

Question Bank

Use situations a – c below to answer Exercises 1–2.

1. Are the data that are collected categorical or numerical?
2. For the situation, are the data likely to show a lot or a little variability? Explain your reasoning.
 - a. Each carpenter’s helper measures and records the length of the same wooden plank in centimeters.
 - b. Each student records the number of pets to answer the question: What is the typical number of pets for students in the class?
 - c. Each student records the time spent playing video games in the last week to answer the question: “How much variability is there in the times spent playing video games?”
3. Javier’s test scores were 85, 85, 97, 98 and 100. His teacher told the class that they could choose which measure of center they wanted her to use to determine final grades. Which measure do you suggest that Javier choose?
A. Mean B. Median C. Mode D. Range
4. Six days’ temperatures in April have an average that is 12 degrees higher than six days’ temperatures in March. What is the difference between the sums of the temperatures?
5. Use the medians, means, and ranges given below. Compare the number of movies watched by boys with the number of movies watched by girls during the summer. Explain your reasoning.

Statistic	Number of Movies Watched by Boys During the Summer	Number of Movies Watched by Girls During the Summer
Mean	≈ 5.3	≈ 5.07
Median	4	3
Range	17	14

- e. What is the typical number of hours slept for the boys on Friday night? Which statement seems to be a sensible answer? Explain your reasoning.
- Use the mode: The typical number of hours slept on Friday night is 6.5 hours.
 - Use the median: The typical number of hours slept on Friday night is 8 hours.
 - None of the above: Write your own statement about what you consider to be the typical number of hours boys slept on Friday night.
- f. If you added data from 10 more boys about the number of hours they slept on Friday night, what do you predict would happen to the median? The mean? The range? Explain your reasoning.
7. Ariel has a total of 320 points on all four of his exams. If these points are shared equally among the four exams, the result is 80 points per project—Ariel's mean exam score.
- What would Ariel's mean score be if he had a total of 372 points for the four exams?
 - Give four possible exam scores that would result in this mean score.
 - What is the range of the scores for these four exam scores? What does this tell you about the variability of the scores?

8. Five good friends have the following numbers of basketball cards:
Glen: 352 Benny: 347 Yari: 265 Jillian: 261 Mark: 325
- What is the range of number of cards of the five friends? What does the range tell you about the variability in the amount of cards they have?
 - The five friends decided to share their cards equally. How many cards per friend will this be? Explain your reasoning.
 - The five friends forgot about another friend, Susanna, when cards were shared. Susanna has 261 cards, the same number of cards as Jillian. If Susanna's cards are included with the others' cards and shared equally among the six friends, will the first five friends now receive less, the same as, or more than they did before Susanna's cards were included? Explain.
9. Another group of five friends shared their basketball cards equally. The result was 364 cards per friend. Does this mean that one of the friends originally received 364 basketball cards? Explain.
10. Four friends wanted to share their costs for lunch equally among themselves. Their meals cost \$4.50, \$3.50, \$4.20, \$3.50. Mandy said that because two of the meals cost the same you needed to only divide the total cost of the meals by 3. Enrico disagreed and said that no matter whether the meals cost the same amount, you would still divide them equally among the 4 friends. Do you agree with Mandy or Enrico? Explain.
11. John's baseball team made the following number of runs for their first 15 games: 0, 0, 0, 1, 1, 1, 1, 2, 2, 2, 3, 3, 4, 5, 8. To figure out the team's average runs per game, John said not to include the 0 runs because they did not increase the amount of their total runs. Do you agree with John's reasoning? Explain.
12. The following data are the number of hours of homework done by several students on a Monday night: 0.5, 0.5, 1, 1, 1, 1, 2, 3. If you replaced data from a student who did 0.5 hour of homework with one who did 2 hours of homework:
- Does the mean change? If so, how does it change and why?
 - Does the median change? If so, how does it change and why?
 - Does the range change? If so, how does it change and why?

13. Below are data from two bags of Crispy M&M's[®] candies that were opened.

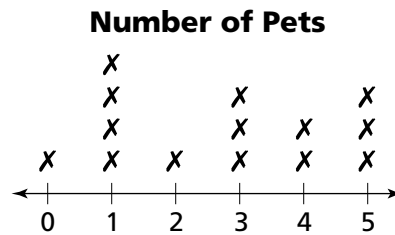
Bag	Green	Yellow	Orange	Blue	Brown	Red	Total
1	8	10	8	10	9	9	54
2	8	9	7	10	10	11	55

- Find the percent of each color for bags 1 and 2.
- Make a bar graph for each set of data that shows the percent of each color found in that bag of candies.
- For each graph, write two or more sentences describing the data displayed on the graph.
- Are there any similarities or differences in the patterns between the two bags of Crispy M&M's candies that can be used to answer the question, "Is there some plan to the distribution of colors of Crispy M&M's candies in a bag?" Explain your reasoning.
- Below are data from thirty bags of Crispy M&M's candies that were opened. Make a bar graph for these data that shows the percent of each color found in the thirty bags of candies.

Bag	Green	Yellow	Orange	Blue	Brown	Red	Total
1–30	250	285	260	275	280	280	1,630

- Write two or more sentences describing the data displayed by the graph.
- How would you now answer the original question, "Is there some plan to the distribution of colors of Crispy M&M's candies in a bag?"

14. At the right is a copy of the distribution of the number of pets for Marie and her friends. The location of the mean is at 2.71 pets and the median is at 3 pets.



- What happens to the mean and the median if a friend with 3 pets is removed and her data is replaced with data from three new friends, each of whom has 1 pet? Why do you think this happens?
- What happens to the mean and the median in the original distribution if you remove a friend with 1 pet and replace her with a friend who has 4 pets? Why do you think this happens?

Use the following bar graphs to answer Exercises 15 and 16.

- Compare the variability in heights in the following distributions. Be sure to discuss clusters and ranges in your comparisons.
- Where do you predict the mean and median will be in each distribution? Explain your reasoning.

