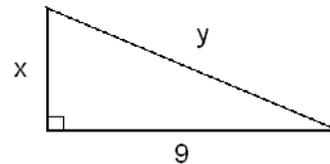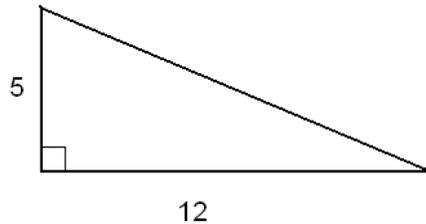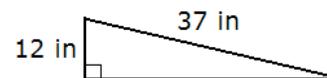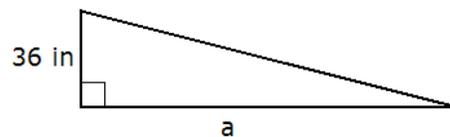1. We wish to enlarge a picture that is 3 in wide and 5 in high.

   a) How high should the enlargement be if we want its width to be 12 in?

   b) How wide should the enlargement be if we want its height to be 12 in?

2. The triangles on the picture below are similar.
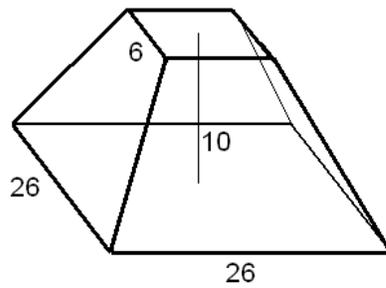
   a) Find x and y.
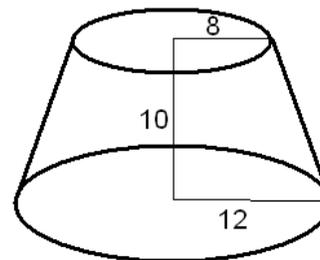

   b) Find the exact value of a.

3. A person is standing 3 ft away from a street light that is 15.6 ft tall. How long is his shadow if he is 5.2 ft tall?

4. Find the present value of $\$10\,000$, twenty years from now. Round your answer to the nearest penny. Assume an annual compound interest rate of 5%, compounded

   a) quartery   b) monthly   c) continuously

5. Assume an annual compound interest rate of 7%, compounded continuously. Find the present value of 3 annual payments of $\$2000$, starting with the first payment today.

6. Compute $\dbinom{25}{2} + \dbinom{25}{6}$

7. Find the length of the diagonal of a rectangle with sides 15 cm and 8 cm.

8. We throw 7 coins. What is the probability that the outcome is 4 heads and 3 tails?

9. If we randomly select a stamp from a sheet of 10 by 10, what is the probability that it is not on the border?

10. There are 9 marbles in a bag: 4 red, 3 blue, and 2 yellow. We randomly pull two marbles, with replacement. Find the probability that

    a) We pull a blue marble first and then a red one.
    b) We pull a blue and a red marble.
    c) We pull no yellow marbles.
    d) We pull at least one yellow marble.
    e) We pull two marbles of the same color.
    f) We pull two marbles of different colors.

11. There are 9 marbles in a bag: 4 red, 3 blue, and 2 yellow. We randomly pull two marbles, without replacement. Find the probability that

    a) We pull a blue marble first and then a red one.
    b) We pull a blue and a red marble.
    c) We pull no yellow marbles.
    d) We pull at least one yellow marble.
    e) We pull two marbles of the same color.
    f) We pull two marbles of different colors.

12. Consider a pyramid with a height of 6 m and square base with sides 5 m long.

    a) Compute the volume of the pyramid. Include units in your computation and answer.
    b) Compute the volume of the pyramid that is similar to the one in the problem and has a height of 12 m.
    c) What is the ratio between the volume of the larger pyramid and that of the smaller pyramid?

13. Find the volume for each of the following objects shown on the figure below. Dimensions are meters.

a)

b)