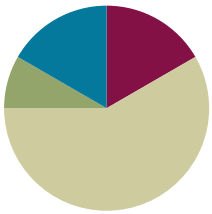
Lesson 5

Objective: Solve word problems using data presented in a bar graph.

Suggested Lesson Structure



Fluency Practice	(10 minutes)
Application Problem	(5 minutes)
Concept Development	(35 minutes)
Student Debrief	(10 minutes)
Total Time	**(60 minutes)**

Fluency Practice (10 minutes)

- Grade 2 Core Fluency Differentiated Practice Sets **2.OA.2** (5 minutes)
- Coin Drop **2.NBT.2, 2.OA.2** (5 minutes)

Grade 2 Core Fluency Differentiated Practice Sets (5 minutes)

Materials: (S) Core Fluency Practice Sets from G2–M7–Lesson 1

Note: During G2–M7–Topic A and for the remainder of the year, each day's fluency includes an opportunity for review and mastery of the sums and differences with totals through 20 by means of the Core Fluency Practice Sets or Sprints. The process is detailed and Practice Sets are provided in G2–M7–Lesson 1.

Coin Drop (5 minutes)

Materials: (T) 2 quarters, 10 dimes, 10 nickels, can

Note: In this activity, students practice adding and subtracting 25, 10, and 5.

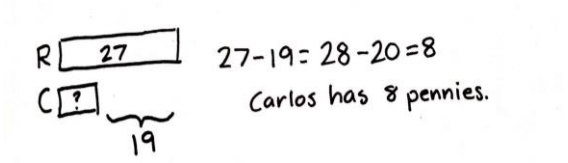
T: (Hold up a quarter.) Name my coin.
S: A quarter.
T: How much is it worth?
S: 25 cents.
T: Watch carefully as I drop the quarter and some nickels in my can. Count along in your minds.

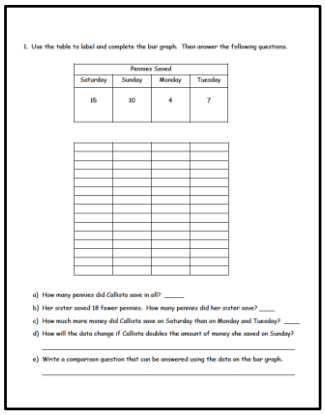
Drop in a quarter and some nickels and ask how much money is in the can. Take out some of the nickels and show them. Ask how much money is still in the can. Continue adding and subtracting nickels for a minute or so. Then repeat the activity with a quarter and dimes, a quarter with dimes and nickels, then 2 quarters with dimes and nickels.

Application Problem (5 minutes)

Rita has 19 more pennies than Carlos. Rita has 27 pennies. How many pennies does Carlos have?

Note: In this problem, the context shifts to money. This leads into today's Concept Development where students work with money data to solve word problems, and segues into problem solving with coins and bills in G2–M7–Topic B. The problem type is *compare with smaller unknown*, one of the more difficult problem types because *more* suggests the wrong operation. Guide students, as needed, to draw a tape diagram to solve.

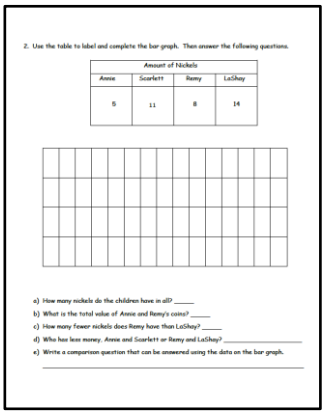



1. Use the table to label and complete the bar graph. Then answer the following questions.

Pennies Saved

Saturday	Sunday	Monday	Tuesday
15	10	4	7

a) How many pennies did Callista save in all? ____
b) Her sister saved 18 fewer pennies. How many pennies did her sister save? ____
c) How much more money did Callista save on Saturday than on Monday and Tuesday? ____
d) How will the data change if Callista doubles the amount of money she saved on Sunday?
e) Write a comparison question that can be answered using the data on the bar graph.


