

It Depends

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Summary	Students will think about how we can show a dependent relationship between two quantities, using a variety of representations.
Goals	<ol style="list-style-type: none">1. Discuss how the value of one thing depends on the value of another.2. Brainstorm different ways to show a dependent relationship.4. Describe in words the representations and the dependent relationships.
Materials	Handouts
Duration	30 minutes
Keywords	Contextualized Situations Full Class Discussion Function Representations Independent/Dependent Variables Linear Functions Production of Equations Production of Graphs Production of Tables

Activity Plan:

1. Students receive a handout with the following problem (Handout Page 1):

We have a motor that turns at a rate of 3 rotations per second.
How can we show how many rotations the motor makes depending on how long it spins for?

2. Students are asked to represent the rotations of the motor on their handout however they would like (i.e. drawing, equation, etc.).
3. Have some students share their representations with the entire class. Outside of seeking volunteers, ask students with different interpretations to share.
4. If not yet covered in the student representations, introduce the idea of a table, where we can show the time and the number of rotations.
5. Introduce the idea of an **independent** variable and a **dependent** variable. Time is generally **independent** because we can choose the number of seconds that the motor spins, and the number of rotations is **dependent** on the length of time.
6. BONUS: Depending on the level of the students, ask how we would show this relationship between rotations and time with a graph. This can be used as an introductory activity for generating a graph from a table.
7. BONUS: Depending on the level of the students, ask if they can show the relationship as an equation that will tell let us find the number of rotations for any number of seconds.
8. BONUS: If students are already able to produce a variety of representations, have the discussion center on comparing these representations and looking to see how features of the function are visible in each representation. For example, the words "3 rotations per second" are visible in the initial problem. The number 3 is then visible in the equation $y=3x$. Similarly, 3 is seen as the slope on the graph. Even young children may be able to express that they multiply by three to generate the table.

Handout: It Depends

(Page 1)

Name: _____ Date: _____

We have a motor that turns at a rate of 3 rotations per second. How can we show how many rotations the motor makes depending on how long it spins for?

Show this on the paper however you would like: