Name: _____
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Introduction to Ground-Water Modeling
15-040-602

First exercise

In a *falling head permeameter test* it takes 20 seconds for the head to drop from 36 to 20 cm at a temperature of 25°C. The sample chamber is 10 cm long, the sample barrel and stand pipe barrel are 4 cm and 1 cm in diameter respectively.

a. What is the *hydraulic conductivity* in meters/day and feet/second?

b. What is the *intrinsic permeability* in cm^2 and *darcies*?

c. How long would it take to do the same experiment using kerosene at the same temperature?

You should get the following answers:

standpipe diameter:	0.01	**m**
sample barrel diameter:	0.04	**m**
initial head:	0.36	**m**
final head:	0.2	**m**
Sample barrel length:	0.1	**m**
elapsed time:	0.000231481	**days**
K:	1.59E+01	**m/day**
	5.21E-04	**ft/s**
Water viscosity:	0.92E-07	**sq m/s**
k:	1.72E-07	**sq cm**
	1.74E+01	**darcies**
Kerosene viscosity	2.30E-06	**sq m/s**
K:	7.35E-05	**m/s**
t:	5.00E+01	**s**

Solve the problem using a well annotated spreadsheet. Submit both a print out of the spreadsheet showing the answers and the same spreadsheet displaying the formulae.