

Grade 3

Unit	Unit Title	Lesson	Day
4.2	Representing and Interpreting Data Using Picture Graphs and Bar Graphs	1 of 3	1 and 2

Lesson Focus

1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
<p>3.MD.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. <i>For example, draw a bar graph in which each square in the bar graph might represent 5 pets.</i></p>	<p>Organize data in tables and solve problems using the strategy <i>make a table</i>. Read and interpret data in a scaled picture graph. Draw a scaled picture graph to show data in a table.</p>	<p>SMP1 Make sense of problems and persevere in solving them. SMP5 Use appropriate tools strategically. SMP6. Attend to precision.</p>	<ul style="list-style-type: none"> •How can you use the strategy <i>make a table</i> to organizedata and solve problems? •How can you read and interpret data in a picture graph? •How can you draw a picture graph to show data in a table?
5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
<p>Use tally marks to record data. Choose the appropriate operation to solve a problem. Find the total amount in equal-size groups by skip counting. Find half of an even number. Read and interpret a picture graph.</p>	<p>Data Tally Table Frequency Table Key Picture Graph</p>	<p>Students often interpret the “Key” for the graph incorrectly and think each picture represent only 1 item. Also when making a graph, some students will choose a number that is not a factor of all the numbers in the data and does not allow values to be represented as whole pictures or half-pictures.</p>	<p>OnCore Lessons 79-81 Student pp. 157-162</p> <p>K-5 Math Resources Button Pictograph □</p>

Instruction

9. Instruction Practices (What are the teachers doing)	10. Learning Practices (What are the students doing)
<p>Teachers will guide children to organize data in tables and solve problems using the strategy <i>make a table</i>, read and interpret data in a scaled picture graph, and draw a scaled picture graph to show data in a table following the lesson guidelines in lessons 79-81 (TM pp 83-85), teachers will:</p> <ul style="list-style-type: none"> •Ask students to explain how they can use tally marks to record information such as answers to a survey question. Check that students are able to read the number represented by a given set of tally marks. Make sure students know the distinction between a tally table and a frequency table. Have students solve problems and explain how they decided to add or subtract. Discuss the meanings of picture graph and key. Check that students know how to use the key. Discuss how to find the amount represented by half a picture. For lesson 81 ask students to compare the table and the incomplete picture . Then guide students to complete the picture graph. Stress the importance of deciding on the key before drawing the caps next to the teams’ names. Encourage students to skip count to decide on the correct number of pictures for each category. 	<p>In Lessons 79-81 students will:</p> <ul style="list-style-type: none"> •Organize data in tables and solve problems using the strategy <i>make a table</i>. •Read and interpret data in a scaled picture graph. •Draw a scaled picture graph to show data in a table. •Complete Student pp. 157-162.

Grade 3

Unit 4.2	Unit Title Representing and Interpreting Data Using Picture Graphs and Bar Graphs	Lesson 2 of 3	Day 3 - 5
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Lesson Focus

1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
<p>3.MD.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. <i>For example, draw a bar graph in which each square in the bar graph might represent 5 pets.</i></p>	<ul style="list-style-type: none"> •Describe the shape of ordered, numerical data; where data are spread out or concentrated, where there are few data, highest and lowest values, and outliers. •Use a picture graph to represent data. •Interpret what the symbols on a picture graph mean. 	<p>SMP4 Model with mathematics.</p> <p>SMP6. Attend to precision.</p>	<p>How does a picture graph help you interpret your data?</p>
5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
<p>Find the number halfway between two given numbers. Skip count by twos, fours, and fives. Choose the appropriate operation to solve a problem.</p>		<p>Students often interpret the “Key” for the graph incorrectly and think each picture represent only 1 item. Also when making a graph, some students will choose a number that is not a factor of all the numbers in the data and does not allow values to be represented as whole pictures or half-pictures.</p>	<p>Investigations Unit 2 Snap-In 2.3A Student pp. C7-C9 Resource Masters M14-M15</p>

