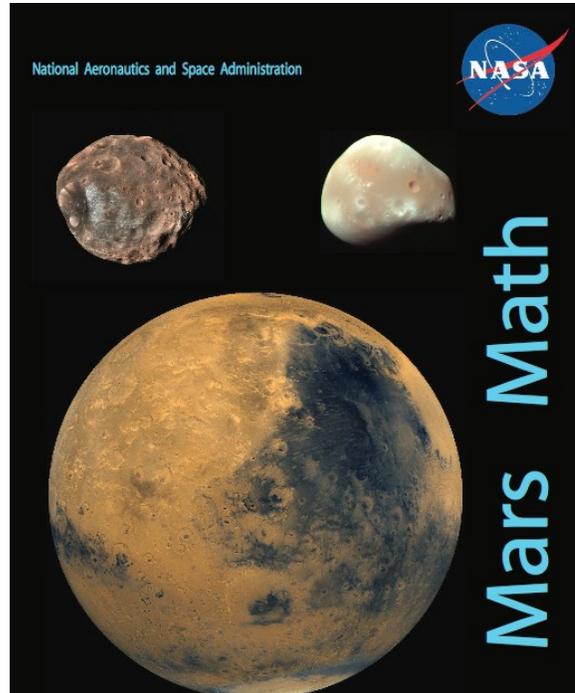


## How big is Mars? Data

[https://www.nasa.gov/pdf/724927main\\_Mars\\_Math.pdf](https://www.nasa.gov/pdf/724927main_Mars_Math.pdf)



### Engaging context

The data will engage the students with a breakdown of size comparisons of individual planets, with an emphasis on Mars. Students will be engaged with hands-on activities. They will be given the data in the form of directions they are able to use to draw out and create a visual model. They will have to be able to interpret the information to be able to make a model on paper using a compass and graphing paper. This visual created by the students will help them to engage by giving them a self-created hands-on model to assist with answering questions from the lesson. Not only is this portion of the lesson engaging in a hands-on way, but in creating a to-scale model the students will gain skills that will help them to see and analyze perspective when looking at and reading maps and blueprints.

### Measurable objectives.

1. When presented with written directions, students will be able to follow and accurately calculate the diameter of the circles for their model with 95% accuracy
2. When presented with written directions, students will be able to manipulate fractions to make proportions with 95% accuracy.

3. When given a proportion, students will be able to solve for a missing variable with 95% accuracy.
4. When students are presented with questions from the lesson, they will answer with 80% accuracy using the models they have created..

## Standards

**KY.HS.G.17 (+)** Apply basic construction procedures within the context of a circle.

**KY.HS.G.9** Understand properties of dilations.

- a. Verify the properties that result from that dilations given by a center and a scale factor.
- b. Verify that a dilation produces an image that is similar to the pre-image.

**KY.HS.G.1** Know and apply precise definitions of the language of Geometry:

- a. Understand properties of line segments, angles and circle.

**KY.HS.G.25** Analyze and determine the validity of arguments for the formulas for the various figures and shapes.

- a. Finding the circumference and area of a circle.

**HS- ESS1-4. Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.**

## Evidence

At the end of the activity or possibly the next day I would pull random students to interview and ask the following questions.

1. On a scale of 1 to 10 how well did you enjoy the activity?
2. Do you feel you knew enough about the information to be able to answer the questions?
  - a. If yes, what was the biggest help in this activity?
  - b. If no, in what areas do you feel you need more understanding?
3. Do you have a better understanding of how scale models are designed and constructed?
4. Do you feel you are better prepared to understand a scale model in real life?
  - a. If yes, what was the biggest help?
  - b. If no, with which concept do you feel you need more instruction?
5. On a scale of 1 to 10 how much did you enjoy having some science in the math classroom?
6. Please describe what you thought went well in this activity.
7. Please describe 2 things you would like to see improved with this activity.

To determine if this enhanced the understanding of the concept, students will be given a quiz before the activity takes place. After the activity, they will again be given the same quiz to see how well the activity increases understanding of the concept.