

LessonTitle: Tongue Twister**Alg 4.7****Utah State Core Standard and Indicators** Algebra Standard 2, 5 Process Standards 1-5**Summary**

In this lesson, students create a line of best fit and analyze the growth relating time and tongue twister repetitions.

Enduring Understanding

Many patterns of growth in the world follow a linear pattern with a constant rate of change.

Essential Questions

What are some examples of growth (or loss) in the real world which follow a pattern with a constant rate of change?

Skill Focus

- Linear relationships
- Lines of best fit
- Slopes of lines

Vocabulary Focus**Materials:** Graphing calculators, stop watches.**Assess****Launch****Explore****Summarize****Apply**

Directions:

Students in groups of varying numbers will recite a selected tongue twister in succession, and the group's total time will be recorded. You will lead your class in graphing the total time required versus the number of students in the group.

1. Explain this procedure to the class: Students sitting in a circle will say a selected tongue twister one at a time, in order, going around the circle. In the first trial, only the first student will say the tongue twister; in the second trial, only the first and second student will say the tongue twister, etc. In each trial, one person will be added to the chain of tongue twisters and the total elapsed time will be recorded.
2. Divide the class into two groups (about 15 people), and assign each group a different tongue twister, one noticeably longer than the other. Provide each group with a stopwatch.

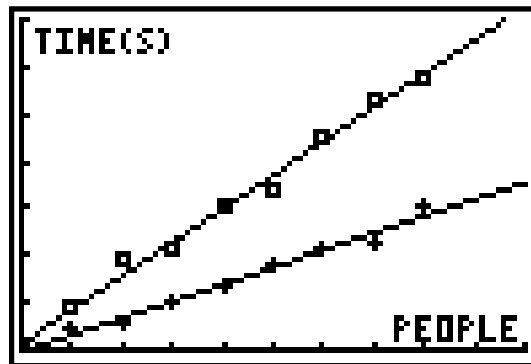
Example Tongue Twisters:

1. I wish I could wash my Irish wristwatch.
2. Three witches wished three wishes, but which witch wished which wish.
3. Peter Piper picked a peck of pickled peppers.
4. Picky people pick Peter Pan peanut butter, it is the only peanut butter picky people pick.

3. Have each group record on the board the time required for 1 to 15 people to say the tongue twister.

4. Lead the class in choosing an appropriate scale, labeling the axes, and plotting data.

EXAMPLE of students graphs:



5. Facilitate a large group discussion regarding the questions about Tongue Twisters. Students should then respond individually to the questions. Assess using a rubric.

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Tongue Twister

Name _____

1. In the table below, record the class data for each Tongue Twister.

<i>Trial</i>	<i>Tongue Twister 1 (time)</i>	<i>Tongue Twister 2 (time)</i>
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		

2. Make a scatter plot of the data for both Tongue Twisters and label the axes appropriately.



3. Explain why you think the plotted points for each tongue twister do not form a straight line?

Should a dot-to-dot line be drawn to connect the data, or should a straight line be drawn through the sets of the data? Explain why.

4. Estimate and draw a line which “fits” the plotted points the best for each Tongue Twister. Draw this on the scatter plot above. This is called the *line of best fit*.
5. Predict the amount of time it would take for 25 people to say the tongue twister? Show your thinking.
6. How many people could say the tongue twister in 70 seconds? Show your thinking.
7. What is the story the tongue twister graphs tell?
8. How can we figure out the number of seconds the longer tongue twister takes per person? How much longer does it take per person to say the longer tongue twister?
9. Write two equations that represent the data for the two tongue twisters. Graph the equations for each tongue twister on a graphing calculator. Use this information to predict the time it would take for 100 people to say the tongue twister.

Tongue Twister 1

Tongue Twister 2

Equation: _____

Equation: _____

Prediction (100 people): _____

Prediction (100 people): _____

10. What would the graph look like if the first person said the tongue twister once, the second twice, the third four times, and so on?