

Tips for Helping at Home

During this unit, students collect, represent, display and interpret data, particularly data that changes over time. To build on this experience, continue to look with your child for ways that advertisements, graphs and tables, movies, or cartoons show change over time. Talk together about the examples you find and what they mean.

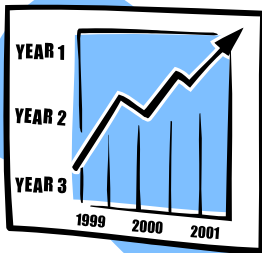
Questions to ask:

- Where does the graph show the fastest growth?
- Where does the graph show the slowest growth?
- What can you tell from the shape of the graph?
- What can you tell from the numbers along the graph?

During this unit, students planted seeds, grew plants over time, and used line plots to represent this growth. You and your child might enjoy doing a similar activity at home with a different kind of plant.

Questions to ask:

- What do you think will happen first?
- After that?
- How much do you think the plants will grow each day?
- Do you think that the plants will grow the same or a different amount each day?
- Do you think they will grow faster when they start or after a week or two?



Mathematical Emphasis

Investigation 1—Graphing Population Changes

- Making graphs that show change over time
- Inventing representations of data
- Interpreting different kinds of graphs
- Developing a scale that includes all the data
- Deciding how to group data
- Establishing conventions for consistency
- Understanding how changes and total are related
- Developing strategies for solving missing information problems when the information is missing from the beginning, middle, or end
- Writing missing information problems

Investigation 2—Ways to Show Change Over Time

- Examining real situations and events that show change
- Interpreting representations that show change
- Making representations that show change
- Distinguishing between representations of something that can change and representations that show changes

Investigation 3—Telling Stories From Line Graphs

- Attending to the shape of graphs
- Using curves to communicate information
- Developing an understanding of the difference between continuous and discrete changes
- Describing growth with a line graph
- Comparing graphs of show growth and fast growth
- Developing a scale that includes all of the data
- Making, interpreting, and comparing line graphs
- Integrating quantitative, qualitative, and graphical descriptions of the same data
- Telling a story from a curve
- Making and interpreting different graphical shapes

Investigations in Number, Data, and Space



Changes Over Time Grade 4

Graphs

Unit Goals:

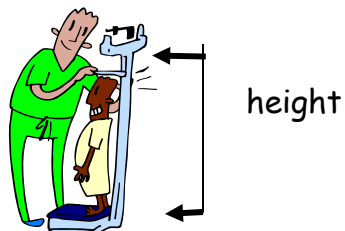
- Students explore the ways things change over time and look at ways to represent these changes
- Students make representations to show how one thing changes over time
- Students make charts and line graphs to show changing speed, changing heights of plants over several weeks, and changing populations
- Students interpret the shapes of curves in line graphs.

Proposed Time Frame:

4 weeks

Vocabulary

height: the measurement from top to bottom



height

centimeter: a metric unit for measuring length. Equal to one hundredth of a meter.

graph: a drawing or diagram used to record information

data:

- *collection of information
- *usually gathered by observation, questioning, or measurement
- *often organized in graphs or charts for analysis
- *may include facts, numbers, or measurements.

story problem: a word problem that gives students a glimpse into how mathematics is used in the real world

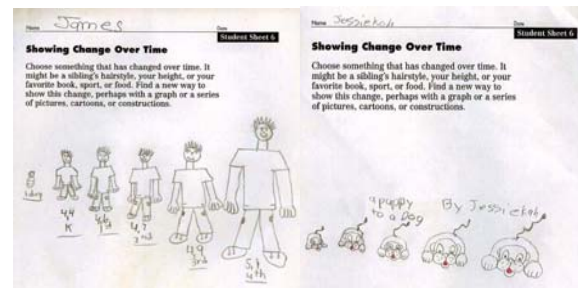
Example: Two frogs had a race. Greedy Frog took 10 jumps of 25. Greasy Frog took 9 jumps of 27. Who was ahead? How do you know?

Web Resources

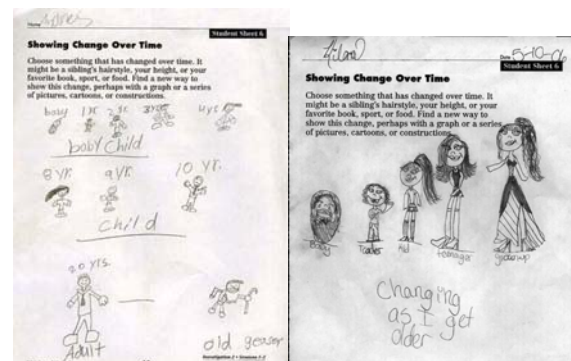
You will find web resources at:

<http://www.dreamsbeginhere.org/static/aboutdcps/departments/acadprog/mathematics/index.asp>

In this unit, students examine a variety of items from newspapers, magazines, and other sources that relate to changing situations and events. Their work focuses on interpreting representations that show change, distinguishing between representations of something that can change and representations that show change over time. Students make representations that show change such as the examples below.



In each of these examples, students show the progression of a living thing from birth until it reaches its full size.



Later in this unit, students will begin to explore the shape of graphs that show change and whether or not the change is steady, fast, or slow. Students are asked to distinguish between a graph that shows growth at a steady rate, and one that shows change in the rate of growth.

Tierney, C. Investigations in Number, Data, and Space: Changes Over Time. Dale Seymour, 1998.

Close to 100

Materials:

One deck of Numeral Cards
Close to 100 Score Sheet per player

Players: 1, 2, or 3

How to Play:

- Deal out six Numeral Cards to each player.
- Use any four of your cards to make two numbers. For example: 6 and 5 could make 65 or 56. Wild cards can be used as any numeral. Try to make numbers that, when added, give you a total that is close to 100.
- Write these two numbers and their total on the Close to 100 Score Sheet. For example: $42 + 56 = 98$.
- Find your score. Your score is the difference between your total and 100. For example: If your total is 98, your score is 2. If your total is 105, your score is 5.
- Put the cards you used in a discard pile. Keep two cards you didn't use for the next round.

6. For the next round, deal four new cards to each player. Make more numbers that come close to 100. When you run out of cards, mix up the discard pile and use those cards again.

7. Five rounds make one game. Total your scores for the five rounds. **LOWEST** score wins!

Score Sheet example: Score

Round 1: _____ + _____ = _____

Round 2: _____ + _____ = _____

Round 3: _____ + _____ = _____

Round 4: _____ + _____ = _____

Round 5: _____ + _____ = _____

Total Score _____