Lab 1 Field Effect Transistors (Part 1)

1. Assemble the circuit in Fig.1:
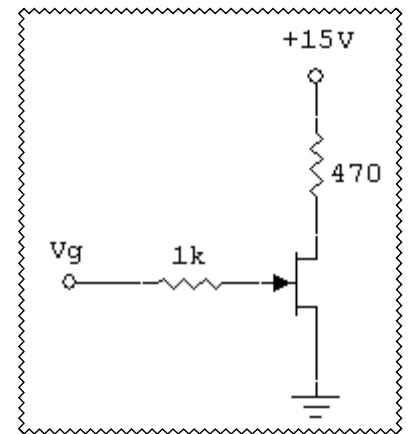

Fig. 1

2. Complete Table 1:

V_G	I_D
0	
-1	
-1.5	
-2.0	
-2.5	
-3.0	

Table 1

3. Graph the data from Table 1 in Fig. 2:
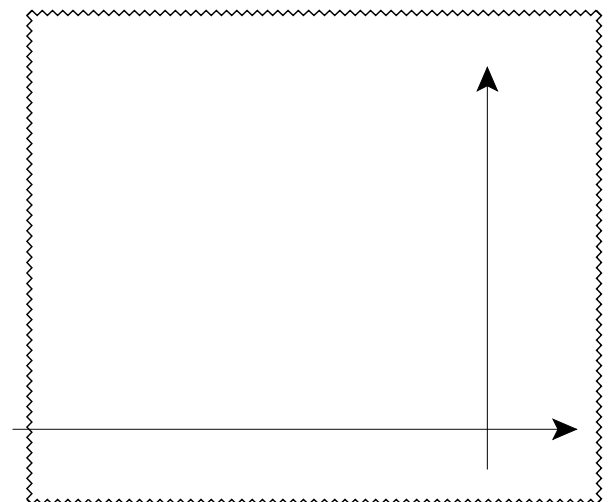
Fig. 2

4. Refer to the data from Table 1: I_{DSS} = _____ V_{GSoff} = _____

5. "Self-bias" means that the transistor is "on" and maintains a steady current that is less than I_{DSS}. A source resistor (R_S) must found to create self-bias. Use the data from steps 4   and complete the following calculations:

$$I_D = \frac{1}{4} I_{DSS} = \qquad\qquad V_{GS} = \frac{1}{2} V_{GSoff} = \qquad\qquad R_S = \frac{V_{GS}}{I_D} = $$

6. Use the value for R_S from step 5 and complete the circuit in Fig. 3:

+15V

470

1k

Rs

Fig.3

7. Measure the following:
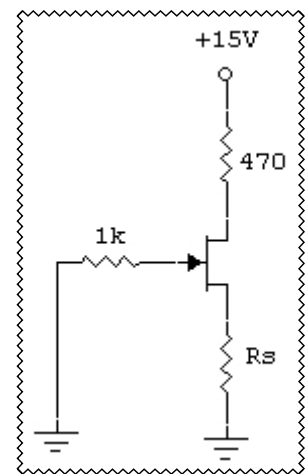
I_D = _____ V_{GS} = _____

8. Do the values measured in step 7 match the calculated values from step 5?