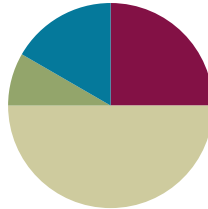# Lesson 12

Objective: Ask and answer varied word problem types about a data set with three categories.

Related Topics:
More Lesson Plans for Grade 1 Common Core Math

Suggested Lesson Structure

■ Fluency Practice   (15 minutes)
■ Application Problem   (5 minutes)
■ Concept Development   (30 minutes)
■ Student Debrief   (10 minutes)
   Total Time   **(60 minutes)**

Fluency Practice (15 minutes)

▪ Addition with Cards **1.OA.6**   (7 minutes)
▪ Get to 10 or 20 **1.OA.5**   (3 minutes)
▪ Subtraction with Partners **1.OA.6**   (5 minutes)

Addition with Cards (7 minutes)

Materials: (S) 1 pack of numeral cards 0–10 per pair (from G1–M1–Lesson 36), counters (if needed)

Note: This review fluency strengthens students' abilities to add within and across ten.

Students place the deck of cards face down between them.
Each partner flips over two cards and adds the numbers.
The partner with the greatest total keeps the cards played by
both players. The player with the most cards at the end of the
game wins. If there is a tie, players each turn over one final
card. The player with the greater number wins. If the cards are
of equal value, they continue to turn over a card until there is a
winner.

> **NOTES ON**
> **MULTIPLE MEANS FOR**
> **ACTION AND**
> **EXPRESSION:**
>
> When playing games with your
> students, provide a variety of ways to
> respond. Oral fluency games should be
> adjusted for deaf and hearing impaired
> students. This can be done in many
> ways including showing the answer
> with fingers, using student boards to
> write answers, or using a visual signal
> or vibration.

Get to 10 or 20 (3 minutes)

Materials: (T) 20-bead Rekenrek

Note: Practicing getting to 10 or 20 reinforces strategically
counting on, which enables students to solve addition problems

by stopping at 10 and continuing to the desired number.

> T: (Show 8 on the Rekenrek.) What number do you see?
>
> S: 8.
>
> T: Give me the complete number sentence to get to 10.
>
> S: 8 + 2 = 10.
>
> T: (Move two beads to make 10.) Good. (Show 18.) What number do you see?
>
> S: 18.
>
> T: Give me the complete number sentence to get to 20.
>
> S: 18 + 2 = 20.

Add two beads to confirm, then continue with other numbers within 20.

Subtraction with Partners (5 minutes)

Materials: (S) Personal white boards

Note: This fluency reviews subtracting 7, 8, and 9 from teen numbers. Allow students who still require pictorial representations to draw 5-groups to solve.

Assign partners of equal ability. Partners assign each other a number from 11 to 17 (e.g., 12).
On their personal white boards, they write number sentences with 9, 8, and 7 as the subtrahend and solve them (e.g., 12 − 9 = 3, 12 − 8 = 4, 12 − 7 = 5). Partners then exchange white boards and check each other's work.

Application Problem (5 minutes)

Kingston's class took a trip to the zoo. He collected data about his favorite African animals. He saw 2 lions, 11 gorillas, and 7 zebras. What does his table look like? Write one question your classmate can answer by looking at the table.

L	II
G	HH HH I
Z	HH II

How many zebras and gorillas did he see?

Note: Students may use any of the methods to collect data from the previous lessons. As they are working, circulate and notice how students are representing the data. Encourage them to line up their shapes and focus on organization. Remind students that they need to use the same symbol to represent the information throughout their table. Representations should make counting and comparing data easy. During the Debrief, the students will share and answer their partners' questions.

Concept Development (30 minutes)

Materials: (T) Chart with a three-column vertical graph entitled *Our Favorite Fruits,* chart with rules of proper measuring from G1–M3–Lesson 8 (post on the side of the board), *Favorite Read Aloud Books* from G1–M3–Lesson 10 (S) Sticky notes, personal white boards

Distribute one sticky note at each student's seat. Have students sit in the meeting area in a semi-circle formation.

- T: (Post *Our Favorite Fruits* graph.) What are some of your favorite fruits?
- S: (Responses may vary. Choose only three, or possibly four, categories from the students' suggestions.) Strawberries. → Watermelon. → Apples.

