Math 172 Review for Exam 1 (Ch. 7 & 8)

1. Determine which of the following fractions have a terminating decimal representation. Explain how you can tell this without using a calculator.
   a. \( \frac{17}{78} \)  
   b. \( \frac{2^3}{2^7 \cdot 5^3} \)  
   c. \( \frac{7}{32} \)

2. Express each of the following in all three forms: fraction, decimal and percent.
   a. 52%  
   b. 1.25  
   c. \( \frac{17}{25} \)

3. Express each decimal as a fraction in simplest form:
   a. 0.36  
   b. 0.3\overline{6}  
   c. 0.3636

4. Calculate using fraction equivalents or mental math techniques (properties, compensation, etc). Show or describe your method.
   a. \((0.25 \times 12.3) \times 8\)  
   b. \(1.3 \times 2.4 + 2.4 \times 2.7\)
   c. 15.73 + 2.99  
   d. 27.51 - 19.98

5. Estimate using the techniques given.
   a. Range: \(2.51 \times 3.29 \times 8.07\)  
   b. Front end with adjustment: \(2.51 + 3.29 + 8.2\)  
   c. Rounding to the nearest tenth: \(8.549 - 2.352\)  
   d. Rounding to compatible numbers: \(421.7 \div 52.937\)

6. Determine which of the following fractions have repeating decimals. For those that do, express them as a decimal with a bar over their repetend.
   a. \(\frac{5}{13}\)  
   b. \(\frac{132}{333}\)  
   c. \(\frac{7}{125}\)

7. Model the following using 10×10 decimal squares:
   a. \(0.3 \times 0.4 = 0.12\)  
   b. \(0.24 \div 0.06 = 4\)
   c. \(0.5 + 0.32 = 0.82\)

8. Arrange the following from smallest to largest:
   a. \(0.5, 0.505, 0.5005, 0.55\)  
   b. \(\frac{1}{3}, 0.3, 3\%, \frac{2}{7}\)

9. Dr. Fjeldsted has 91 students in his first-quarter calculus class. If the ratio of math majors to non-math majors is 4 to 9, how many math majors are in the class?

10. A refrigerator was on sale at the appliance store for 20% off. Marcus received a coupon from the store for an additional 30% off any current price in the store. If he uses the coupon to buy the refrigerator, the price would be $487.20 before taxes. What was the original price?

   a. \(23\% \times 81\)  
   b. \(32\% \times 59\)
12. Which is the better buy? Explain.
   a. 7 pounds for $3.45 or 11 pounds for $5.11
   b. 58 cents for 24 oz or 47 cents for 16 oz

13. A family uses 5 gallons of milk every 3 weeks. At that rate, how many gallons of milk will they need to purchase in a year’s time?

14. A fishing crew is paid 43% of the value of their catch.
   a. If they catch $10,500 worth of fish, what is the crew paid?
   b. If the crew is paid $75,000 for a year’s work, what was the total catch worth?

15. A bookstore has a spring sale. All items were reduced by 20%. After the sale, prices were marked up 20% over the sale price. How do prices after the sale differ from prices before the sale?

16. Illustrate the following operations using a (i) number line, and (ii) black and red chips (label chips with (+) or (-)).
   a. \(8 + (-3)\)  
   b. \(-5 + 3\)

17. Demonstrate how you would show each of the following using black and red chips. Draw a sketch and label chips with (+) and (-).
   a. \(8 - (-5)\)  
   b. \((-2) - (-7)\)

18. Represent the following products using black and red chips and give the results.
   a. \(3 \times (-2)\)  
   b. \((-3) \times (-4)\)

19. Fill in the blanks with the appropriate symbol, <, > or =, to produce true statements.
   a. \(-4 \underline{\quad} -5\)
   b. \(3 + (-5) \underline{\quad} 2 \times (-3)\)
   c. \((-12) \div (-2) \underline{\quad} (-2) - (-3)\)
   d. \(15 - (-6) \underline{\quad} (-3) \times (-7)\)
   e. \(5 + (-8) \underline{\quad} (-4) + 3\)

20. If \(a\) and \(b\) are negative and \(c\) is positive, determine whether the following are negative or positive.
   a. \((-a)(b)\)
   b. \(a(b - c)\)