



Homework-7

Student Name: _____

Grade: $\frac{\quad}{5}$

1- A cylinder with a diameter of 1.5 *in* and height of 3 *in* solidifies in 3 minutes in a sand casting operation.

(a) What is the solidification time if the cylinder height is doubled?

(b) What is the solidification time if the diameter is doubled?



- 2- Pure aluminum has a density of 2700 kg/m^3 and a viscosity of 0.004 Ns/m^2 is poured into a sand mold. The metal level in the pouring basin is 8 in above the metal level in the mold, and the runner is circular with a 0.3 in diameter. Assume that $v_1 = 0$, the pressure does not change in the channel, and there is no friction in the sprue.**
- (a) What is the velocity and rate of the flow of the metal into the mold?**
- (b) Is the flow turbulent or laminar?**