Instruction

9. Instruction Practices (What are the teachers doing)	10. Learning Practices (What are the students doing)
<p>Teachers will be following lesson activities from Investigations Unit 2 Snap-In session 2.3A materials. (TM CC9) In the activities teachers will: Have students create line plots to show the data from a third grade class and a fifth grade class, describe each data set, and compare the two classrooms. Using RM pp. M14-M15. To help children understand the Grade 3 list teachers can tell a story to provide context as describe on teacher pages. Make sure students understand what the numbers in the list mean before they work on representing the data. Tell students they are making picture graphs and that a picture graph uses pictures instead of numbers, to represent data. Tell students that like other graphs they need to make a title for the picture graph and ask what a good title may be for the data given. Decide on a picture to represent the data and on what number each picture should represent. Have students complete the picture graphs and then ask questions that could be answered by the graph.</p>	<p>In Investigations Unit 2 Snap-In 2.3A students will:</p> <ul style="list-style-type: none"> •Describe the shape of ordered, numerical data, where data are spread out or concentrated, where there are few data, highest and lowest values, and outliers. •Use a picture graph to represent data. •Interpret what the symbols on a picture graph mean. •Complete pp. C7 - C9

Grade 3

Unit 4.2	Unit Title Representing and Interpreting Data Using Picture Graphs and Bar Graphs	Lesson 3 of 3	Day 6 - 7
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Lesson Focus

1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
3.MD.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. <i>For example, draw a bar graph in which each square in the bar graph might represent 5 pets.</i>	Read and interpret data in a bar graph. Draw a bar graph to show data in a table or picture graph. Solve one- and two-step compare problems using data represented in scaled bar graphs.	SMP1 Make sense of problems and persevere in solving them. SMP4 Model with mathematics. SMP6. Attend to precision	<ul style="list-style-type: none"> •How can you read and interpret data in a bar graph? •How can you draw a bar graph to show data in a table or picture graph? •How can you solve problems using data represented in a bar graph?
5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
Read a scale. Find the number halfway between two given numbers. Read and interpret a bar graph. Skip count by twos, fours, and fives. Read bar graphs. Choose the appropriate operation to solve a problem.	Bar Graph Scale Horizontal Bar Graph Vertical Bar Graph	Students often interpret the “Key” for the graph incorrectly and think each picture represent only 1 item. Also when making a graph, some students will choose a number that is not a factor of all the numbers in the data and does not allow values to be represented as whole pictures or half-pictures.	OnCore Lessons 82-84 Student pp. 163-168 K-5 Math Resources Button Bar Graph Jake's Survey Collecting and Representing Data

Instruction

9. Instruction Practices (What are the teachers doing)	10. Learning Practices (What are the students doing)
Teachers will guide children to read and interpret data in a scaled bar graph, draw a scaled bar graph to show data in a table or picture graph, and solve one- and two-step problems using data represented in scaled bar graphs following the lesson guidelines in lessons 82-84 (TM pp 86-88), teachers will: Remind students that picture graphs represent data in different categories. Discuss the meaning of <i>bar graph</i> and <i>scale</i> . Help students understand the distinction between <i>horizontal bar graph</i> and <i>vertical bar graph</i> . Check that students can identify the data value halfway between labeled values by having them find the number of medals for Brazil or Japan. Explain that the questions might involve reading just one data value, comparing values, or adding values. Ask students to explain how to use the scale of a bar graph to find the value that each bar represents. Guide students through the steps of making the Favorite Winter Activity graph. Make sure students understand why it is not realistic to count by ones when labeling the scale. Ask students to explain why the numbers must be evenly spaced. Ask students why it might be easier to make comparisons using their graphs instead of the table of numerical data. Have students make general observations about graphs by asking questions about the heights of the bars, such as which bar is the tallest and which bar is shorter than ___ bar. Discuss that problems can be solved in more than one way.	In Lessons 82-84 students will: <ul style="list-style-type: none"> •Read and interpret data in a scaled bar graph. •Draw a scaled bar graph to show data in a table or picture graph. •Solve one- and two-step compare problems using data represented in scaled bar graphs. •Complete Student pp. 163-168