GROUP 1
FINE SAND

WETTING FRONT	Time	START 990 (mL)
(cm) 2	0:38	930
4	0:58	890
6	1:15	840
8	1:32	810
10	1:53	770
12	2:10	730
14	2:25	690
16	2:42	650
18	3:02	590
20	3:20	540

POROSITY = n = 0.436

Group 2

	Time
2 cm	6
4	9
6	13
8	—
10	18
12	—
14	26
16	—
18	34
20	37
22	—
24	44

start Vol. 230 ml

end vol. 660 cm

coarse/fine sand mix

porosity (bulk density) $n = .319$
using original way $n = .298$

Δ=mass? 42.15 g. graduated cylinder
133.24 g w/ dry soil + cylinder
154.55 g w/ water. vol. 60 mL of soil for porosity

6.3 cm diameter soil column

M/V

infiltrates, (a) assuming the soil saturates above the wetting front, how deeply does the wetting front penetrate? (b) Assume the water redistributes to a uniform water content over 30 cm; what is this uniform θ for each soil? (c) After the water redistributes, which, if either, of the soils have a uniform water content greater than field capacity? (d) Assume water above field capacity drains and saturates the bottom of the soil profile; how deep is this saturated layer? (e) Assume the saturated layer drains out the bottom of the soil profile until the water content everywhere is at field capacity; how much water (cm) drains.

GROUP 3
silt-sand mix

4) Show conceptually, using algebra, that $n = 1 - \rho_b/\rho_p$ [recall: n =(vol. Pores)/(/vol. Soil)]

5) Use the Green and Ampt equation, in conjunction with the soil properties handout for a sand loam and clay loam, and estimate how much infiltration you get from a 4.5 cm, 1.5 hr storm.

Extra Credit:

(1) Calculate the largest diameter tube possible that will hold a drop of water on its end. Test your answer. Hint: a drop will have two surfaces attached to the tube, one on the inside of the tube and one clinging to the end of the tube.

(2) For question 2(c), determine the fraction of the area for which the 1-hr rainfall intensity exceeds the saturated hydraulic conductivity for each return period, 1, 2, 5, 10, 25, 50, and 100 yrs.

Time (s)	z_f (cm)	F-volume (mL)
0	0	950
10	0	950
20	1	940
30	1	920
40	6	900
50	7	880
60	7.5	870
70	8.5	860
80	9.5	860
90	11	850
100	11.5	840
110	12.5	830
120	13	830
130	13.4	820
140	14	810
150	14.8	800
160	15.2	790
170	15.6	790
180	16.5	780
190	17	780
200	17.4	770
210	17.8	770
220	18.2	760
230	18.9	750
240	20	750
250	20.5	740
260	21.2	730
270	21.8	730
280	22.1	720
290	22.7	710
300	23	710
310	23.7	700
320	24.3	700
330	24.7	690
340	24.9	690
350	25.3	680
360	26.0	670

02/14/13