***MAP4C – 3D problem solving*** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

SOME QUESTIONS INVOLVING YE OLDE GIANT HUNK OF PLAYDOH.

Answer below or on back. Whenever you are calculating something, provide clear mathematical evidence.

1. Determine the radius of the giant ball of playdoh.
2. Suppose we break the giant ball of playdoh into two equal pieces, then form a ball with those pieces. Predict (no calculations) what the radius of those two balls will be.
3. Calculate what the radius of the balls will be. Reflect upon your answer…are you surprised?
4. You know the radius of the big ball of playdoh from question #1. Into how many identical small balls would you need to break the big ball, so that the radius of each small ball is half the big ball? Justify.
5. Determine the surface area and volume of the ball with a radius of 8 cm. Use your formula sheet for formulas.
6. Suppose you double the radius to 16 cm. What are the surface area and volume now?
7. How many times bigger are the surface area and volume of the ball from #5 than #6? Is the same true anytime you double the radius of a sphere? Investigate.
8. Let’s think 2D for a few minutes. Suppose you have a circle with radius *r*. What is the effect of doubling the radius of the circle on the circumference and area? Investigate. Choose numbers if you need.
9. Let’s say you have a circle with an area of 1000 cm2. If the area is doubled, how many times bigger is the radius?