Fill in the three categories as students make suggestions. Have students go back to their seats, write their names on sticky notes, and come back to the meeting area with them.

- T: My vote is for strawberry as my favorite fruit. I'm going to place it right beneath the line where it says *Strawberry.* (Model.) Who likes watermelon the best? (Choose a student to come up.) He's also going to place his sticky note, right beneath the line where it says *Watermelon.* (Choose another student to come up and place her sticky note for *Apple.* Be sure to have these sticky notes aligned with each other.)
- T: We need one more person who likes strawberries the most. (Have the student come up.) When he puts his sticky note, he's going to put it right beneath my sticky note, so there are no overlap or gaps.
- T: (Call up one third of the class to post their votes, encouraging them to avoid making gaps or overlaps between the sticky notes.) What do you notice about the rules of completing this chart with our votes on the sticky notes?
- S: The rules are just like the rules for measuring! → We had to line up our endpoints when we first started! → We couldn't have any overlaps or gaps. → The sticky notes are the same size, the same length unit.
- T: Excellent connections! Let's have the rest of the class complete the graph as they put up their votes following these rules.
- T: Which fruit is the most popular among our students? Which fruit has the least number of votes? How can you tell?
- S: I counted. The fruit with the highest total is the most popular. → I just looked at the sticky notes. The longest strip of notes means the most votes. The shortest strip means the least number of votes. → This reminds me of measuring again! The one that used the most length units to measure is the longest one, and that is the most popular fruit!
- T: How many students voted for strawberries? Watermelon? Apples? (Record the number amount on the graph.) When we organize our data this way, it makes it easy for us to compare.   We call this a **graph**. A graph lets us see the data easily. In this graph, it lines up our data just like when we

> **NOTES ON MULTIPLE MEANS OF REPRESENTATION:**
>
> Students demonstrate a true understanding of math concepts when they can apply them in a variety of situations. Often students learn math concepts in an isolated fashion and they do not see how to transfer their application to new situations. Celebrate student success when they make these connections.

measure lengths of different items, so we can easily compare.

T: (Point to the corresponding parts of the graph and ask.) Which received more votes, strawberries or watermelon?

S: Category ___.

T: Did you have to look at the numbers for each, or could you see it just by looking at the lengths of the bars?

S: I just looked at the bar. → The longer bar has more.
   T: How many more students would Category A need to have the same amount as Category B? Tell your partner how you figured it out.

S: I just counted the part that was longer, the part that was sticking out. → I used subtraction. → I used addition with a mystery number in the middle. → This reminds me of measuring again! We used all of these strategies when we tried to figure out which length was longer when we compared two things!

T: You are right! So, how many more votes did Category ___ receive than Category ___?

T: (Using the same two categories as above, rephrase the question.) How many *fewer* votes did Category ___ receive than Category ___?

Continue to ask *compare with difference unknown* problems and *put together with result unknown* problems presented by this graph. Ask students to write a number sentence to show how they got their answer using their personal white boards. If time allows, use *Favorite Read Aloud Books* from G1–M3–Lesson 10 to answer more *compare with difference unknown* problems. Students may work with their partners to answer each other's questions.

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.

Student Debrief (10 minutes)

Lesson Objective: Ask and answer varied word problem types about a data set with three categories.

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.

Lesson 12: Ask and answer varied word problem types about a data set with three categories.
Date: 3/13/14

engage^ny   **3.D.27**

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

- What are the strategies to figure out how many more or fewer votes a category received compared to the other?

- How are tables and **graphs** similar? How are they different? (Tables and graphs both organize information. With a graph, the information can be compared in a way similar to how length units can be compared.)

- How are the graphs in Problem 3 and 5 different? How are they similar?

- How is measuring objects similar to creating graphs like these to compare information about different categories?

- How does a graph that is created properly help you see and understand its information better? Did you follow these rules when you made your graph for Problem 1?

- Look at your Application Problem. What question did you come up with? Share with your partner and answer each other's questions.

Each student in the class added a sticky note to show their favorite kind of pet. Use the chart to answer the questions.

