

Name: \_\_\_\_\_

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Math 130

Quiz 7

Some formulas you may need:

$$EV = \mu = \sum xp(X = x) \quad Var = \left[ \sum x^2 p(X = x) \right] - \mu^2 \quad \sigma = \sqrt{\left[ \sum x^2 p(X = x) \right] - \mu^2}$$

1. (2, 3, 2, 1) In this problem we are going to analyze the “field” bet in craps (where you roll a pair of dice). If you are playing craps and make the field bet,

You will win twice your bet if you roll a total of 2

You will win the amount that you bet if you roll a total of 3, 4, 9, 10, or 11

You will win three times your bet if you roll a total of 12

You will lose your bet if you roll anything else

Suppose you bet \$100 on the field bet. Let  $X$  denote the amount of money you win when playing this game once.

a) Find the probability distribution for  $X$ .

b) Find the expected value, variance and standard deviation of  $X$ .

c) Explain in words the meaning of the expected value calculated in part (b)

d) Is this a good game for you to play? Why or why not?

2. (2 points) Consider the experiment where you flip a single coin 3 times. Define a random variable on this experiment.