2. Use the table to label and complete the bar graph. Then answer the following questions.

Amount of Nickels

Annie	Scarlett	Remy	LaShay
5	11	8	14

a) How many nickels do the children have in all? ____
b) What is the total value of Annie and Remy's coins? ____
c) How many fewer nickels does Remy have than LaShay? ____
d) Who has less money, Annie and Scarlett or Remy and LaShay? ____
e) Write a comparison question that can be answered using the data on the bar graph.

Concept Development (35 minutes)

Materials: (T) Ruler (optional) (S) Lesson Activity Sheets 1 and 2, colored pencils or crayons, Template 4 (blank table, graph, and lines for question)

Note: In G2–M7–Lesson 5, students use money data to solve word problems. Depending on the needs of your students, you may choose to have them work independently, with a partner, or in groups.

T: Today we're going to use activity sheets for our lesson. Use the information in the table to complete the graphs, and then use the data to answer the questions.

MP.6

Pass out Activity Sheets 1 and 2. Circulate to be sure students are labeling their graphs accurately, paying special attention to the count scale. You may wish to remind them with the visual aid of a ruler that the beginning of the scale is 0 and not 1.

Provide support as students work. Invite them to share how they solved as they complete each problem. This is a good opportunity to work with a small group of students who are struggling with graphing or answering questions based on information presented in a graph. It is also a chance to provide extension for students working above grade level. For those students, a good alternative activity might be using Template 4 to design their own survey and table and then creating a graph and questions to represent and interpret the data.

NOTES ON MULTIPLE MEANS OF REPRESENTATION:

Some students may find it visually challenging to fill in and read the graphs. Enlarge the activity sheet, or provide these students with Template 1 (G2–M7–Lesson 2), which leaves space between the bars. Also, have students use different colors to further distinguish the bars.

NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

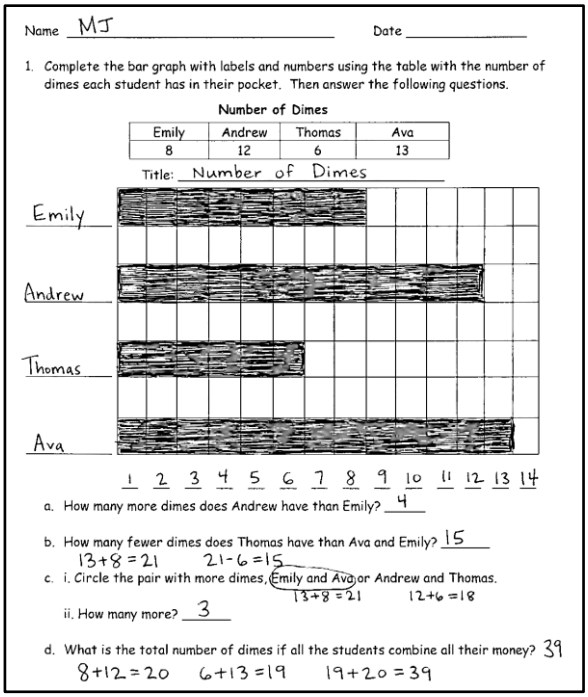
Activate multiple senses by playing music to create a soothing atmosphere.

Allow flexible grouping and allow students to move around and check their work and ask questions of those not in their pair or group.

As students successfully complete their work, allow them to move on to the Problem Set.

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. For some classes, it may be appropriate to modify the assignment by specifying which problems they work on first. Some problems do not specify a method for solving. Students solve these problems using the RDW approach used for Application Problems.



Name MJ Date

1. Complete the bar graph with labels and numbers using the table with the number of dimes each student has in their pocket. Then answer the following questions.