Favorite Pet

Dog	Fish	Cat

5. How many students chose dogs and cats as their favorite?

_____15_____ students

6. How many more students chose dogs as their favorite pet than students that chose cats?

_____3_____ students

7. How many more sticky notes would need to be under Fish to have the same number of sticky notes as under Cat?

_____2_____ sticky notes

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.
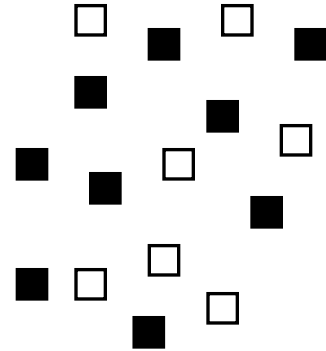
Name _____   Date _____

Use squares with no overlaps to organize the data from the list. Line up your **squares** carefully.

Favorite Ice Cream Flavor ☐ = 1 student

Flavors

	☐ Vanilla	
	■ Chocolate	

Number of Students

1. How many **more** students liked chocolate than liked vanilla? _____

2. How many **total** students were asked about their favorite ice cream flavor?
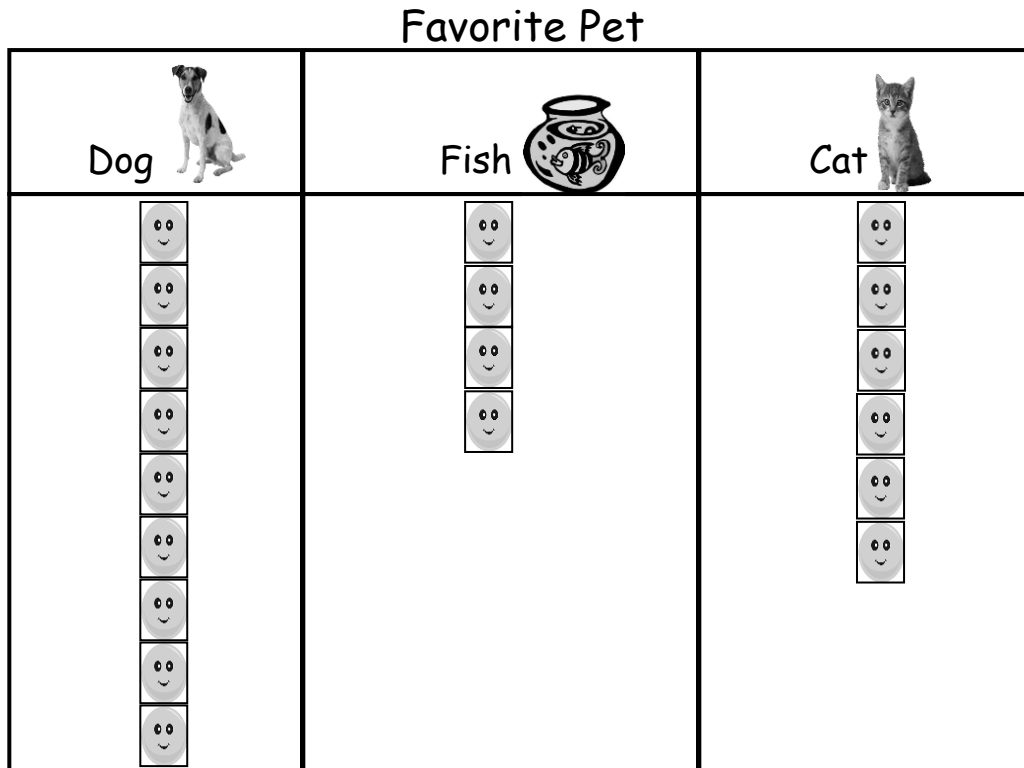
_____ students

Ties on Shoes   ☐ = 1 student

Types of Shoe Ties

Velcro	☐ ☐ ☐ ☐ ☐
Laces	☐ ☐ ☐ ☐ ☐ ☐ ☐
No Ties	☐ ☐ ☐ ☐ ☐ ☐

Number of Students

3. Write a number sentence to show how many **total** students were asked about their shoes?

_____

4. Write a number sentence to show how many **fewer** students have Velcro ties on their shoes than laces?

_____

Each student in the class added a sticky note to show their favorite kind of pet. Use the chart to answer the questions.

