

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. 254 above Activity 2.
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 $A = 1 \cdot (1.04)^n$ 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
$$A = 1 \cdot (1.04)^n \text{ is approximately equivalent to } A = 1 \cdot (2)^{\frac{n}{17.7}}$$
- 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.)
Geometric mean: Lesson 5, p. 263 for discussion. Lesson 5, p. 267-269, exercise 2.
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.
Lesson 3. HW p. 243-248 problem 11.
- 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
Logic. Lesson 3 p. 65 for rule. p. 68-70: exercises 27-34 and 57-60.
- i. 11& 12. Arguments: shortened form, identifying the type of argument and whether it is valid or invalid.
Logic, Lesson 4 p. 75 Example 3. p. 76-77: exercises 7-24.