Play Dough Planets v2.0

Instruct your groupmates to each take one can of play-dough, one plastic knife and one laminated sheet. Read the following instructions aloud to them, giving them time to complete the activity in between each instruction.

1. Roll out the ball of playdough and cut it into 10 equal parts.
   - Place 5 pieces into the "J" box.
   - Place 3 pieces into the "S" box

2. Roll out the remaining 2 pieces and cut each into 10 equal parts (20 pieces total)
   - Place 9 parts in the "J" box
   - Place 5 pieces in the "S" box
   - Place 2 parts in the "N" box
   - Place 2 parts in the "U" box

3. Roll out the remaining 2 pieces and cut each into 10 equal parts (20 pieces total)
   - Place 7 parts in the "U" box
   - Place 5 parts in the "N" box
   - Place 2 parts in the "J" box
   - Place 5 parts in the "S" box

4. Roll out the remaining piece and cut it into 10 equal parts
   - Place 4 parts in the "E" box
   - Place 3 parts in the "V" box
   - Place 1 part in the "U" box

5. Roll out the remaining 2 pieces and cut each into 10 equal pieces (20 pieces total)
   - Place 7 parts in the "V" box
   - Place 6 parts in the "Ma" box
   - Place 4 parts in the "E" box
   - Place 2 parts in the "Me" box

6. Roll out the remaining piece and cut it into **4** equal parts
   - Place 2 parts in the "Ma" box
   - Place 1 parts in the "Me" box
   - Place 1 part in the "P" box

Station 1: Play Dough Planets

1. Note: At (almost) every step of this activity, you were asked to divide the play dough into ten equal pieces. If the entire lump of play dough represents the total size of all of the material in the solar system if you were to lump it all together. At the first step, you divided this total into ten equal pieces, so each lump represents 1/10, or 10% of the total material in planets in the solar system. At the next step, 1/100 or 1% and then 1/1000 or 0.1%. Use this trend to complete the chart below.

Planet	Fractions	Percentage of Total
EXAMPLE: Planet "X"	$\dfrac{5}{10} + \dfrac{3}{100} + \dfrac{1}{1000} = \dfrac{531}{1000}$	53.1%
Mercury		
Venus		
Earth		
Mars		
Jupiter		
Saturn		
Uranus		
Neptune		
Pluto		

2. Now, using your number from the chart for the Earth as a **unit conversion** (1 Earth = __% of solar system), determine how many times larger or smaller each planet is relative to the Earth. Round your answers to the nearest tenth. (Example: Planet X is 3.1 times larger than the Earth, while Planet Y is 5.2 times smaller).

    Mercury is _____ times _____ er than the Earth

    Venus is _____ times _____ er than the Earth

Mars is _____ times _____ er than the Earth

Jupiter is _____ times _____ er than the Earth

Saturn is _____ times _____ er than the Earth

Uranus is _____ times _____ er than the Earth

Neptune is _____ times _____ er than the Earth

Pluto is _____ times _____ er than the Earth

BEFORE YOU MOVE ON, check that all of your answers in the first blank above are bigger than one. If not, your bigger/smaller conclusion is incorrect. If you are not sure how to revise your answer, raise your hand and I'll come help.

3.

    a.   Do these numbers (both the percentages that you computed in (1) and the ratios the you computed in (2)) represent the relative **volume, area, or radii** of the planets and how do you know?

    b.   How would the number be different (bigger or smaller and by what factor) for the other two?