2019-2020 HISD @ H.O.M.E. Distance Learning
Mathematics – Grade 4
April 13-24, 2020 – Week 1

Monday – 30 minutes

Activity / Task

Problem Solving Using Frequency Tables with Whole Numbers

Look at this frequency table.

Genres of Books Read

Type	Frequency
Comedy	63
Fiction	58
Nonfiction	87
Drama	70

What do you notice? What do you wonder? On a piece of paper, write your response using the following sentence stems: *I notice* _____. *I wonder* _____.

A frequency table represents data using tally marks and/or numerical counts. We use frequency tables to organize and represent collected data from a survey. What's a survey? A survey is when someone asks a question and records the answers. What could have been the question for this frequency table? Write your answer.

Look at the frequency table again. Then, answer the questions that follow the frequency table.

The frequency table below shows the genres of books read by the fourth-grade students at Reed Elementary.

Genres of Books Read

Type	Frequency
Comedy	63
Fiction	58
Nonfiction	87
Drama	70

- How many fourth-grade students read only comedy books?
- How many fourth-grade students read comedy or drama books?
- How many more students prefer comedy and drama than non-fiction as their favorite genre?
- How many fourth-grade students participated in the survey? **Hint: add all the frequencies**

On your paper, explain how you know your answer to the third question is correct using the following sentence stem:

I know that _____ students prefer comedy and drama than non-fiction as their favorite genre because _____.

Resources

Tuesday – 30 minutes

Activity / Task

Problem Solving Using Frequency Tables with Whole Numbers

Look at this frequency table.

Route	Distance (miles)	Frequency
A	2.75	0
B	5.2	2
C	7.5	3
D	10	4
E	14.8	2

How is this frequency table the same as the one from yesterday? How is it different? Complete a table similar to this one on a piece of paper:

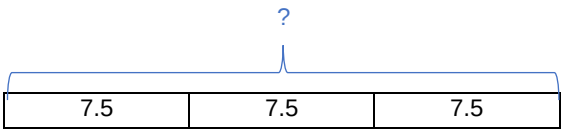
Same	Different

Read the math story below with the frequency table. Then, observe how one question can be solved.

Steve, a long-distance runner, uses an online computer program to map running routes that vary by distance. Over the past 3 weeks, Steve used a frequency table to record how many times he completed each route, as shown below.

Route	Distance (miles)	Frequency
A	2.75	0
B	5.2	2
C	7.5	3
D	10	4
E	14.8	2

For the routes run over the past 3 weeks, how many miles did Steve run route C?



Looking at the frequency table, I can see that Steve ran route C three times, so I created a strip diagram to show how many miles he ran each time. Then, I just need to add. 7.5 + 7.5 + 7.5 = 22.5 miles

Now answer the rest of the questions:

- For the routes run over the past 3 weeks, how many miles did Steve run route B?
- For the routes run over the past 3 weeks, how many miles did Steve run route E?
- For the routes run over the past 3 weeks, how many miles did Steve run route C than route B?

Write one question that you can solve using the information in this frequency table. Then, explain how you would solve the problem.

Resources

Wednesday – 30 minutes

Activity / Task

Problem Solving Using Frequency Tables with Fractions

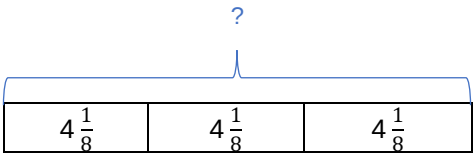
Read the math story below with a frequency table where the data gathered is written as fractions. Then, observe how one question can be solved. Is the process different from what we've done before?

Coach Garcia recorded the frequency of students running different distances (in miles) during a 30-minute window during his PE class.

Students' Half-Hour Running Distance	
Distance in Miles	Frequency
$\frac{3}{8}$	4
$1\frac{1}{8}$	0
$1\frac{7}{8}$	6
$2\frac{5}{8}$	3
$3\frac{3}{8}$	5
$4\frac{1}{8}$	3

Notice: Distances in the table are arranged from least to greatest.

Coach Garcia added the number of miles the students with the **three greatest distances** ran. What was the total distance these students ran together?



