Grade-Level Specifics: 3rd–5th Grades

- Use objects, pictures, models, and drawings as proof of solutions
- Use rules and properties to explain procedures, calculations, and mathematical thinking
- Participate and contribute to mathematical discussions
- Question the processes and procedures of others
- Compare multiple arguments or strategies, and determine the most effective

Student Actions

- Communicate orally and in writing
- Share and explain strategies for solving and simplifying problems
- Use examples to explain
- Ask questions about strategies and processes of self and others
- Listen to others
- Analyze alternative strategies shared by others
- Solve problems in more than one way
- Support arguments in more than one way
- Explain procedures, calculations, and mathematical thinking
- Use logic and appropriate sequencing in explanations
- Use objects, pictures, models, and drawings
- Analyze different strategies to determine which is the most effective
- Use mathematical terminology
- Work in various groupings (partners, small groups, whole class)

3rd-Grade Connections within CCSS:

- Analyze patterns and relationships (3.OA.9)
- Assess the reasonableness of solutions (3.OA.8)
- Use models to represent the problem (3.NF.3b; 3.NF.3d; 3.MD.1; 3.MD.2; 3.MD.3)

4th-Grade Connections within CCSS:

- Analyze patterns and relationships (4.OA.5)
- Illustrate and/or explain calculations and/or reasoning (4.NBT.5; 4.NBT.6; 4.NF.1; 4.NF.2; 4.NF.3b; 4.NF.7)
- Assess the reasonableness of solutions (4.OA.3)
- Use models to represent the problem (4.NF.2; 4.NF.4a; 4.NF.4b; 4.NF.4c)

5th-Grade Connections within CCSS:

- Evaluate expressions with parentheses, brackets, or braces (5.OA.1)
- Analyze patterns and relationships (5.OA.3; 5.NBT.2)
- Illustrate and/or explain calculations and/or reasoning (5.NBT.6; 5.NBT.7; 5.MD.5a)
- Assess the reasonableness of solutions (5.NF.2)
- Use models to represent the problem (5.NF.3; 5.NF.4a; 5.NF.4b; 5.NF.5b; 5.NF.6; 5.NF.7a; 5.NF.7b; 5.NF.7c)

CCSS – 3.MD.03

Teacher Highlights:

1. Have students collect data and then make a graph, using butcher paper, markers, rulers, etc., that you provide. If needed, activities can be adjusted to reflect school playground equipment.
2. Select a few students to share their graphs. Select graphs that contain various increments (e.g., counting by ones, twos, fives, tens), and select a variety of different graphs (e.g., picture graphs, bar graphs).
3. Display student graphs, allowing time for the entire class to share them.
4. Have small groups of students discuss validity and pros and cons of the increments and types of graphs used.
5. Discuss as a whole class, making sure to highlight the following:
   - What similarities and differences there are between the graphs
   - How the increments affect the graph
   - Which strategies were used to create the graphs
   - Which graph is more effective and why

Name _____

Collect the following data during recess:

Activity	Number of Students
Swing	
Basketball	
Slide	
Jump Rope	

Create a graph to display your data.