1. Simplify the following expressions.

(a) 
$$1 + \frac{1}{2 + \frac{1}{2 + \frac{1}{2}}}$$
 (b)  $1 + \frac{1}{2 + \frac{1}{2 + \frac{1}{2 + \frac{1}{2}}}}$  (c)  $1 + \frac{1}{2 + \frac{1}{2$ 

2. Of the 360 employees in a certain company, two-thirds are women and 30 are executives. Only 10 of the executives are women.

(a) How many of the employees in this company are women? men?

(b) What fraction of female employees at the company are executives? What fraction of male employees are executives?

(c) What fraction of executives are men? What fraction are women?

(d) What fraction of all employees are female executives?

3. The US Census Bureau predicts that by the year 2025, one-tenth of the 50 US states will increase by at least one-half of their 1995 level, and that three eighths of the remaining states will increase by at least one-fourth of their 1995 level. According to these projections:

(a) What fraction if all 50 US states will increase by less than one-fourth of their 1995 level? by at least one-half?

(b) What fraction of those states projected to increase by at least one-fourth of their 1995 level will increase by at least one-half?

4. Rank in order of least to greatest: 5/8, 8/13, and 13/21. Justify your answer. (Do not simply convert to decimals).

5. The number  $\pi$  gives the *ratio* of a circle's circumference to its diameter. It's value cannot be written exactly as an ordinary fraction or decimal.

(a) A good approximation for  $\pi$  is given by 3.14. Express this decimal as a fraction.

(b) An even better approximation for  $\pi$  if given by 3.14159. Express this decimal as a fraction.

6.[Mentioned in class] The golden ratio, written using the Greek letter  $\phi$  or phi is given by

$$\phi = \frac{1 + \sqrt{5}}{2}$$

(a) Using a calculator, find the value of the golden ratio correct to eight decimal places.

1

(b) The golden ratio is well approximated by the fraction 21/13. To how many decimals does this fraction equal the golden ratio?

(c) The fraction (21 + 13)/21 gives an even better approximation to the golden ratio. To how many decimals does this fraction equal the golden ratio.

(d) The fraction (34+21)/34 gives an even better approximation to the golden ratio. How many decimals does this fraction equal the golden ratio?

(e)Following the pattern outline above, find a fraction that approximates the golden ratio to eight decimals.

7. Do exercise 1.2.3 SUBDIVIDING FRACTIONS on page 20. EVEN numbers <u>ONLY</u>

8. Do exercise 1.2.4 SIZES OF FRACTIONS on page 21. ODD numbers ONLY

9. Do exercise 1.2.7 FRACTIONS OF FRACTIONS; ABSOLUTE VS. RELATIVE on page 24.

10. Evaluate the following expressions.

(a) $ (2-3\frac{1}{5})  \cdot \frac{15}{4}$	(c) $\frac{81}{10} \cdot  (-2 + 3\sqrt{25})^2 $	(e) $\frac{37}{21}$
(b) $\frac{32}{13} -  3\frac{5}{13} \div 2\frac{26}{22} $	(d) $ -2+(-4) \cdot 5+2\frac{3}{4}$	(f) $(-2) \cdot  3-5 ^3 -  6-7\frac{1}{3} $

11. Find the cost of  $15\frac{1}{2}$  yards of electrical wire at 29 cents a yard. (Round to the nearest cent).

12. A car traveled 196 miles. If it gets 14 miles per gallon of gas, how many gallons did it use for the trip? If gas is \$1.329 per gallon, how much was spent for gas?

13. If 25 is multiplied by a number that is less than one, will the answer be smaller or larger than 25?

14. If 25 is divided by a number that is less than one, will the answer be larger or smaller than 25?

2