

**Mth 21, Homework 6 on section 3.1, 3.2**

Due by Mon, Oct 23.

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Please use lots of space and explain your answers, showing clearly any work you had to do. Each question is worth 3 points.

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- (1) Suppose the probability of rain tomorrow is 0.2. Convert this to a percent and a fraction. Is it likely or unlikely to rain tomorrow?
- (2) In a roulette game you bet \$20 on the number 7. The house odds are 35 to 1 for this bet. If the ball doesn't finish on 7 then you lose your \$20. What happens if the ball does finish on 7?
- (3) Roll a die. What is the probability of the number 3 coming up? Give your answer as a fraction, a decimal and a percent.
- (4) Roll a die again.
  - (a) In the language of probability, what is the *experiment* here?
  - (b) What is the *sample space*?
  - (c) Let  $E$  be the event that you roll a 4 or a 5. So  $E = \{4, 5\}$ . Compute  $p(E)$  which means the probability of  $E$  happening.
- (5) Give the odds of event  $E$  in Question 4. (Remember odds are a ratio of successes to failures.)
- (6) A pack of cards is shuffled and you pick a card.
  - (a) How many elements does the sample space have here?
  - (b) What is the probability that you pick a diamond?
  - (c) Let  $E$  be the event that you pick a Queen or a King. Compute  $p(E)$  which means the probability of  $E$  happening.

(The four suits are clubs, diamonds, hearts and spades. Each suit has Ace, King, Queen, Jack and then ten down to 2.)
- (7) A jar contains jellybeans with only 5 red, 7 black and 8 yellow beans.
  - (a) You pick a bean without looking. What is the probability that it is red?
  - (b) What are the odds that it is red?
  - (c) What is the probability that it is not yellow?
- (8) In a clinical trial of a drug, 60 out of 500 patients found it cured their condition. What is the probability of the drug curing a similar patient?

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If you get stuck on a question or aren't sure if you understand it:

- Go over the relevant class notes and section in the textbook.
- Check if you get the right answer for a similar odd-numbered question in the textbook (answers at the back of the book).
- Ask me about it after class.
- Come to my office hours: Mon 11:30 - 12:30, Wed 11:30 - 12:30 in CP 317.
- Go to the Math Tutorial Lab in-person in CP 303 or online.