Number of Dimes

Emily	Andrew	Thomas	Ava
8	12	6	13

Title: Number of Dimes

Emily
Andrew
Thomas
Ava

1 2 3 4 5 6 7 8 9 10 11 12 13 14

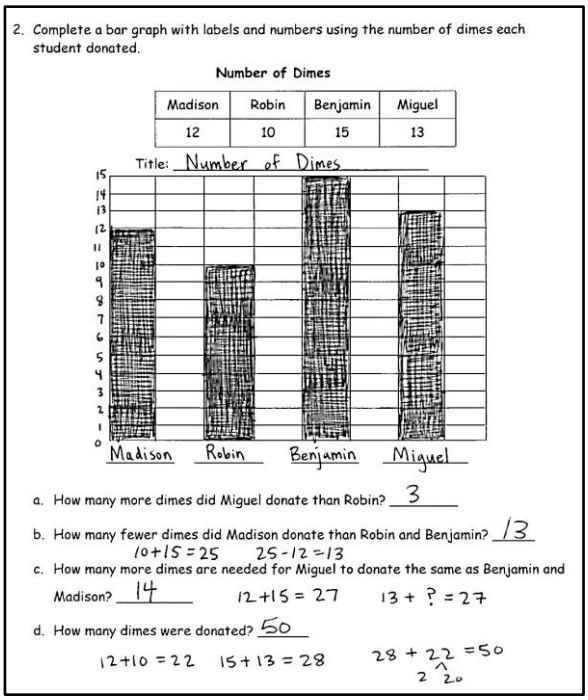
a. How many more dimes does Andrew have than Emily? 4

b. How many fewer dimes does Thomas have than Ava and Emily? 15
13+8=21 21-6=15

c. i. Circle the pair with more dimes, Emily and Ava or Andrew and Thomas.
13+8=21 12+6=18

ii. How many more? 3

d. What is the total number of dimes if all the students combine all their money? 39
8+12=20 6+13=19 19+20=39



2. Complete a bar graph with labels and numbers using the number of dimes each student donated.

Number of Dimes

Madison	Robin	Benjamin	Miguel
12	10	15	13

Title: Number of Dimes

15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

Madison Robin Benjamin Miguel

a. How many more dimes did Miguel donate than Robin? 3

b. How many fewer dimes did Madison donate than Robin and Benjamin? 13
10+15=25 25-12=13

c. How many more dimes are needed for Miguel to donate the same as Benjamin and Madison? 14
12+15=27 13+?=27

d. How many dimes were donated? 50
12+10=22 15+13=28 28+22=50
2 20

Student Debrief (10 minutes)

Lesson Objective: Solve word problems using data presented in a bar graph.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

You may choose to use any combination of the questions below to lead the discussion.

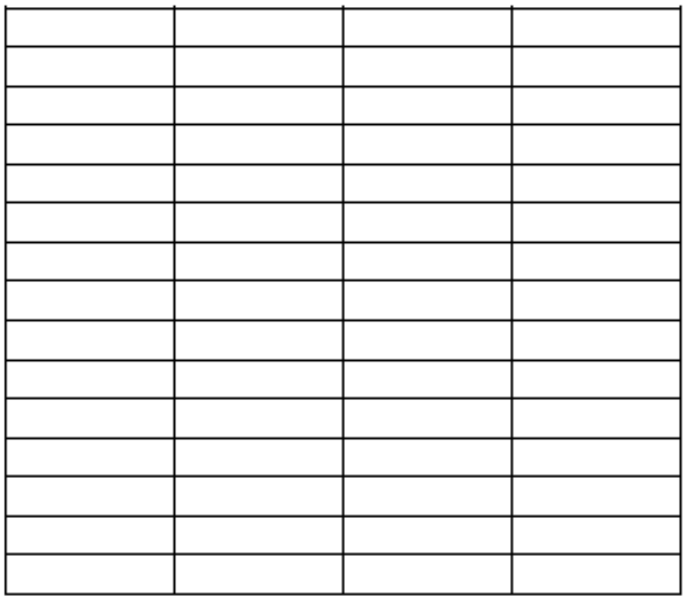
- Look at Emily's dimes in the Problem Set. How many dimes would Emily have if you doubled her dimes? (16.) How would we record 16 in the graph? (We would have to make more boxes. Or, we could make each unit box's value 2 instead of 1.)
- In each graph you completed today, you were asked to find the total amount of coins recorded in the graph. Tell your partner if you figured out the answer in your head or with paper and pencil. Share the calculation strategy you used.
- Think about a question you could ask our class that you could turn into a bar graph. Tell your partner what question you would ask. What would you title your graph? What would the categories be labeled?

Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students' understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.

1. Use the table to label and complete the bar graph. Then answer the following questions.

Pennies Saved			
Saturday	Sunday	Monday	Tuesday
15	10	4	7



a) How many pennies did Callista save in all? _____

b) Her sister saved 18 fewer pennies. How many pennies did her sister save? _____

c) How much more money did Callista save on Saturday than on Monday and Tuesday? _____

d) How will the data change if Callista doubles the amount of money she saved on Sunday?

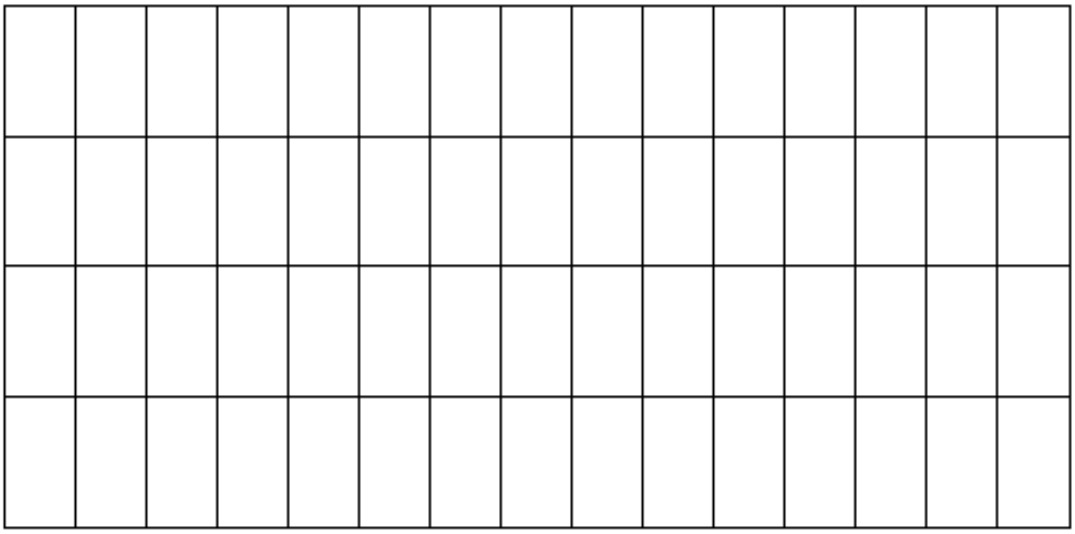
_____

e) Write a comparison question that can be answered using the data on the bar graph.

_____

2. Use the table to label and complete the bar graph. Then answer the following questions.

Amount of Nickels			
Annie	Scarlett	Remy	LaShay
5	11	8	14



a) How many nickels do the children have in all? _____

b) What is the total value of Annie and Remy's coins? _____

c) How many fewer nickels does Remy have than LaShay? _____

d) Who has less money, Annie and Scarlett or Remy and LaShay? _____

e) Write a comparison question that can be answered using the data on the bar graph.