Favorite Pet

Dog	Fish	Cat
9	4	6

5. How many students chose dogs or cats as their favorite?

_____ students

6. How many more students chose dogs as their favorite pet than cats?

_____ students

7. How many more students chose cats than fish?
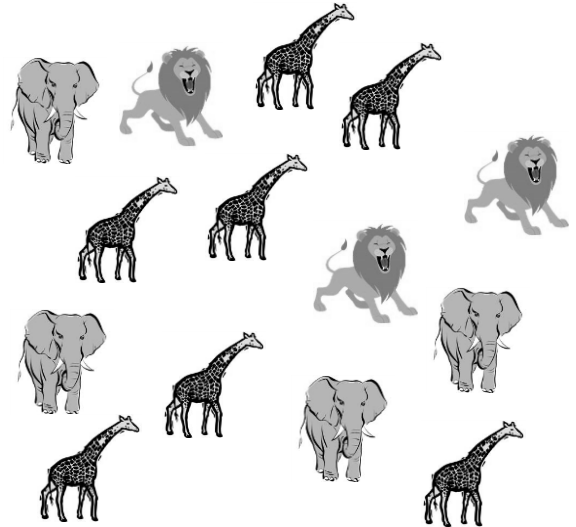
_____ students

Name _____   Date _____

Use squares with no overlaps to organize the data from the pictures.
Line up your **squares** carefully.

Favorite Animals at the Zoo

Giraffe	
Elephant	
Lion	

Number of Students

Each picture represents
    1 student's vote

1. Write a number sentence to show how many **total** students were asked about
   their favorite animal at the zoo.

   _____

2. Write a number sentence to show how many **fewer** students like elephants than
   like giraffes.

   _____

Lesson 12: Ask and answer varied word problem types about a data set with three categories.

Date: 3/13/14

engage^ny   3.D.31

Name _____   Date _____

The class has 18 students and they wore different kinds of shoes to school on Friday. Nine students wore sneakers, six students wore sandals, and three students wore boots. Use squares with no overlaps to organize the data from the pictures. Line up your **squares** carefully.

Shoes Worn on Friday

| Shoes	

Number of Students
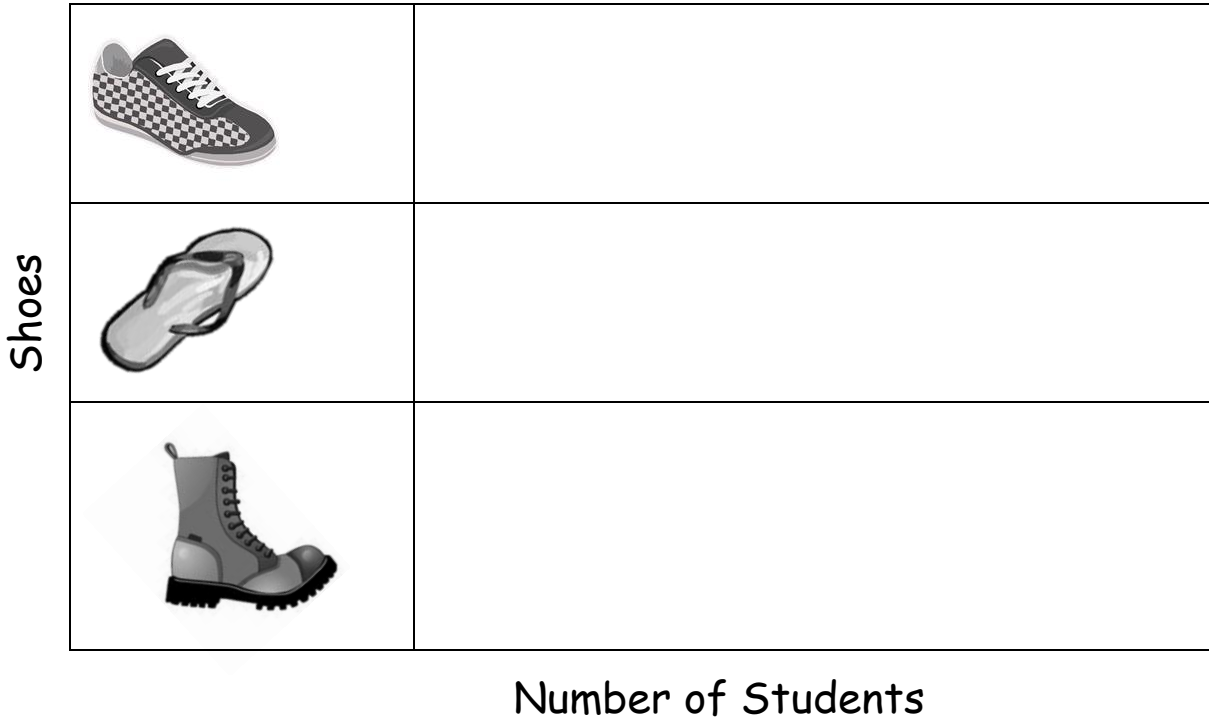
1. How many more students wore sneakers than sandals? _____ students