Looking at the frequency table, I can see that the greatest distance ran by his students was $4\frac{1}{8}$ miles. I can also see that 3 students ran this same distance. So, in order to find how many total miles these students ran together, I simply have to add the distances.

$$4\frac{1}{8} + 4\frac{1}{8} + 4\frac{1}{8} = 12\frac{3}{8}$$

Now answer the following questions:

- How many total students were recorded as running during the 30-minute window in Coach Garcia's class?
- What was the total distance of the four shortest distances recorded?
- Write one question that you can solve using the information in this frequency table. Then, explain how you would solve the problem.

Resources

Thursday – 30 minutes

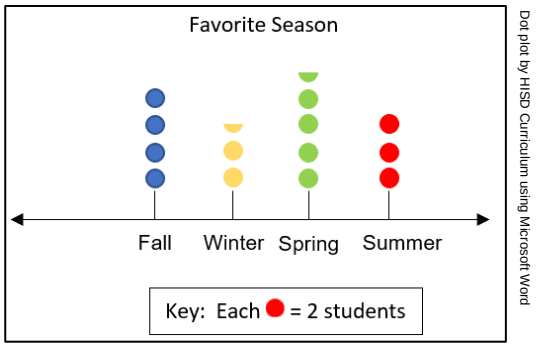
Activity / Task

Problem Solving Using Dot Plots with Whole Numbers

How are the following graphs alike? How are they different? Write a few of your ideas on a piece of paper.

Favorite Season		
Season	Tally	Frequency
Fall	𝍸 III	8
Winter	𝍸	5
Spring	𝍸 IIII	9
Summer	𝍸 I	6

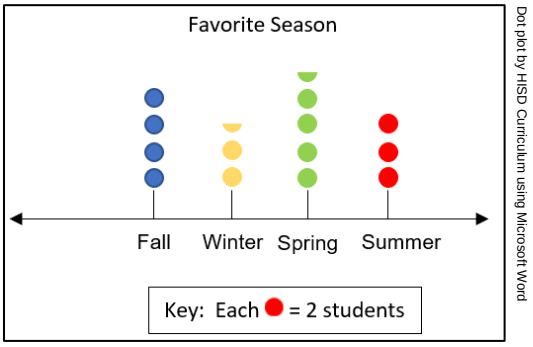
Frequency Table



Dot Plot

As we have been working on frequency tables this week, we know that a frequency table represents how many times something happens. We can represent this same data in a dot plot. A dot plot uses dots to represent how many times something happens, but can look different. We can change the value that each dot represents by creating a key. This let's us know how much each dot represents. In our dot plot, the key tells us that one dot equals 2 students. If a whole dot represents 2 students what would a half dot represent? It would represent half of 2, which would represent 1 student.

Look at the following dot plot:



Answer the following questions about the dot plot on a piece of paper:

- How many total students were surveyed**?**
- How many students prefer winter or spring?
- How many students prefer winter or spring than summer?
- How many more students would need to vote for summer so that it has 2 times as many votes as fall?

Write an additional question that you can solve using the information in this frequency table. Then, explain how you would solve the problem.

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Activity / Task

Problem Solving using Dot Plots with Decimals

Think about yesterday's lesson on frequency tables and dot plots. Describe how they are alike and how they are different.

Read the problem and look at the frequency table below:

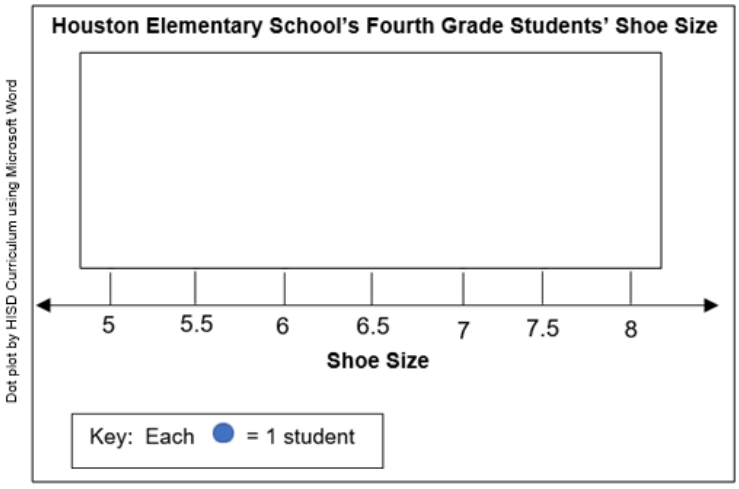
You conducted a survey of the students in your class to determine their shoe size. Then you listed students' responses in the frequency table below:

