Problem Solving

1. A hotel has rooms numbered consecutively from 50 to 200. How many rooms does the hotel have?

2. If today is Thursday, what day of the week will it be 200 days from now?

3. How many squares are there on the <u>border</u> of a 25×25 square?

4. A Fox News commentator is dismayed by the fact that California has more people on food stamps than any other state in the U.S. What's the fallacy in this comment?

5. The current treatment for a disease has a 4% risk of a certain side effect. The new treatment has a 6% risk of the same side effect. There are two different ways to describe the <u>increase</u> in the risk of the side effect, resulting in two totally different answers. Calculate each way.

6. The total cost, including 9% sales tax, of the computer was $860.01. What was the price of the computer?

7. a. Two numbers have a sum of 20 and a difference of 10. Find the two numbers.

    b. Find two numbers with a product of 36 and a quotient of 4.

8. The DJIA (Dow Jones Industrial Average) rose by 450 points yesterday, while the S&P 500 rose 300 points. Which stock index did better?

9. *Customer*: My stocks fell 20% this year.
   Stock Broker: Don't worry -- I'm sure the market will rise 20% this year, and you'll be right back where you started.

    Is the stock broker lying or just ignorant?

10. The first 12 contestants won an average of $80. The next 20 won an average of $70. What was the average winnings of all the contestants? [Hint: It's <u>not</u> $75.]

11. Bed Bath & Beyond has two coupons:

   $10 off any purchase of $30 or more

   20% off any single item

   a. Find the net (final) cost of an item whose original price is $25:
      i)   using the $10 off coupon.
      ii) using the 20% of coupon.

   b. Find the net (final) cost of an item whose original price is $40:
      i)   using the $10 off coupon.
      ii) using the 20% of coupon.

   c. Find the net (final) cost of an item whose original price is $60:
   i)   using the $10 off coupon.
   ii) using the 20% of coupon.

   d. Find the original price of an item that produces the <u>same discount</u> for each coupon. This price might be called the *break-even point*.

12. The diameter of the $24 pizza is double the diameter of the $8 pizza. Which pizza is the better deal? [Hint: The area of circle is πr^2.]

13. Prove that the area of the big square is twice the area of the small square.
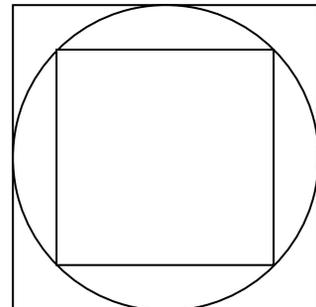
14. Prove that the total area of the two small circles is one-half the area of the large circle.
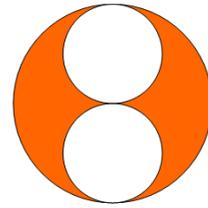
15. Janie drove from home to college at an average speed of 40 mph, and returned home (same distance) at an average speed of 60 mph. What was Janie's average speed for the entire trip?