_____

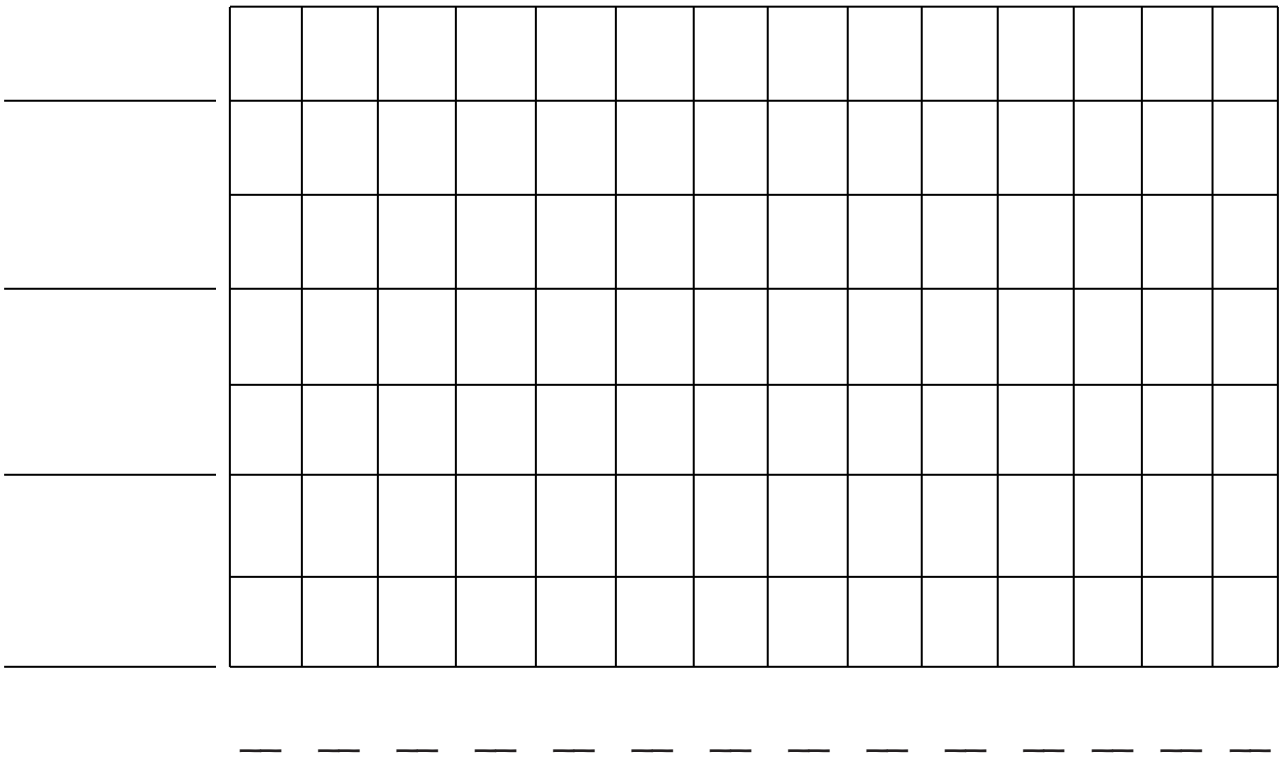
Name _____ Date _____

1. Complete the bar graph with labels and numbers using the table with the number of dimes each student has in their pocket. Then answer the following questions.

Number of Dimes

Emily	Andrew	Thomas	Ava
8	12	6	13

Title: _____



a. How many more dimes does Andrew have than Emily? _____

b. How many fewer dimes does Thomas have than Ava and Emily? _____

c. i. Circle the pair with more dimes, Emily and Ava or Andrew and Thomas.

