collapse: collapse;"> <thead> <tr><th style="padding: 2px;">Animals</th><th style="padding: 2px;">Tally marks</th></tr> </thead> <tbody> <tr><td style="padding: 2px;">Animals with no legs</td><td style="padding: 2px;">   </td></tr> <tr><td style="padding: 2px;">Animals with 2 legs</td><td style="padding: 2px;"></td></tr> <tr><td style="padding: 2px;">Animals with 4 legs</td><td style="padding: 2px;"></td></tr> </tbody> </table> <p>a. How many animals have no legs?</p> <p>b. How many animals have 2 legs?</p> <p>c. How many animals have 4 legs?</p> </div> <td style="vertical-align: top; padding-left: 10px;"> <p>a.</p> <p>b.</p> <p>c.</p> </td>	Penguin		Dog	Duck		Chicken	Cat		Fish	Snail		Cow	Horse		Ostrich	Snake			Rabbit			Animals	Tally marks	Animals with no legs		Animals with 2 legs		Animals with 4 legs		<p>a.</p> <p>b.</p> <p>c.</p>
Penguin		Dog																												
Duck		Chicken																												
Cat		Fish																												
Snail		Cow																												
Horse		Ostrich																												
Snake																														
Rabbit																														
Animals	Tally marks																													
Animals with no legs																														
Animals with 2 legs																														
Animals with 4 legs																														

<p>4. Mariyah makes a chart about the flowers in her garden.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <caption style="text-align: center;"><b>Flowers in Garden</b></caption> <thead> <tr> <th style="text-align: center;">Flower Color</th> <th style="text-align: center;">Red</th> <th style="text-align: center;">Yellow</th> <th style="text-align: center;">White</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Number of Flowers</td> <td style="text-align: center;">5</td> <td style="text-align: center;">4</td> <td style="text-align: center;">7</td> </tr> </tbody> </table> <p style="margin-left: 40px;">a. What is the total number of red and white flowers in her garden? b. How many flowers are there in her garden?</p>	Flower Color	Red	Yellow	White	Number of Flowers	5	4	7	<p>a. b.</p>												
Flower Color	Red	Yellow	White																		
Number of Flowers	5	4	7																		
<p>5. Below is a note on a survey that Andy conducted about their favorite pets. He asked 20 people.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <caption style="text-align: center;"><b>Favorite Kind of Pet</b></caption> <tbody> <tr> <td style="text-align: center;">Marie – dog</td> <td style="text-align: center;">Ben – cat</td> <td style="text-align: center;">Tasha – cat</td> <td style="text-align: center;">Becca - dog</td> </tr> <tr> <td style="text-align: center;">Lisa – cat</td> <td style="text-align: center;">Ritzo – dog</td> <td style="text-align: center;">Lina – fish</td> <td style="text-align: center;">Pete – dog</td> </tr> <tr> <td style="text-align: center;">Nima - fish</td> <td style="text-align: center;">Jose - fish</td> <td style="text-align: center;">Melanie – dog</td> <td style="text-align: center;">Jamal – cat</td> </tr> <tr> <td style="text-align: center;">Liam – cat</td> <td style="text-align: center;">Dan – cat</td> <td style="text-align: center;">Jen – hamster</td> <td style="text-align: center;">Nelika – fish</td> </tr> <tr> <td style="text-align: center;">Ann - hamster</td> <td style="text-align: center;">Nick - dog</td> <td style="text-align: center;">Varun - hamster</td> <td style="text-align: center;">Mei Li - cat</td> </tr> </tbody> </table> <p style="margin-left: 40px;">a. Which pet got the most votes? b. Which pet got the fewest votes?</p>	Marie – dog	Ben – cat	Tasha – cat	Becca - dog	Lisa – cat	Ritzo – dog	Lina – fish	Pete – dog	Nima - fish	Jose - fish	Melanie – dog	Jamal – cat	Liam – cat	Dan – cat	Jen – hamster	Nelika – fish	Ann - hamster	Nick - dog	Varun - hamster	Mei Li - cat	<p>a. b.</p>
Marie – dog	Ben – cat	Tasha – cat	Becca - dog																		
Lisa – cat	Ritzo – dog	Lina – fish	Pete – dog																		
Nima - fish	Jose - fish	Melanie – dog	Jamal – cat																		
Liam – cat	Dan – cat	Jen – hamster	Nelika – fish																		
Ann - hamster	Nick - dog	Varun - hamster	Mei Li - cat																		