Houston Elementary School's Fourth Grade Students Shoe Size		
Shoe Sizes of Students	Tally	Frequency
5	IIII	4
5.5	II	2
6	III	3
6.5	𝍸 III	8
7	𝍸	5
7.5	𝍸 II	7
8	I	1

Based on the table, how many students have a shoe size of 7?

Solution: *When I look at the frequency table, I see five tally marks and a frequency of 5, so that means that 5 students have shoe size of 7.*

Represent the data in the frequency table above using the dot plot below. Then, answer the questions below.



Answer the following questions.

- How many total students were surveyed?
- How many students have a shoe that is size 7.5?
- How many students have a shoe size that is 8?
- How many students have a shoe size smaller than 7.5?
- How many students have a shoe size of 5.5 and 7.5?
- How many students have a shoe size of 5 and 8?
- How many more students have a shoe size of 5.5 and 7.5 than a shoe size of 5 and 8?

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2019-2020 HISD @ H.O.M.E. Distance Learning
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Monday – 30 minutes

Activity / Task

Stem-and-Leaf Plots with Whole numbers

Look at the following stem-and-leaf plot. What do you notice? What do you wonder?

Recorded Temperatures in Houston, Texas

October 2014

Stem	Leaves
7	7 8
8	2 4 4 4 5 6 6 6 6 6 7 8 8
9	0 0 0 1 2 2

Key: 8 | 2 means 82° Fahrenheit

Create a T-chart to record your thoughts.

Notice	Wonder

A stem-and-leaf plot is another type of graph that we can use to organize our data. This one looks a little different. It has two main parts: the stem and the leaf. It also organizes our data using place value. The stem represents the digit(s) in the greater place value and is normally written vertically from least to greatest. The leaf represents the digit(s) in the lesser place value and is written horizontally from least to greatest.

Look at the following stem-and-leaf plot for the following birthdates: 1, 2, 2, 4, 7, 9, 10, 10, 10, 13, 15, 16, 21, 22, 23, 23, 23, 28, 29, 30, 31

Stem	Leaves
0	1 2 2 4 7 9
1	0 0 0 3 5 6
2	1 2 3 3 3 8 9
3	0 1

Key: 2 | 3 means 23

The number 23 has a stem value of 2 and a leaf value of 3. In our stem-and-leaf plot, we can see that there are 3 value of 23 represented.

Practice:
During the 2019 NFL football season, the Houston Texans scored the following numbers of points in each game: 26, 30, 0, 10, 28, 13, 27, 10, 53, 31, 23, 27, 26, 7, 20, 28, 24, 24, 23, 14, 22, 31

Complete the stem-and-leaf plot below to represent this data. Make sure you write the numbers in order from least to greatest first.

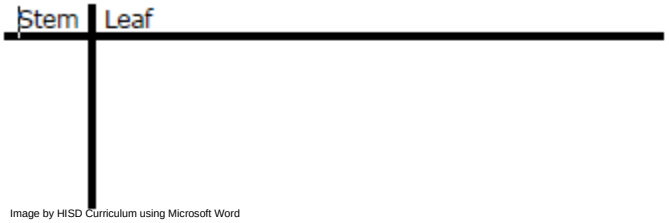


Image by HISD Curriculum using Microsoft Word

Key: 2 | 3 means 23

- How many times did the Houston Texans score 27 points?
- How many times did the Houston Texans score 28 points or more?

Write an additional question you can answer using the stem-and-leaf plot above. Then solve. Explain how you found your solution.

Resources

Tuesday – 30 minutes

Activity / Task

Connecting Multiple Graphs

So far, we have studied frequency tables, dot plots, and stem-and-leaf plots. Write on a piece of paper what they have in common. Then, read the scenario below and create the graphs requested.

Ms. Roger's class used AccuWeather to collect data on the high temperatures in Houston for three weeks.

