Test 2 Makeup work.  (Here are some places where you can find explanations and problems.)

a. 1&2. Exponential formulas and interpretations
   Lesson 6: pages 280-285: 8-15
   Lesson 4: page 256-259: 1, 3-7
   Most students need to pay very careful attention to p. 256 1b, 1c, and 5.

b. 3 Linear formulas
   Linear handout from Day 1 of the course.
   Lesson 2: p. 225-226. Also the HW on p. 233-236, problems 1, 6, and 8

c. 4 Conversion from a doubling formula to a growth factor formula. Also conversion between a growth factor and a percentage growth rate.
   Lesson 4 p. 256-259. 9, 10, 11

d. 5 Conversion from a percentage growth rate to a doubling time formula.
   Lesson 6, p. 274. Activity 1 and just above it - The Rule of 72.
   Example: If 4% annual growth rate, then the approximate doubling time is 72/4 = 18.
   So use the 4% growth rate formula, which is \( A = P \cdot (1.04)^n \) where \( A \) is the amount and \( n \) is the number of years.
   Find out how much there is after 18 years: \( A = 1 \cdot (1.04)^{18} = 2.0258 \).
   So it more than doubles in 18 years. Thus the actual doubling time is a little less than 18 years. Maybe 17.7 years. I said you could stop there. But if you want to continue, find the actual amount after 17.7 to be \( A = 1 \cdot (1.04)^{17.7} = 2.00212 \). So this is still just a very little bit too long. So maybe the doubling time is 17.69. Etc.
   If we stop with 17.7, then we have
   \[ A = 1 \cdot (1.04)^n \] is approximately equivalent to \( A = 1 \cdot (2)^{\frac{n}{17.7}} \).

e. 6 Identifying the type of growth (linear or exponential), giving a reason for your choice, and giving a good estimate of a value in between two of the values in the table (geometric mean or arithmetic mean, as appropriate.)
   Type of growth: Lesson 1, p. 213-216 for discussion. Lesson 1, HW p. 217. 1.

f. 7 Linear and exponential growth: making tables, writing formulas, using formulas.

g. 8 & 9. Logic. Negations: shortened form including defining the letters used, DeMorgan’s laws and negations of “all” and “some” statements.
   DeMorgan’s laws: Logic Lesson 2 p. 57 for the rule . p. 59-61: exercises 40-47
   Negation of “all” and “some”: Logic Lesson 1 p. 47 rules. P. 48-50: exercises 41-48

h. 10 Conditional statements: shortened form including defining the letters used, contrapositive, converse, inverse

i. 11 & 12. Arguments: shortened form, identifying the type of argument and whether it is valid or invalid.