**Tables**

In math, a table is a way to represent information or data in a gridded structure using rows and columns. Tables are often used to visually represent information and compare correlations.

Use the table on the right to answer questions 6 and 7.

**Points Scored by Each Team**

Round	Team W	Team X	Team Y	Team Z
1	5	5	4	6
2	8	6	3	3
3	5	5	5	5
4	4	5	6	5

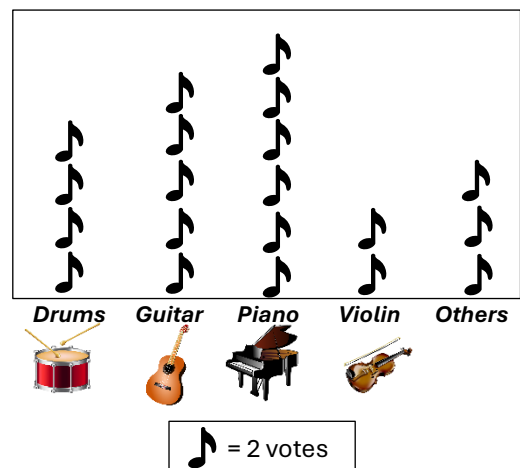
<p>6. At school, there are 4 teams playing a game. The table shows the teams and the number of points scored in the first 4 rounds. The winner is the team with the highest points.</p> <p style="margin-left: 40px;">a. Which round is won by Team Y? b. Which round is won by Team X?</p>	<p>a. b.</p>
<p>7. The first-place team has the highest total points. Rob displays the teams in order from the one with the most points to the one with the least points. What would Rob’s list look like?</p>	

**Pictograph**

In mathematics, a pictograph, also known as a pictogram, is the pictorial representation of data using images, icons, or symbols. We can represent the frequency of data while using symbols or images that are relevant using a pictograph.

Use the pictograph on the right to answer questions 8 and 9.

**Students’ Favorite Instruments**



<p>8. Orion conducted a survey among his schoolmates about their favorite musical instruments. The results are shown in the pictograph above.</p> <p>a. Which instruments got the most votes?</p> <p>b. Which instrument got 10 votes?</p>	<p>a.</p> <p>b.</p>
--	---------------------

<p>9. Orion loves to play both piano and drum. He wanted to compare the results with these two instruments.</p> <p>a. How many more votes did the piano have than the drums?</p> <p>b. How many votes were recorded in the survey?</p>	<p>a.</p> <p>b.</p>
--	---------------------

<p>10. Last week, from Friday to Sunday, the drama club put on a musical performance. Below is the number of tickets sold each day. If they sell each ticket for \$5, how much money did the drama club collect in total from the ticket sales over the three days?</p> <table border="1"> <tr> <td>Friday</td> <td></td> </tr> <tr> <td>Saturday</td> <td></td> </tr> <tr> <td>Sunday</td> <td></td> </tr> <tr> <td></td> <td> = 20 tickets      = 10 tickets</td> </tr> </table>	Friday		Saturday		Sunday			= 20 tickets      = 10 tickets	
Friday									
Saturday									
Sunday									
	= 20 tickets      = 10 tickets								

The Lee family runs four small bakery stands. Each location only sells donuts and cookies. Each location sells donuts at \$3 a piece and cookies at \$2 a piece. The pictograph below shows the average number of donuts and cookies sold in one week. The family is reviewing how well each location is doing.

Use this story and the pictograph to answer questions 11, 12 and 13.

