Data & Graphs Unit

4th Grade

Teaching in the Fast Lane

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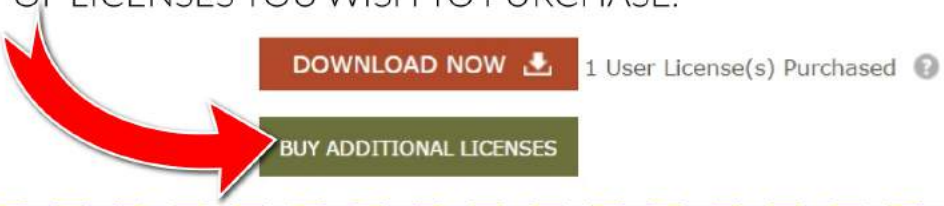

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Credits: KG Fonts, Graphics from the Pond, Teaches Third in Georgia, a hughes DESIGN

Table of Contents

To The Teacher

Thank you for purchasing this resource! Within it you will find a complete unit for teaching the fourth grade standards for data and graphs including pre-assessment, content vocabulary, daily warm-ups and exit tickets, daily lessons with student activities, and a post assessment.

While this unit is laid out over a nine day time span do not feel that you must rigidly stick to the timeline. As a teacher you know what is best for your students, and should follow your gut, as some classes may require more time to reach understanding of a concept.

To save on ink and decrease prep time, every page of this unit is created in black and white. To create a more colorful unit print or copy on color paper.

Standards

TEKS

4.9A represent data on a frequency table, dot plot, or stem-and-leaf plot marked with whole numbers and fractions

4.9B solve one- and two-step problems using data in whole number, decimal, and fraction form in a frequency table, dot plot, or stem-and-leaf plot

CCSS

4.MD.B.4 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*

ALL ABOUT THIS UNIT

This unit is made up of unique elements that can be used independently or together to provide a complete unit of math instruction.

CONTENT VOCABULARY

Vocabulary for this data and graphs unit is included in a few forms.

- Word wall cards make it easy to add your content vocabulary to your word wall
- The word and definition list make a great reference for student math notebooks and teachers alike
    - This list is included completed as well as with blank areas for definitions and examples
- Double-sided word and definition cards are great for review and small group remediation

PRE-ASSESSMENT AND STUDENT STANDARD CHECKLIST

To be used as an informal assessment to check students' prior knowledge as well as determine any misconceptions. The data that you gather from this pre-assessment can be recorded on the Student Standards Checklists and used to set student learning goals, form small groups, or partner students based on ability. Checklists fit 11 students per page.

ALL About This Unit

Daily Warm-Ups

Nine days of half-page daily warm-ups are provided along with answer keys. Each day has two standards-based question for students to think through their learning. A student tracking sheet is also included for students to record their own grow and glow areas. To save paper you may choose to project the warm up each day and have students complete their work in math notebooks.

Exit Tickets

Nine days worth of exit tickets and answer keys, with one question each, are included two to a page for easy copying. Each of the questions is based on how that standard is tested, providing a test bridge and exposing students to test style language. This serves to build familiarity with standardized testing without overwhelming students.

Exit tickets can be checked as a class, or by the teacher. A checklist of questions is included to track how students are doing on their exit tickets.

Assessment

An end of unit assessment is included to check for student mastery on the data and graphs standards included. This assessment is meant to be used informally. While students should do their best work, it is best to not place too much importance on the test.

Daily Lessons

Nine daily lessons are included in this unit. Each lesson includes:

- Guiding question(s)
- Objectives
- List of necessary materials
- Overview of the lesson
- Student activity sheets when applicable
- Suggestions for small group activity

Day 1	Pre-assessment and Collecting Data
Day 2	Frequency Tables
Day 3	Using Frequency Tables
Day 4	Dot Plots
Day 5	Using Dot Plots
Day 6	Stem-and-Leaf Plots
Day 7	Using Stem-and-Leaf Plots
Day 8	Problem Solving with Data & Graphs
Day 9	Assessment

content vocabulary

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- Word wall cards make it easy to add your content vocabulary to your word wall
- The word and definition list make a great reference for student math notebooks and teachers alike
  - This list is included completed as well as with blank areas for definitions and examples
  - TIP: print/copy definition list at 80% to fit perfectly in math notebooks
- Double-sided word and definition cards are great for review and small group remediation
  - To complete these cards print, fold along the dotted line with the word and definition on the outside, then tape or glue to secure the card.

