

## Orange you a Sphere?

### **What you will be doing...**

You will work with the students at your table to use the orange provided to discover a formula that we can use to help Jose determine how much wrapping paper he will need to wrap his gift for Tatijana.

### **What you will use/need...**

- ⊕ Copy Paper
- ⊕ Markers
- ⊕ Calculator
- ⊕ An Orange
- ⊕ Napkins
- ⊕ Ruler

### **How you will do it...**

1. Mold the orange into the most sphere-like shape possible.
2. Identify a great circle on the orange. Draw it on the orange using your marker.
3. Raise your hand so that the teacher can come over and cut your orange along the great circle.
4. Measure the diameter of the great circle & record it under Analysis Question #1.
5. Trace one great circle onto the piece of copy paper your group was given.
6. Predict how many great circles you can fill with the peel of the orange. Record your prediction under Analysis Question #2.
7. Trace the number of great circles your group predicted onto the copy paper plus 3 extras. (For example, if I guess 5 great circles, I will draw 8 extra circles.)
8. Tear off pieces of the orange peel, each about to 1 square inch.
9. Use the pieces of orange peel to cover as many circles as possible. (Note: Each circle must be covered entirely without any gaps or overlaps.)
10. Answer the questions 1-6 below. Then add your group's data to the table on the board.

### **Analysis Questions**

Answer while conducting the experiment.

1. What is the length of the diameter of the great circle? Of the radius?

Diameter: \_\_\_\_\_

Radius: \_\_\_\_\_

2. Predict the number of great circles that will be filled by the orange peel.

Prediction: \_\_\_\_\_

*Answer after conducting the experiment.*

3. How is the surface area of the orange related to the orange peel?

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4. How many circles did your orange peel fill up?

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5. What is the area of one circle?

6. What is the area of ALL the circles?

*Answer after discussing class data.*

7. From the class findings, what general formula/equation could you generate to determine the surface area of ANY sphere or orange peel?

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