

Cool Ideas for Teaching Linear Relationships Using Real World Examples

Proportional Relationships (Direct Variations):

- Relationship between thickness of a single book and the height of a stack of books.
- Conversion between centimeters and inches
- Heart rate vs. Elapsed time
- Height of an object vs. its shadow length
- Exchange Rates between US Dollars and other currencies
- Length of a string of paper clips vs. Number of paper clips
- Diameter of a given circle vs. the circle's circumference
- Side lengths of equilateral triangles vs. number of toothpicks needed to make triangles
- ♥ Number of triangles vs. number of toothpicks needed to make triangles

Non-Proportional Linear Relationships:

- Number of people who can sit at a square table vs. number of tables lined up
- Conversions between Celsius and Fahrenheit temperatures
 - *For a system of equations, compare the actual formula, $F = 1.8C + 32$ to an estimate of the conversion, $F = 2C + 30$, to see where it's most accurate.*
- Perimeter vs. the number of pieces in a pattern block series
- Surface area vs. the number of one inch cubes stacked
 - *Or, use Cuisenaire rods and compare the surface area (in cm^2 with the volume (in cm^3)*
- ♥ Size of a rectangular garden vs. Number of tiles around the garden
- ♥ Side length of a square pool vs. Number of tiles around the pool

Relationships that fit lines, but aren't exactly linear:

- Number of times a nut is screwed into a carriage bolt vs. distance between nut and bolt head
- Number of cups stacked vs. height of stack
- ♥ Number of bites in licorice vs. Length of licorice left
- Number of sips taken of a drink vs. Height of drink left
- Number of knots tied in a section of rope vs. Length of rope left
 - *For a system of equations, use ropes of different thicknesses and lengths, and graph them on the same grid.*
- Number of times a ball is bounced vs. Time elapsed
- Bounce height of a ball vs. Height at which ball is dropped
- Height of a student vs. Jump height against a measuring tape on the wall

♥ = Activities we did in our session today.

Sources:

- [*AIMS Looking at Lines*](#)
- [*Fulton, Brad & Lombard, Bill. The Pattern & Function Connection Key Curriculum Press, © 2001*](#)
- [*NCTM. Navigating Through Algebra in Grades 6-8.*](#)

Online Resources that might be helpful:

- www.nctm.org (and <http://illuminations.nctm.org>)

Thanks for attending my session today!

You can email me at jcampbel@wboe.org for more resources and a Microsoft Word version of this handout.