data

a collection of facts

graph

a diagram showing data in a visual way

frequency table

a table of data that show the number of times each piece of data has been collected

dot plot

a graph that shows each piece of data on a number line

Data & Graphs Vocabulary

data	a collection of facts
graph	a diagram showing data in a visual way
frequency table	a table of data that shows the number of times each piece of data has been collected
dot plot	a graph that shows each piece of data on a number line
stem-and-leaf plot	a graph of data organized by place value

data	a collection of facts
graph	a diagram showing data in a visual way
frequency table	a table of data that show the number of times each piece of data has been collected

Answer Key

1. Anna collected data on the number of car accidents that occurred each month May through July. She found there were 4 accidents in May, 9 in July, and 8 in June. Create a frequency table to show Anna's data.

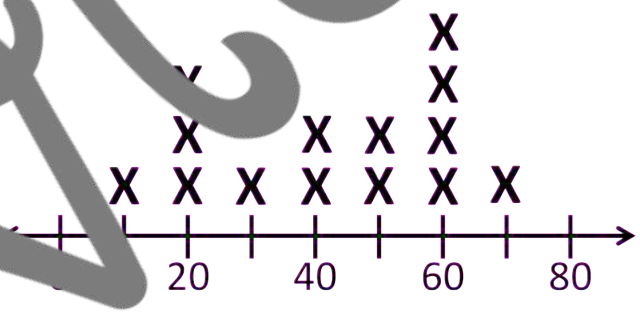
Car Accidents By Month	
May	4
June	
Jul	9

2. How many more accidents occurred in May and June than in July?

3 more accidents

3. Use the data set provided to create a dot plot representing the data.

Candies in a Package						
40	20	60	10	60	20	50
30	60	60	50	70	20	



4. How many more packages of candy had 60 pieces in them than 50 pieces?

2 more packages

5. Use the data set provided to create a stem and leaf plot representing the data.

Price of a Shirt						
45	21	33	19		22	21
30	24	20	3	1	21	19

stem	leaf
1	7 8 9 9
2	0 1 1 1 2 4
3	0 0 3
4	5

1 | 7 = 17

6. What is the difference in the lowest and highest priced shirts?

28

Data & Graphs Pre-assessment Student Standards Checklist

Student	1. Frequency Tables	2. Frequency Tables Problem Solving	3. Dot Plots	4. Dot Plots Problem Solving	5. Stem and Leaf Plot	6. Stem and Leaf Plot Problem Solving
w						

Daily Warm-Ups

Nine days of half-page daily warm-ups are provided along with answer keys.

Each day has two standards-based questions for students to think through their learning.

A student tracking sheet is also included for students to record their own grow and glow areas.

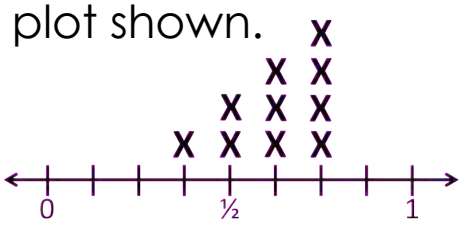
To save paper you may choose to project the warm up each day and have students complete their work in math notebooks.

Data & Graphs Day 1

Name _____

Creating Plots and Tables

Create a frequency table based on the dot plot shown.



Problem Solving

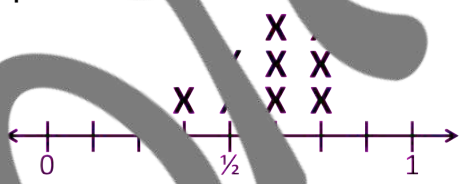
How many more measurements were more than 1/2 than 1/2 or less?

Data & Graphs Day 1

Name _____

Creating Plots and Tables

Create a frequency table based on the dot plot shown.



Problem Solving

How many more measurements were more than 1/2 than 1/2 or less?

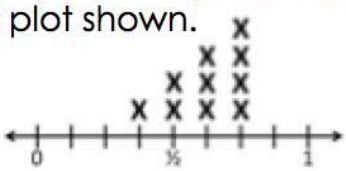
Daily Warm-Up Answer Key

Data & Graphs Day 1

Name _____

Creating Plots and Tables

Create a frequency table based on the dot plot shown.