Recorded Temperatures in Houston, Texas

October 2014

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Sep 28 86 73	*Sep 29* 88 72	*Sep 30* 88 73	*Oct 1* 92 75	*Oct 2* 92 79	*Oct 3* 84 66	*Oct 4* 77 60
Oct 1 85 57	*Oct 1* 82 67	*Oct 1* 91 67	*Oct 1* 90 73	*Oct 1* 90 72	*Oct 1* 90 75	*Oct 1* 84 67
Oct 1 87 67	*Oct 1* 86 63	*Oct 1* 78 55	*Oct 1* 84 53	*Oct 1* 86 60	*Oct 1* 86 63	*Oct 1* 86 65

Table created by HISD Curriculum using Microsoft Word

Her students used the information in the calendar to create the following frequency table:

Daily High Temperature Weather Forecast	
Temperature	Frequency
77°	1
78°	1
82°	1
84°	3
85°	1
86°	5
87°	1
88°	2
90°	3
91°	1
92°	2

Image by HISD Curriculum using Microsoft Word

Construct a stem-and-leaf plot that matches the data in the frequency table above.

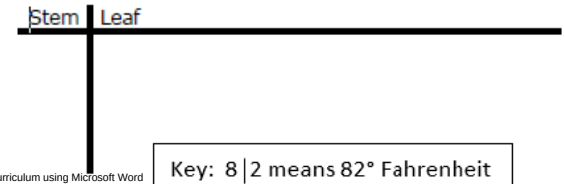
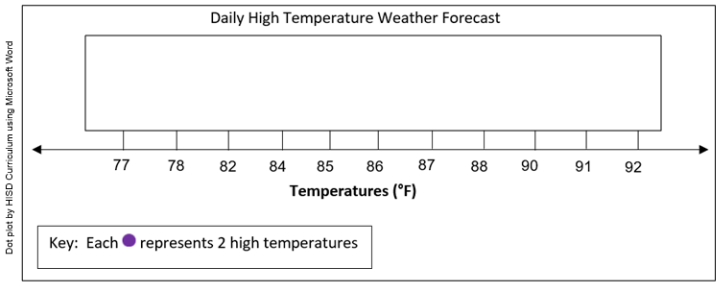


Image by HISD Curriculum using Microsoft Word

Now construct a dot plot using the same information.



Dot plot by HISD Curriculum using Microsoft Word

Which graph is your favorite? Use the following sentence stem to share your answer: *My favorite graph is*_____ *because*_____.

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Wednesday – 30 minutes	
Activity / Task Problem Solving using Stem-and-leaf Plots with Decimals	Think about how you created a stem-and-leaf plot yesterday and answer the following question on a piece of paper: *Why is thinking about place value important when creating a stem-and-leaf plot?* So far, we have only created stem-and-leaf plots using whole numbers. However, if we remember to use what we know about place value, we use the same process to create stem-and-leaf plots when the data contains decimals. Look at the following math story and its stem-and-leaf plot: The meteorologist in Odessa, Texas recorded the rainfall averages for each month of the year. Odessa Average Rainfall by Month (inches) Stem | Leaves 0 | 42, 53, 58, 65, 65, 73 1 | 71, 77, 77, 79, 89 2 | 31 Key: 1 | 71 represents 1.71 inches Stem-and-Leaf plot created by HISD Curriculum using Microsoft Word **Note:** Here, the stems represent the ones place value like in a whole dollar, and the leaves represent the decimal values. For example: 2.3 means 2 is a whole number and is written in the stem part and 3 is a tenth and is written in the leaf part. **Remember,** the numbers are ordered from least to greatest. 0.42 is the least and 2.31 is the greatest value Now, answer the following questions on your paper: • For how many months did Odessa have an average rainfall total of 0.65 inches? How do you know? • What is the difference between the lowest rainfall total and the highest rainfall total? Create a question that can be answered by the data represented in the stem-and-leaf plot. Solve and record your solution. Use these sentence stems to help you formulate your question: • *How many months had rainfall over _____?* • *How many months had rainfall less than _____?* • *How many months had rainfall greater than _____ but less than _____?*
Resources	

Thursday – 30 minutes

Activity / Task

Problem Solving using Stem-and-Leaf Plots with Fractions

Think about how you created a stem-and-leaf plot during the previous lessons and answer the following question on a piece of paper: *Why is a key important to have with a stem-and-leaf plot?*

So far, we have created stem-and-leaf plots using whole numbers and decimals which depend on place value position to determine place on the leaf or on the stem. Think about the following scenario which shows us how we can create stem-and leaf plots using fractions.

