## Literal Formulas Project Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## MATH A104

Most math books define the area of a circle as follows: , where *A* is the area of the circle and *r* is the radius of a circle.

A text used in UAA’s Automotive Diesel program defines the area of a circle as , where *A* is the area of the circle andis the diameter of the circle.

1. (2 points) What is the mathematical relationship between radius and diameter? Your answer can be a sentence or an equation.
2. (5 points) Show mathematically how to get from the formula to the formula .
3. (5 points) Explain in words what you did in each step to change the first formula into the second. What assumptions did you have to make? Anyone reading this answer should be able to replicate the math by just reading your answer. That is, talk me through all the steps.
4. (1 point) Did you have any false starts or did you see how to change the formula right away? There is no wrong answer here; I just want you to think about your process.
5. (2 points) For this problem, you will need a tape measure or a ruler. First **measure** the radius of the circle below. Then **measure** the diameter of the circle below and record your answer. *Do not calculate the diameter!* I want it measured, not calculated. Try to be as precise as is reasonably possible. Include units.
   1. Radius:\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Diameter:\_\_\_\_\_\_\_\_\_\_\_
   3. Was it easier to measure the radius or diameter?
6. (3 points) What is one reason why it might be more practical in the real world to use the formula instead of ? If it helps, you may wish to ask yourself why the auto diesel students in particular use this less traditional formula.
7. (4 points) Which of the two formulas is more accurate? Which is more precise? Give a reason to back up your answer.