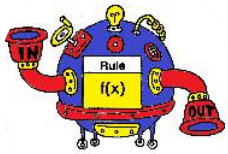

Function Junction

Introduction to Functions

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Grade Level	8th – 11th Grade	**Time Frame**	1-2 class period(s)
Subject	Mathematics	**Duration**	80 minutes
Course	Algebra 2		

Essential Question

How can we represent relations between quantities?

Summary

Students will define function, domain, and range and apply these concepts to a variety of relations.

Snapshot

Engage

Students will consider three everyday objects that can be considered functions.

Explore

Students will consult multiple texts to create their own definitions of function, domain, and range.

Explain

Students will share their definitions and critique the definitions of others.

Extend

Students will apply their definitions to several examples of relations.

Evaluate

Students will watch a video and write an argument about why the Google search engine is or is not a function.

Standards

Oklahoma Academic Standards for Computer Science (High School, Level 1)

L1.AP.V: Variables

Oklahoma Academic Standards for Computer Science (High School, Level 1)

L2.AP.V: Variables

Oklahoma Academic Standards for Mathematics (Grades 9, 10, 11, 12)

A1.F.1.1: Distinguish between relations and functions.
A1.F.1.2: Identify the dependent and independent variables as well as the domain and range given a function, equation, or graph. Identify restrictions on the domain and range in real-world contexts.
A1.F.1.3: Write linear functions, using function notation, to model real-world and mathematical situations.

Attachments

- Explore Handout—Function Junction - Spanish.docx
- Explore Handout—Function Junction - Spanish.pdf
- Explore Handout—Function Junction.docx
- Explore Handout—Function Junction.pdf

Materials

- Function Junction PowerPoint (attached)
- Function Junction Explore Handout (attached; 1 per student)
- Internet access for video
- Small whiteboards or dry-erase pockets (1 per every 4 students)
- Dry erase markers

Engage

Go to slide 2 to introduce the essential questions and then to slide 3 to introduce the lesson objectives to students.

Go to slide 4, have students complete a Think-Pair-Share strategy to answer this question. Give students several minutes to think on their own and several more minutes to share with a partner. Then call on several pairs to share their thoughts.

Go to slide 5, review the answers to the "riddle." All of the objects can be considered functions. Ask students to share what they recall about functions.

Explore

Pass out the Explore Handout. Have students work in pairs to review the descriptions given on the handout and create definitions for function, domain, and range.

Explain

Have between three and five groups share their definitions of function. Record the definitions on the PowerPoint, chart paper, or whiteboard. Have other pairs compare and contrast the definitions created. Have the class work together to create one class definition of a function.

Repeat the above procedure with the terms domain and range.

Review slides 8-10 on the PowerPoint to reinforce the meaning of these three terms.

Extend

Group two pairs of students together to form groups of four. Each group of four is a "team." Review the rules of the game "What's My Rule?" on slide 11 with students. Play each round of "What's My Rule?" on the following slides. For each round, pick one or two groups to share how they decided what the rule was, if it was a function, and if so, what the domain and range were. Continue playing rounds until you are convinced most students understand what a function is.

Evaluate

Advance to the last slide of the PowerPoint (slide 21). Tell students they will need to be able to answer this question based on what they are about to hear in the video.

Click the link to show the video.

After the video is complete, have students write a Two-Minute Paper in response to the prompt on the screen.

Resources

- Collins, W. (2001). Mathematics applications and connections: Course 2. New York: Glencoe McGraw Hill.
- Davidson, D. M. et al. (2001). Pre-algebra: Tools for a changing world. Needham: Prentice Hall.
- YouTube Video "How Search Works": Google. (2010, March 4). How search works [Video file]. Retrieved from https://www.youtube.com/watch?v=BNHR6IQJGZs
- Two-Minute Paper Instructional Strategy: K20 Center. (n.d.). Two-minute paper. Instructional Strategies. Copyright 2015 Board of Regents of the University of Oklahoma. Retrieved from https://learn.k20center.ou.edu/strategy/d9908066f654727934df7bf4f506cf73
- Think-Pair-Share Instructional Strategy: K20 Center. (n.d.). Think-pair-share. Instructional Strategies. Copyright 2015 Board of Regents of the University of Oklahoma. Retrieved from https://learn.k20center.ou.edu/strategy/d9908066f654727934df7bf4f5064b49
- Sullivan, M. (2002). College algebra (6th ed.). Upper Saddle River: Prentice Hall.
- Sullivan, M. & Sullivan, M., III. (2000). Precalculus: Enhanced with graphing utilities (2nd ed.). Upper Saddle River: Prentice Hall.