3/8	1
1/2	2
5/8	3
3/4	4

Problem Solving

How many more measurements were more than 1/2 than 1/2 or less?

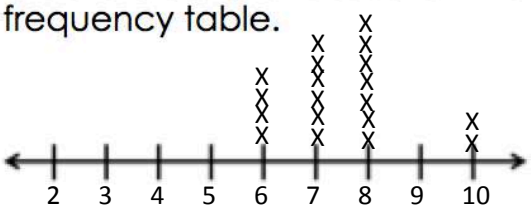
4 more measurements

Data & Graphs Day 2

Name _____

Creating Plots and Tables

Create a dot plot based on the frequency table.



Shoe Sizes	
size 6	4
size 7	6
size 8	7
size 10	2

Problem Solving

How many more students have a show size 7 or smaller than 8 or larger?

1 more student

Name _____

Personal Daily Warm-Up Tracking Sheet

	Creating Plots and Tables	Problem Solving
Day 1		
Day 2		
Day 3		
Day 4		
Day 5		
Day 6		
Day 7		
Day 8		
Day 9		

Exit Tickets

Nine days worth of exit tickets and answer keys, with one question each, are included two to a page for easy copying.

Each of the questions is based on how that standard is tested, providing a test bridge and exposing students to test style language. This serves to build familiarity with standardized testing without overwhelming students.

Exit tickets can be checked as a class, or by the teacher. A checklist of questions is included to track how students are doing on their exit tickets.

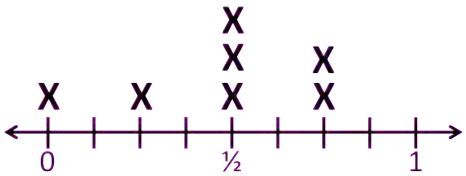
Exit Ticket Day 1

Name _____

Students threw paper airplanes to see how far they would fly. The table shows the number of planes that flew different distances. Which dot plot represents the data in the table?

Distance (Meters)	0	1/4	1/2	3/4	1
Number of Planes	1	1	3	2	0

a.



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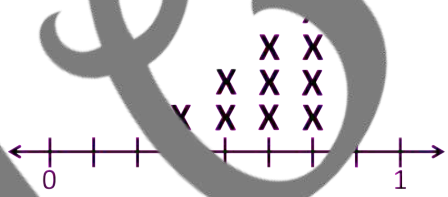

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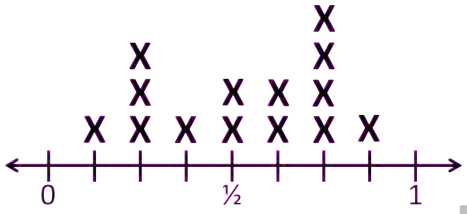

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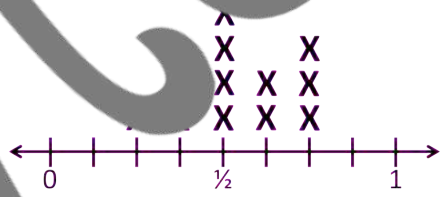

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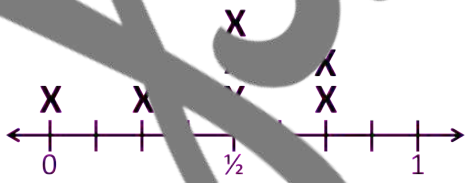

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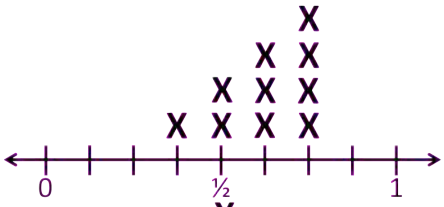
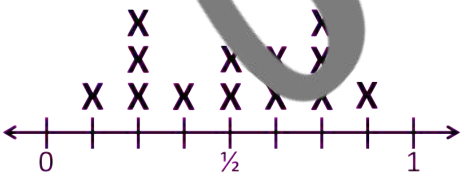
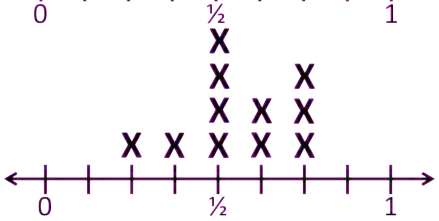


c.



d.



