

## Exam 1 Review

Additional suggested problems:

- 1C: 51-54, 60-62, 65-68, 72, 73, 78-79
- 1D: 35, 37, 49-54, 57-58
- 2A: 33-36, 43-46, 47-51, 69-70
- 2B: 53-62, 84
- 3A: 31-34, 71-72, 75-76, 79-80
- 3B: 33-38, 40, 47-50
- 4B: 43-44, 49-50, 57-60, 68-70, 81-82, 86, 87
- 4C: 51-52, 57-58, 93-94
- 4D: 23-24, 25-30, 37-38

1. Betty looks through her stack of scratch paper and records the following information regarding the 214 sheets of paper.

- 130 of them are lined
- 140 of them are white
- 50 of them have some writing on them
- 110 of the lined paper are white
- 12 of the lined white paper have writing on them
- 25 of the white paper have writing on them
- 20 of the lined paper have writing on them

Draw a Venn diagram to describe this information and use it to determine how many sheets of paper Betty has that are either white or lined (this includes those that are both).

2. Steve Keyboard works in an office building. He finds out the following information regarding the 68 people on his floor.

- 25 can type over 75 words per minute
- 24 have a college degree
- 32 bring sack lunches
- 13 of the college graduates bring sack lunches
- 13 of the college graduates can type over 75 words per minute
- 13 of those that type over 75 words per minute bring sack lunches
- 5 of the college graduates that bring sack lunches can type over 75 words per minute

Draw a Venn diagram to describe this information and use it to determine how many people there are in the office who do not bring sack lunches, do not type over 75 words per minute, but do have a college degree.

3. Determine whether the following deductive argument is valid or invalid. If it is valid, determine whether or not the argument is sound.

- Premise #1: All dwarf planets have mass less than one hundredth times the mass of the earth
- Premise #2: The mass of Ceres is less than one hundredth times the mass of the earth
- Conclusion: Ceres is a dwarf planet

4. Determine whether the following deductive argument is valid or invalid. If it is valid, determine whether or not the argument is sound.

- Premise #1: Every region with pyramid structures was home to an ancient civilization
- Premise #2: Cydonia is a region of Mars with pyramid structures
- Conclusion: Cydonia was home to an ancient civilization

5. Suppose Maxine's car gets 35 miles per gallon. What is her fuel efficiency in feet per fluid ounce?

( 128 fluid ounces = 1 gallon, 1 mile = 5280 feet )

6. It is estimated that when the natural dam at Red Rock Pass broke, water from Lake Bonneville at a rate of 15,000,000 cubic feet per second. Compute the flow rate of the water in cubic miles per day.

( 1 mile = 5280 feet, 1 hour = 3600 seconds, 1 day = 24 hours )

7. Outer space sales tax just increased to 3.8%. If Petra's astronaut ice cream cost \$12.44 **after** outer space tax, how much did her ice cream cost before tax?

8. Last year Jupiter Space Suits cost \$1,485. This year Jupiter Space Suits cost \$1,678. By what percent did the cost of Jupiter Space Suits increase from last year to this year?

9. The outer space economy is very unpredictable. Two years ago, outer space inflation caused the value of outer space currency to increase by 2.1%. Last year, the value of outer space currency increased by 6.3%. This year, the value of outer space currency decreased by 8.8% due to the banking collapse. Find the total percentage increase or decrease over the last two years.

10. Laura just sold a really fancy sweater she knitted out of vicuña wool she spun herself from her own vicuña farm in Peru. She made \$3000. Now she wants to deposit it in a bank account. Chevy Chase Bank is offering 4.11% APR compounded monthly, and the Banco de Crédito del Peru is offering 4.1% APR, compounded continuously.

1. If she puts her money with Chevy Chase Bank, how much will she have in 10 years?
2. If she puts her money with Banco de Crédito del Peru, how much will she have in 10 years?
3. Calculate the APY for each account. Which is the better account?
4. Suppose she puts her money in the better account. In 10 years, what percentage of her balance will be from interest?

11. Arjen wants to have \$40,000 21 years from now. His savings account has an APR of 5.3%, compounded daily.

1. How much should he deposit now in order to reach his goal?
2. By what percent did his deposit increase in the 21 years?

12. Use scientific notation to do the following computations.

1.  $(87,100,000,000,000,000)(.00000000000000000011)$
2.  $\frac{.0000000000000000000626}{.0000000000000000000313}$
3.  $\frac{440,000,000,000,000}{.00000000000000000004}$
4.  $\frac{.00000000000000000012}{30,000,000,000,000,000,000}$

13. At some point in the future. Laura would like to expand into farming cashmere goats, so every quarter she is depositing \$2500 of her profits into a goat account at 4.5% APR. How much will she have in 10 years?

14. Laura is looking to expand her vicuña farm. She is making about \$1000 profit per month. She decides to take out a 20 year loan from Banco de Crédito del Peru at 5% APR. If she spends all of her profit, every month, on paying down her loan, how large a loan can she afford?