Mr. Code's science class measured the heights of their bean plants to the nearest eighth of an inch and recorded their measurements in the stem-and-leaf plot below.

Bean Plant Height (inches)

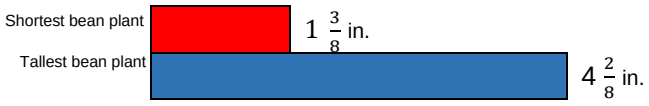
Stem	Leaves
1	$\frac{3}{8}$ $\frac{3}{8}$ $\frac{5}{8}$
2	$\frac{0}{8}$ $\frac{3}{8}$ $\frac{6}{8}$ $\frac{7}{8}$
3	$\frac{1}{8}$ $\frac{7}{8}$
4	$\frac{2}{8}$

Key: $4\left|\frac{2}{8}\right.$ represents $4\frac{2}{8}$ inches

Stem-and-Leaf plot created by HISD Curriculum using Microsoft Word

What is the difference in height between the tallest and shortest bean plant?

Solution:



I see that I need to compare the lengths, so I need to subtract. $4\frac{2}{8} - 1\frac{3}{8}$
When I try to subtract the fractions, I realize I need to regroup one whole and write it as a fraction, $\frac{8}{8}$
This changes my expression to $3\frac{10}{8} - 1\frac{3}{8}$ *before I can subtract the fractions easily. This makes my final solution to be* $2\frac{7}{8}$.

Now answer the following questions on your paper:

- How many bean plants did Mr. Code's class measure?
- How many bean plants are taller than 2 38 inches in height?
- How many bean plants are between 3 and 4 inches tall?
- What is the length of the combined heights of the three tallest bean plants?

Explain how to solve problems using a stem-and-leaf plot. Provide an example in your explanation.

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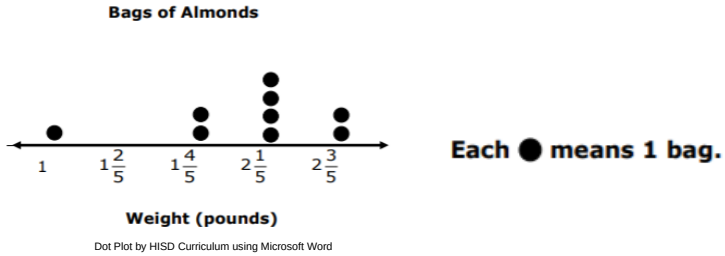
Friday – 30 minutes

Activity / Task

Problem Solving with Various Types of Graphs

Over the past two weeks, we have looked at solving problems using any type of graph. Let's take the time today to practice solving problems that use graphs. Answer the following questions on a sheet of paper.

1. The dot plot below shows the weight, in pounds, of bags of almonds that Kyle had for sale at the beginning of the day.



Dot Plot by HISD Curriculum using Microsoft Word

Kyle's first customer purchased the two heaviest bags and the three lightest bags of almonds that were for sale. What was the total weight, in pounds, of the bags of almonds that were left after the first sale of the day?

2. The stem-and-leaf plot below lists the lengths, in centimeters, of the arm spans of the gorillas at a sanctuary.

Gorilla Arm Span Lengths (cm)

Stem	Leaf
20	5 6 9
21	2 5 5 7 8
22	
23	0 4
24	1 1 3 6
25	

Key: 21|8 means 218 cm.

What data is represented by this stem-and-leaf plot?

3. Jason, a long-distance runner, uses an online computer program to map running routes that vary by distance. Over the past 3 weeks, Jason used a frequency table to record how many times he ran each route, as shown below.

Route	Distance (miles)	Frequency
A	3.25	0
B	4.8	1
C	7	3
D	13	9
E	16.2	3

How many more times did Jason run route D than routes B, C, and E over the past 3 weeks?

Looking at the frequency table provided in question 3, create a dot plot and a stem-and-leaf plot to match the data.

Resources