Bakery	
Location A	
Location B	
Location C	
Location D	

= 40 donuts

Bakery	
Location A	
Location B	
Location C	
Location D	

= 50 cookies

<p>11. Help the Lee family find answers to the following questions.</p> <p>a. How many donuts are sold by the bakery at location B?</p> <p>b. Which location sold 275 cookies in a week?</p> <p>c. What is the total number of donuts sold in a week?</p> <p>d. What is the total number of cookies sold in a week?</p>	<p>a.</p> <p>b.</p> <p>c.</p> <p>d.</p>
---	---

<p>12. Help the Lee family find answers to the following questions about their revenues. <i>Revenue is the total amount of money that a business generates.</i></p> <p>a. Which location(s) brought in more than \$1000 each week?</p> <p>b. Which location has the least revenue?</p> <p>c. What is the total revenue generated by all four locations?</p>	<p>a.</p> <p>b.</p> <p>c.</p>
---	-------------------------------

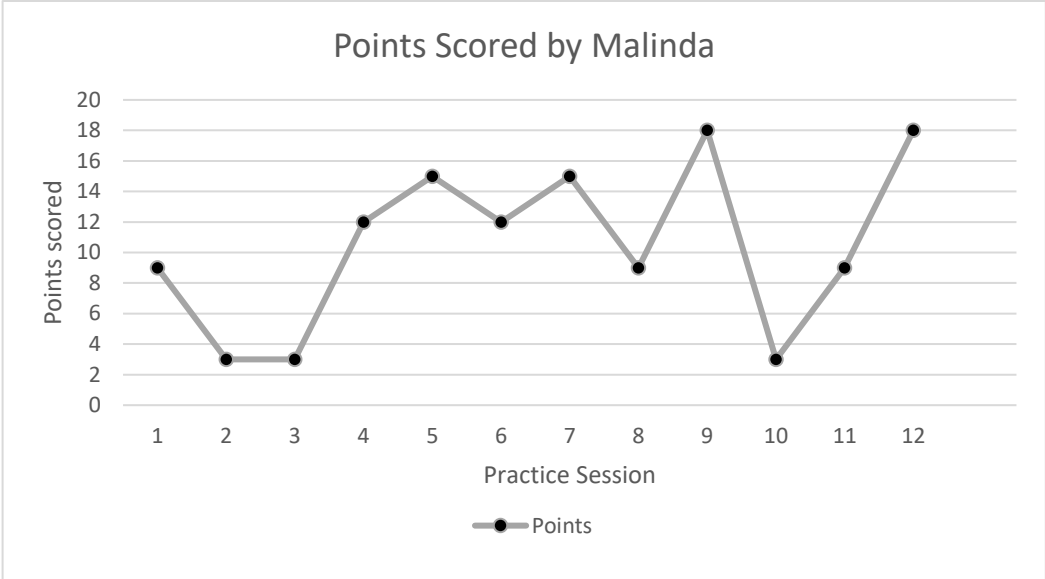
13. Help the Lee family find answers to the following questions about their profits.  
*Profit is the amount of money a business has left after paying all of its expenses.*

- If it costs \$550 a week to run each bakery stand, how much weekly profits do the four locations generate in total?
- If each stand can have a capacity of 240 donuts and 300 cookies to sell while the cost is still \$550 weekly, what is the maximum possible profit one location can generate in a week?

14. Malinda is practicing her 3-point shots. During each practice session, she records the number of points she makes in 15 tries. She kept the data from 12 practice sessions and made the line graph below.

