Some Questions

1. What variable is X? What variable is Y?
2. What is the average of X? SD of X?
3. What is the average of Y? SD of Y?
4. What is the correlation r between X and Y?
5. What is the slope m of the regression line (of X predicting Y)?
6. What is the intercept b of the regression line?
7. Write the equation for the regression line.
8. What is the r.m.s. error of this regression line?
9. What is the average value of (or prediction for) Y when X = 1? What about when X = 2? X = 10? X = 100? X = -25? X = 1,000,000?
10. If we increased district magnitude by one seat, how many more parties do we get? What if we increase it by 10 seats? Is this large enough to matter?

1.) X is avg magnitude; Y is ENEP

2.) 13.16; 30.71

3.) 4.02; 1.89

4.) 0.17

5.) slope = $\frac{r * \text{SD of Y}}{\text{SD of X}} = \frac{0.17 * 1.89}{30.71} = 0.01$

6.) intercept = avg of Y - (avg of X * slope) = 4.02 - (13.16 * 0.01)
= 4.02 - 0.13
= 3.89

7.) $y = mx + b = 0.01x + 3.89$

8.) rms error = $\sqrt{1-r^2} * \text{SD of Y} = \sqrt{1-0.17^2} * 1.89$
$= \sqrt{1-0.03} * 1.89$
$= 1.86$

9.)

X	1	2	3	10	100	-25	1m
Y	3.90	3.91	3.92	3.99	4.89	3.64	10,003

10.) 0.01 ; 0.10