Exit Ticket Answer Key

Day 1	A
Day 2	D
Day 3	B
Day 4	C
Day 5	B
Day 6	A
Day 7	D
Day 8	A
Day 9	A

Exit Ticket Student Checklist

Student	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9

Daily Lessons

Nine daily lessons are included in this unit. Each lesson includes:

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Frequency Tables

Guiding Question

How can I show data using a frequency table?

Materials

- Anchor chart paper
- Example Data Collection
- Data Collection Practice (from lesson 1)
- Creating Frequency Tables Practice

Learning Objective

We will use a frequency table to organize a set of data.

Lesson

Begin by referring students back to the data they collected in lesson one when they polled their classmates. Ask students why it might be challenging to use the data they collected. Possible answers may include that it is not organized.

Tell students today they will be organizing the data they collected into a frequency table so they can use the data easier.

Show students the example data collection provided. Ask students to think about how they might organize the data. Have students turn and talk about how to organize the data and then share their idea.

Using the example data set create a frequency table as an anchor chart and label each of the parts including title, categories, and frequency.

Explain to students how numerals are usually used, but they may also see tallies.

For practice, students will use the data they collected in lesson 1 to create their own frequency tables.

Small Group Ideas

Have students trade data sets with one another to create more frequency tables using their math journals or student white boards. After each frequency table they create have them create a question that can be answered using the table and trade with a partner to solve.

Example Data Set #1

How many siblings do you have?				
0	1	3	2	2
2	1	1	3	0
1	3	2	2	1
1	1	0	1	3

Example Data Set #2

What is your favorite color?				
blue	green	red	blue	yellow
yellow	blue	red	yellow	blue
green	red	blue	green	yellow
red	blue	green	green	green

Example Data Set #3

What time do you go to bed?				
8:30 pm	9:00 pm	9:00 pm	8:00 pm	9:30 pm
9:30 pm	8:30 pm	8:00 pm	9:00 pm	9:30 pm
9:00 pm	8:30 pm	9:00 pm	8:30 pm	8:30 pm
8:00 pm	9:30 pm	8:00 pm	9:00 pm	9:30 pm

Name _____ **Frequency Table Practice**

Use the data you collected to create your own frequency table.

Category	Frequency

Bonus: Write two questions that could be answered using your frequency table.

Answer Key

1. The number of passengers on public transportation changes each day. Monday 48 people rode the bus. Tuesday 63 people rode the bus. Thursday 49 people rode the bud, and Wednesday only 26 people rode the bus. Use this data to create a frequency table.

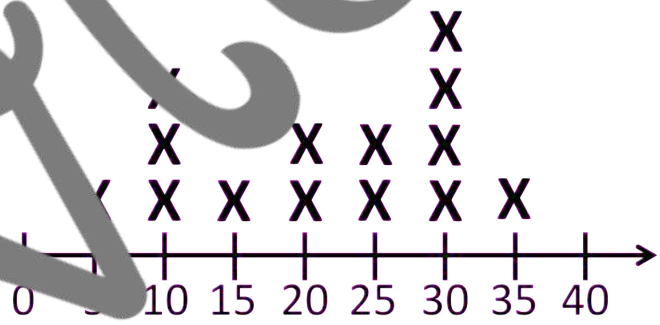
Number of Passengers on Public Transportation	
Monday	48
Tuesday	63
Wednesday	26
Thursday	49

2. How many more people rode the bus on Tuesday and Thursday than on Monday and Wednesday?

38 more people

3. Use the data set provided to create a dot plot representing the data.

Students In Each Club						
10	30	25	5	30	30	10
30	25	15	20	10	35	



4. How many clubs have at least 10 students in them?

9 clubs

5. Use the data set provided to create a stem and leaf plot representing the data.

Cookies in a Box						
20	21	8	9		22	29
30	24	20	3	1	21	19

stem	leaf
0	8
1	8 8 9 9
2	0 0 1 1 2 4 9
3	0 2

6. How many boxes had less than 20 cookies in them?

5 boxes

0|8 = 8