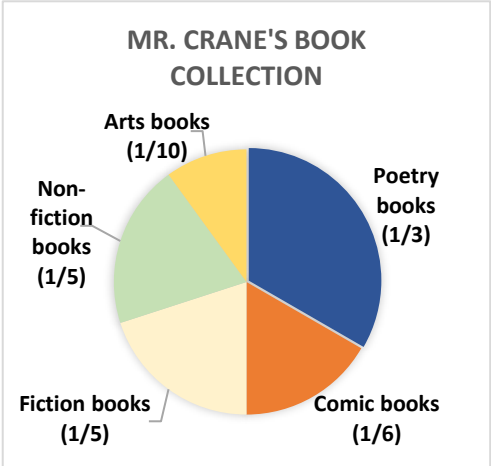
- How many points did Malinda make during all her 12 practice sessions?
- What is the arithmetic mean of her points during all her 12 practice sessions?

*In mathematics, the "arithmetic mean" refers to the average of a set of numbers and the most common way to find the 'average' value within a data set. It is calculated by adding all the numbers together and then dividing by the total count of numbers in the set.*



Practice Session	Points Scored
1	9
2	3
3	3
4	12
5	15
6	12
7	15
8	9
9	18
10	3
11	9
12	18

15. The pie chart below shows data about Mr. Crane's book collection.



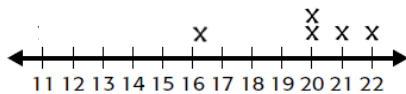
Category	Fraction
Poetry books	1/3
Fiction books	1/5
Non-fiction books	1/5
Arts books	1/10
Comic books	1/6

- Which books did he collect the most?
- What fraction of the collection is not comic books?
- If he has a total of 80 poetry books, how many total books are in the collection?

16. A line plot is another way to organize data. Line plots are a lot like tally charts. In line plots, you use X's above a number line instead of tally marks next to a category. Line plots are used when you want to chart how often a certain number occurs in your data. The table and the line plot show the number of students riding the bus to school in a particular week.

**Students Riding the Bus to School**

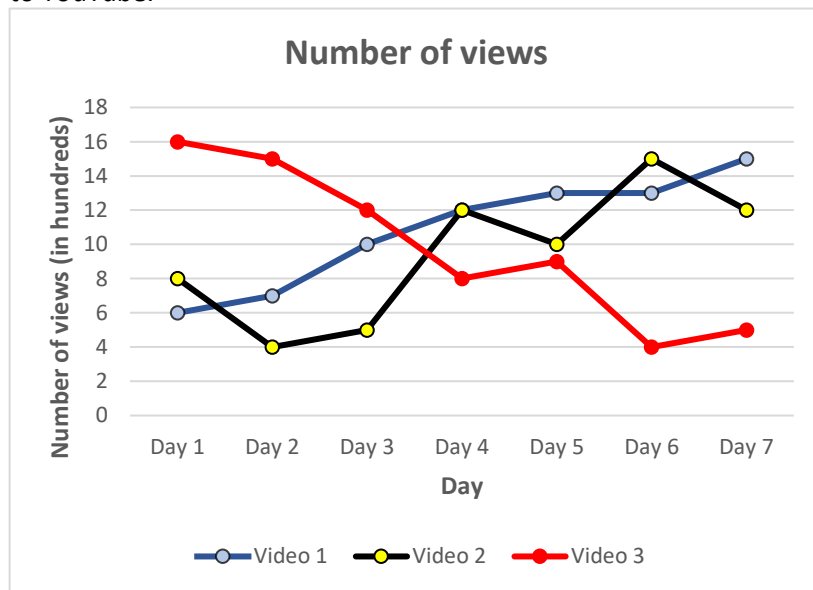
Day	Students
Monday	20
Tuesday	22
Wednesday	20
Thursday	
Friday	16



- If the mode and median are 20, how many students ride the bus on Thursday?
- What is the arithmetic mean of the data?

a.  
b.

17. The double line graph shows the number of views for one week for three videos Milo uploaded to YouTube.



- How many views did video 1, 2 and 3 have altogether on day 5?
- Which day had an equal number of views for two of the videos?
- Which video's number of views never decreased from one day to the next?
- Find the total number of views for all three videos.

a.  
b.  
c.  
d.

*Solution is available on January 10, 2025*  
[www.mathinaction.org](http://www.mathinaction.org)