ii. How many more? _____

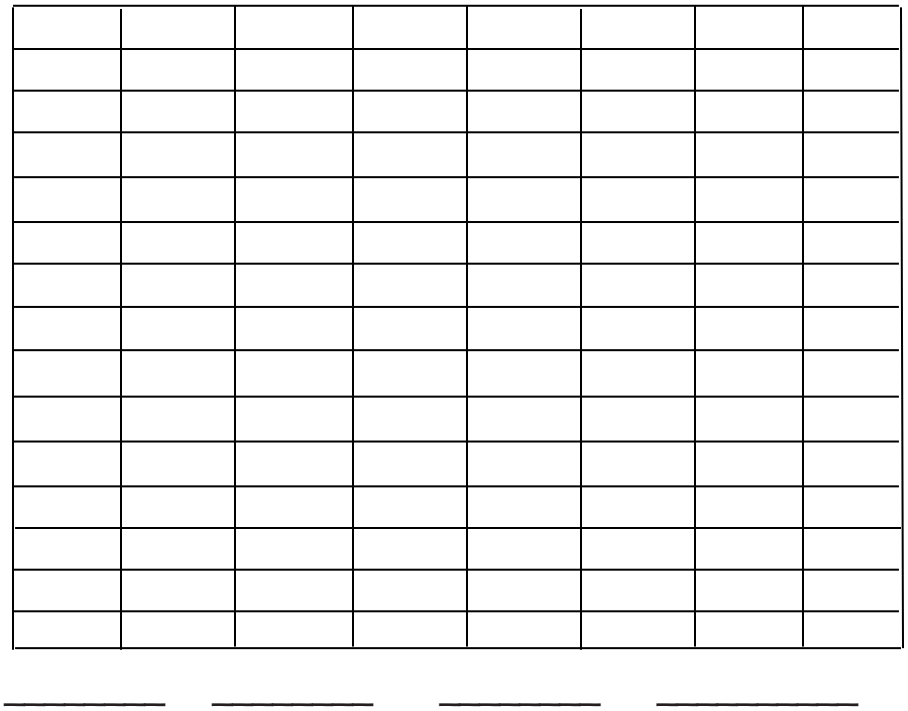
d. What is the total number of dimes if all the students combine all their money?

2. Complete a bar graph with labels and numbers using the number of dimes each student donated.

Number of Dimes

Madison	Robin	Benjamin	Miguel
12	10	15	13

Title: _____



_____ _____ _____ _____

a. How much many more dimes did Miguel donate than Robin? _____

b. How many fewer dimes did Madison donate than Robin and Benjamin? _____

c. How many more dimes are needed for Miguel to donate the same as Benjamin and Madison? _____