2. Write a number sentence to show how you could use the chart to tell how many students were asked about their shoes on Friday.

   _____

3. Write a number sentence to show how many fewer students wore boots than sneakers.

   _____

Lesson 12: Ask and answer varied word problem types about a data set with three categories.
Date: 3/13/14

engage^ny   3.D.32

Our school garden has been growing for two months. These are the vegetables that we have harvested so far.

Vegetables Harvested

Beets	Carrots	Corn
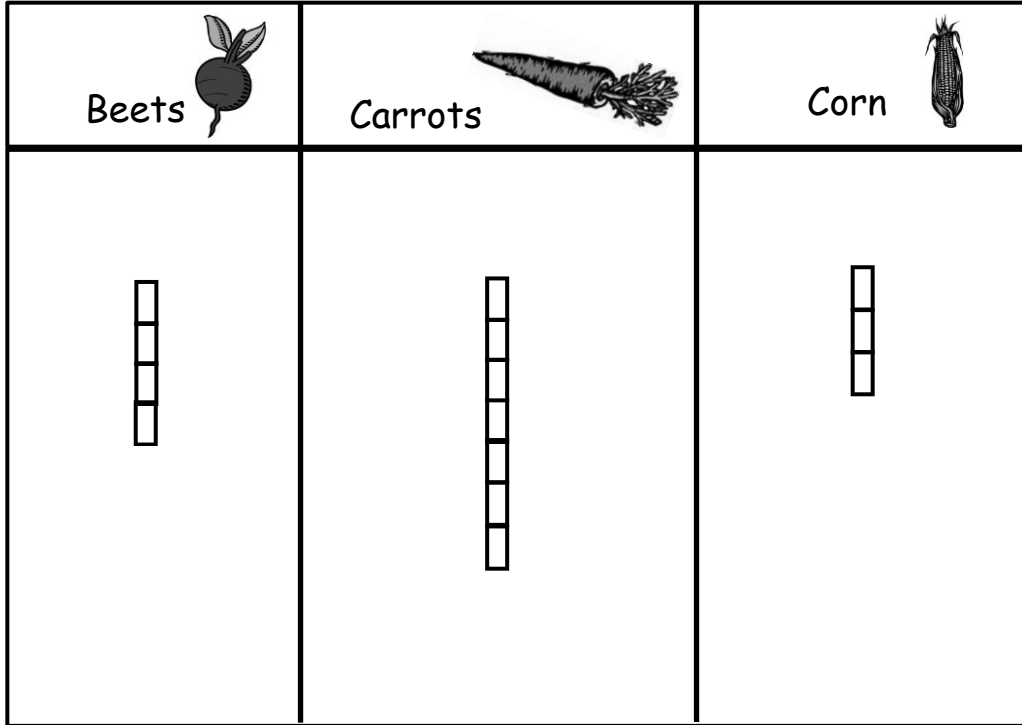
8. How many total vegetables were harvested?

                                   _____ vegetables

9. What vegetable have students harvested the most of?

                              _____

10. How many more beets were harvested than corn?

                              _____

11. How many more beets would need to grow to have the same as the number of carrots?

                              _____