MATH 1030: Midterm 1 Practice Exam

The following are practice problems for the first exam.

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

   - 214 sheets of paper total
   - 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 the 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 if it 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 if it 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 flowed out at a rate of 15,000,000 cubic feet per second. Compute the flow rate of water in cubic miles per day.
(1 mile = 5280 set, 1 hour = 3600 seconds, 1 day = 24 hours)

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

8. If Earth is 12.5% of the planets in the solar system and water is 71.11% of Earth, what percent of the solar system is Earth water?

9. 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?

10. The outer space economy is very unpredictable. Two years ago, outer space inflation cause 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.

11. Convert the following:

    - 346 Calories to Joules (1 Cal = 4184 Joules)
    - 76.5 degrees Fahrenheit to Celsius
    - -12 degrees Celsius to Kelvin (Kelvin = Celsius + 273.15)

12. If a person with 5 Liters of blood consumed 4 grams of alcohol, what is this individual's blood alcohol content in $\frac{grams}{100mL}$?

13. Use scientific notation to do the following computations:

    - $(87,100,000,000,000,000,000)(.00000000000000011)$
    - $\dfrac{.00000000000012}{30,000,000,000,000,000}$