d. How many dimes were donated? _____

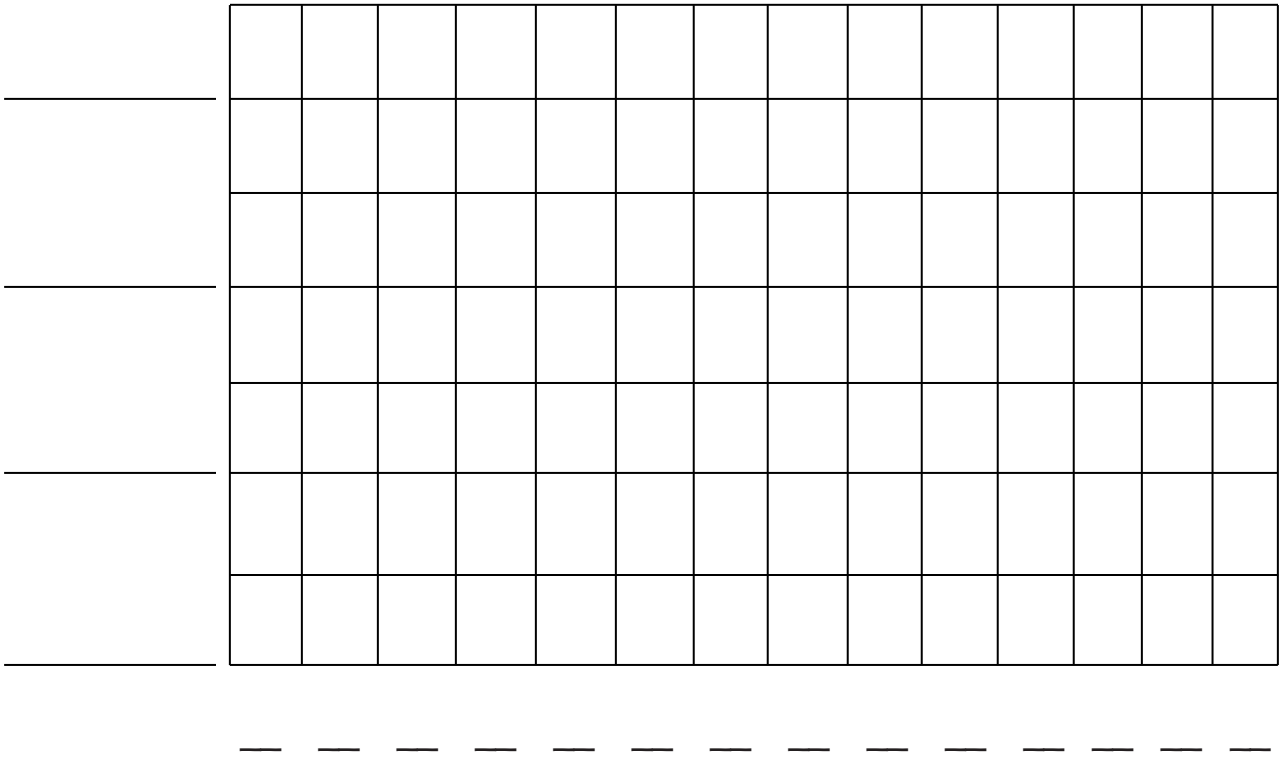
Name _____ Date _____

Complete the bar graph with labels and numbers using the information in the table. Then answer the following questions.

Number of Dimes

Lacy	Sam	Stefanie	Amber
6	11	9	14

Title: _____



a. How many more dimes does Amber have than Stefanie? _____

b. How many dimes will Sam and Lacy need to save to equal Stefanie and Amber? _____

