TEACHER PAGE
Lesson: Linear/Nonlinear Functions
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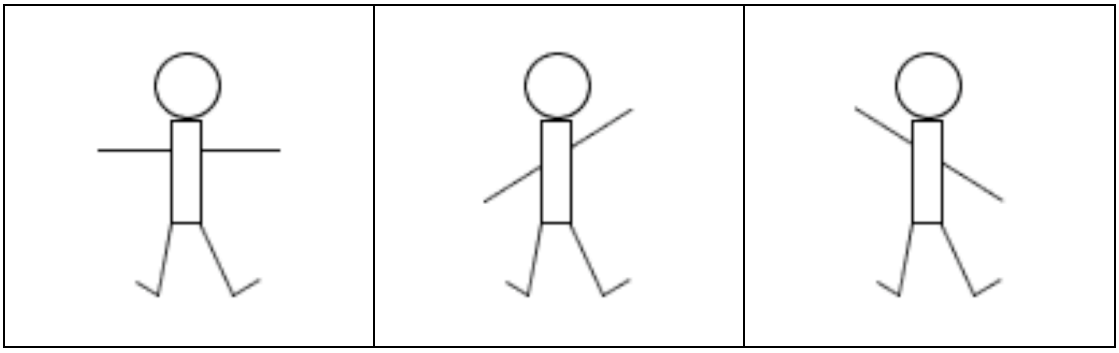
New Arizona Math Strand 3 Patterns, Algebra and Functions Grade 8
Articulated 3M82-O2 Distinguish between linear and nonlinear functions, given graphic examples.
Old Arizona Math Standard 3 Patterns, Algebra and Functions Grades 6-8
3ME6-PO1 Distinguish between linear and nonlinear functions through investigations.

Learning Objectives: Students will be able to distinguish between linear and nonlinear functions, given graphic examples.

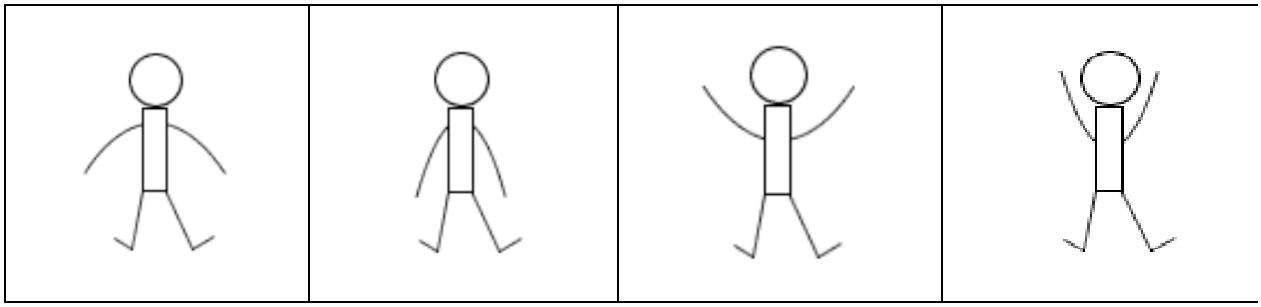
Overview:
In grades 6-8, students should be able to distinguish between graphs representing linear functions and graphs representing non-linear functions. This lesson provides students with an introduction to functions in daily life, and graphical representations of linear and non-linear functions.

Engage Students: Direct the students to stand up, extend their arms straight out from their shoulders. Tell them their arms now represent the graph of functions. Direct the students to keep their arms in a straight line, and move them up and down in various angles from their bodies. They are not representing other functions, but they are all linear functions.



Now direct the students to stand with their arms out straight, but bend them up at the elbow, in a curved line. While still bending their elbows, direct the students to make their arms come nearer and farther from their bodies. Direct the students to bend their arms down at the elbows now, in a curved line, and experiment with moving their arms near and farther from their

bodies. They are now representing non-linear functions, in particular, quadratic functions.



Content: Algebraic functions create distinctive patterns when plotted in a Cartesian graph. In this activity, students are shown various algebraic functions and the corresponding graphic patterns. Students are asked to distinguish between graphic patterns created by linear functions and non-linear functions. There are web sites for interactivity in the DIG DEEPER. TALK ABOUT IT has a drawing exercise helping student understanding of a mathematical function.

Follow-up, extensions: Students have the opportunity to visit educational Internet sites in the Internet lesson that allow them to manipulate and explore various algebraic functions. Encourage active research.

Assessment: Students will correctly identify at least 4/5 graphic representations of algebraic functions. Pre and post-testing will provide good learning data.