

Extra Credit Homework

Math 118 section 004

Due: TBA

1. Consider the following dice game. You roll a single die once. If you roll a 1, 2, 3, or 4, you win that many dollars (ie \$1, \$2, etc.). If you roll a 5 or a 6, you pay me that amount (ie \$5 or \$6). Let X be the amount that you win or lose. Answer the following questions.
 - (a) What is the expected value of X ?
 - (b) In your own words, explain what this means.

2. A box contains 10 one dollar bills, 6 five dollar bills, 2 ten dollar bills and 2 twenty dollar bills. You get to reach into the box and pick one bill and keep it. Answer the following questions:
- (a) Find the probability of getting each different type of bill.
 - (b) Find the expected value for the outcome.
 - (c) How much should I charge you to play if I want the game to be fair?

3. Suppose we start with an equilateral triangle which has sides of length 3 inches. We are to apply the Koch Snowflake algorithm. Fill in the table below.

	Start	Step 1	Step2	Step3	...	Step n
number of sides	3	12				
length of each side	$3in$	$1in$				
length of boundary	$9in$	$12in$				

4. Suppose we start with an equilateral triangle which has an area of 12cm^2 . We are to apply the Koch Snowflake algorithm.
- (a) Fill in the table below with the area of the snowflake at each step.
 - (b) What is the area of the resulting Koch Snowflake (ie, the finished product)?

	Start	Step 1	Step 2	Step 3
Area	12cm^2			