

Lesson Title: Data, Patterns and Graphs: Bouncing Balls and Walking Strides Pre 6.6a	
Utah State Core Standard and Indicators Algebra Content Standard 2 Process Standards 1-5	
Summary	
In this lesson, students collect, organize and analyze data using tables and graphs. They bounce tennis balls and measure walking strides and times. Then they find missing pieces of data by using patterns and rules.	
<p style="text-align: center;">Enduring Understanding</p> <p>Change is all around us. Some things change in a constant pattern and some things change in changing patterns. A very important part of math is learning how to describe, talk about and interpret the effects of change in our lives.</p>	<p style="text-align: center;">Essential Questions</p> <p>How do graphs and tables help us organize and analyze patterns in data?</p>
<p style="text-align: center;">Skill Focus</p> <ul style="list-style-type: none"> • Collect and record data • Setting up graphs and graphing data • Defining variables 	<p style="text-align: center;">Vocabulary Focus</p>
Assessment	
Materials: Graphing Calculators	
Launch	
Explore	
Summarize	
Apply	

Directions:

These activities were modified from Navigating Through Algebra Grades 6-8.

Follow the directions on the worksheets.

- Bouncing Tennis Balls
- Walking Strides
- Patterns with Missing Data

Pre 6.6a1

Bouncing Tennis Balls

How many times can you bounce and catch a tennis ball in two minutes?

You are in a team of 4 students. Start with the ball waist high. One team member, the counter, will count your bounces. Another, the timer, will time you for 2 minutes calling out every 10 seconds. The counter will call out the number of bounces at every 10 second notice. Your third team member, the recorder will record the number of bounces every 10 seconds.

What is the mean of your 10 second interval number of bounces? _____

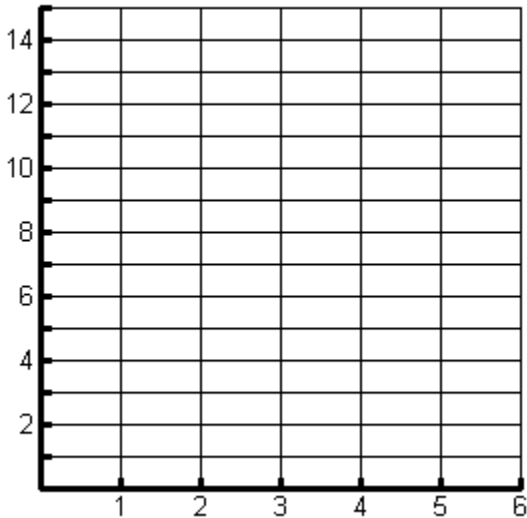
Each person on the team should take a turn bouncing, timing, counting and recording. All team members must bounce the ball on the same surface.

Create a graph of your data on the graphing calculator or TI interactive.

Graph the cumulative totals with time.

Sketch the graph below. Be certain to give the Graph a Title and to label the axes.

Time (seconds)	Number of Bounces during 10 second intervals	Cumulative total Bounces
0		
10		
20		
30		
40		
50		
60		
70		
80		
90		
100		
110		
120		



How does the mean of your 10 second times relate to the graph?

Graph your team members bouncing totals.

Describe your team members' mean 10 second times as related to the graph.

Pre 6.6a2

Walking Stride Times

In this activity you will test whether different size strides (step lengths) affect the time it takes to walk a given distance. You will walk 8 meters using short, medium, and long strides, timing each trial.

- Mark off an 8 meter walking track.
- Time the walker using long, then medium, then short strides.
- Estimate the time needed to go longer distances.

Strides and Times

Distance	Short	Regular	Long
8 meters			
16 meters			
24 meters			
32 meters			

1) Create a graph to track the change using different strides.

- Label the axes.
- Decide on the scales to use on the axes. Mark off the units on the axes.
- Plot the points and draw the lines.
- Label the lines for stride lengths.
- Label the graph.



2) Determine the walking rate (meters per second).

Long stride = _____meters/sec Medium stride = _____meters/sec.

Short stride = _____meters/sec.

Pre 6.6a3

Patterns with Missing Data

Sometimes pieces of data are lost or not available. If you can track a pattern of change then you can predict the missing data. Use the pattern below to predict the missing data.

How did you make the predictions?

What is a rule you could use to find y if you know x .

Use your rule to find y 's value if $x = -2$.

x	y
2	
3	
4	16
5	20
6	24
7	
8	
10	

Create a graph to track the change as the numbers grow. Decide on the scale for the grid and label the grid lines.