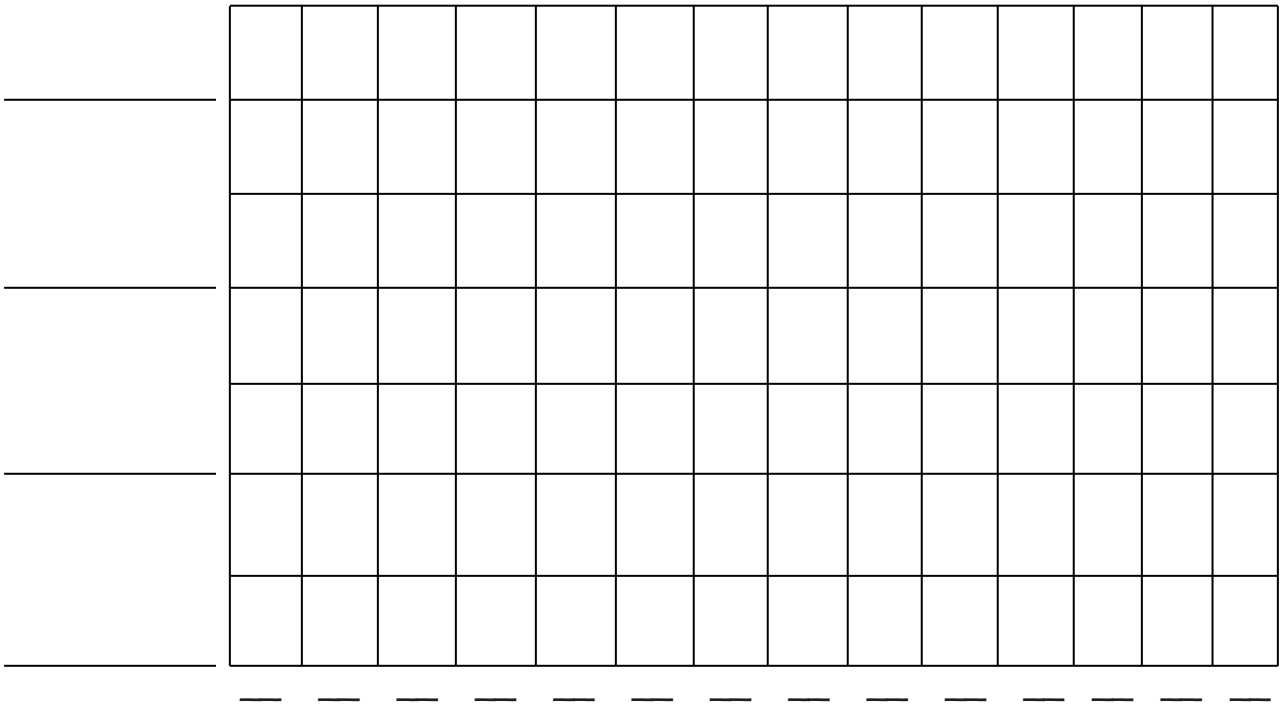
Name _____ Date _____

1. Complete the bar graph with labels and numbers using the table with the number of nickels each student has in their piggy bank. Then answer the following questions.

Number of Nickels

Justin	Melissa	Meghan	Douglas
13	9	12	7

Title: _____



a. How many more nickels does Meghan have than Melissa? _____

b. How many fewer nickels does Douglas have than Justin? _____

c. i. Circle the pair that has more nickels, Justin and Melissa or Douglas and Meghan.

ii. How many more? _____

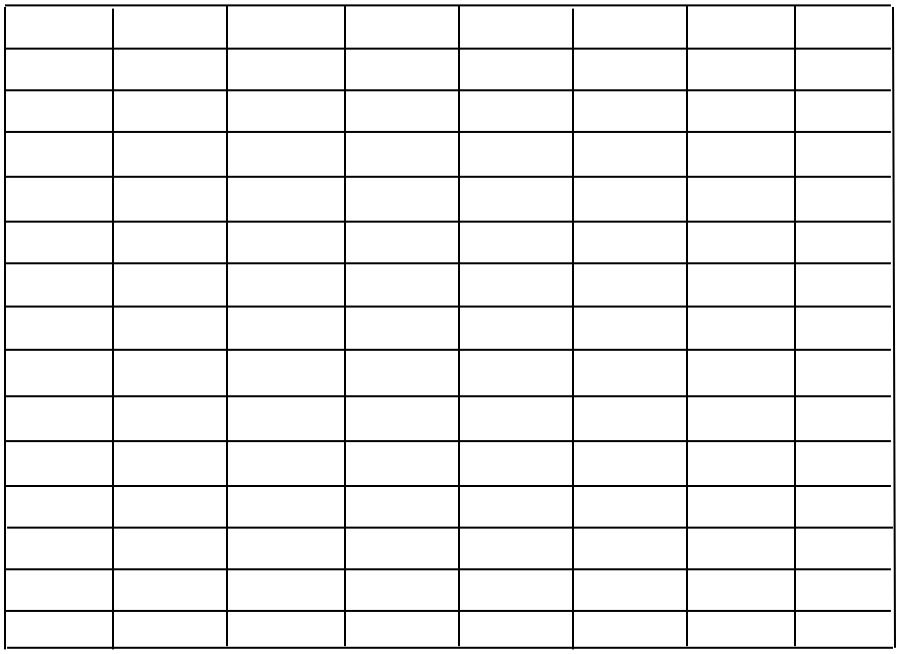
d. What is the total number of nickels if all the students combine all their money?

2. Complete a bar graph with labels and numbers using information in the table.

Dimes Donated

Kylie	Tom	John	Shannon
12	10	15	13

Title: _____



_____ _____ _____ _____

a. How many dimes did Shannon donate? _____

b. How many fewer dimes did Kylie donate than John and Shannon? _____

c. How many more dimes are needed for Tom to donate the same as Shannon and Kylie? _____

d. How many dimes were donated in total? _____

1. Design a survey and collect the data.
2. Label and fill in the table.
3. Use the table to label and complete the bar graph.
4. Write questions based on the graph, then let students use your graph to answer them.

a) _____

b) _____

c) _____