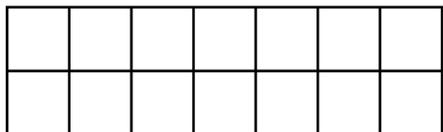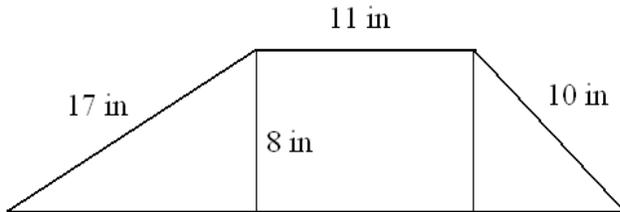Math 118   Problem Set 17

1. We borrowed $5000 for two years, with a simple annual interest rate of 8%. After 8 months, we make a partial payment of $1000. After an additional 8 months, we make another partial payment of $1000. How much do we have to pay at the end of the two years?

2. We placed $5000 into a bank account with an annual compound interest rate of 8%. How much money do we have in the account after 22 years if the bank compounds

   (a) annually
   (b) semi-annually
   (c) monthly
   (d) daily
   (e) continuously?

3. Translate a 10% discount rate to interest rate.

4. We want to buy a car for $8000. The dealership has a financing plan of no down payment and 9% APR for 24 months. Compute the monthly payment under this plan.

5. We want to buy a car for $6400. The dealership has a financing plan of a down payment of $400 and 48 monthly payments of $142.29. What APR does the dealership charge?

6. We roll two dice. What is the probability that the sum of the two numbers rolled is odd?

7. We roll two dice. What is the probability that the product of the two numbers rolled is odd?

8. We toss six coins. What is the probability that we end up with

   (a) six tails?
   (b) five tails and one heads?
   (c) four tails and two heads?
   (d) three tails and three heads?

9. Find the sum $\binom{4}{0} + \binom{4}{1} + \binom{4}{2} + \binom{4}{3} + \binom{4}{4} =$

10. How many rectangles are there on the picture below?

11. We randomly pull 2 cards from $\{1, 2, ..., 10\}$, without replacement. Find the probability that

   (a) One of the numbers pulled is 7?
   (b) The sum of the two numbers pulled is 11?
   (c) The sum of the two numbers pulled is 10?

12. We randomly pull two cards from $\{1, 2, ..., 10\}$, with replacement. Find the probability that

Problem Set 17

    (a) We pull the number 7 twice?

    (b) None of the numbers rolled is a 7?

    (c) At least one of the numbers pulled is 7?

13. The base of a pyramid is the trapezoid shown on the picture below. The height of the pyramid is 8 in. Find the volume of the pyramid.

14. Find the volume of a cylinder that has height 9 cm and a circular base of radius 12 cm.