

STAT 2290 Homework 2

Due March 4 or March 5

Read these instructions:

Do each problem showing your work. Answers without proper justifications receive no credit.

Problem 1. (Review)

Scores on a particular test follow a normal distribution with a mean of 75.6 and a standard deviation of 7.8.

- (a) What percent of students score between 60 and 83.4?
- (b) Find the score separating the top 16% of the scores from the bottom 84% of scores.
- (c) What percent of students score below 60?

Problem 2. (Basic probability)

A coin is flipped three times. We wish to find the probability of getting at least two heads.

- (a) Identify the sample space S of interest such that each outcome occurs with the same probability. List out all elements of S .
- (b) Identify the event E of interest. List out all elements of E .
- (c) Find the probability $P(E) = |E|/|S|$.

Problem 3. (Basic probability)

In a poker hand consisting of 6 cards, we wish to find the probability of holding exactly 3 aces.

- (a) Identify the sample space S of interest such that each outcome occurs with the same probability. Do not need to list out all elements of S .
- (b) Identify the event E of interest. Do not need to list out all elements of E .
- (c) Find the probability $P(E) = |E|/|S|$.

Problem 4. (Basic probability)

In a poker hand consisting of 6 cards, find the probability of holding 4 hearts and 2 clubs.

Problem 5. (Conditional probability)

I draw 4 cards without replacement from a standard deck of 52 playing cards. I tell you that all my cards are either 10's, J's, Q's, K's, or A's (or a mix of these cards). Given this information, what is the probability that I do not have any 10's or A's in my hand of 4 cards?

Answers:

P1(a): 81.5%

P1(b): 83.4

P1(c): 2.5%

P2(c): 1/2

P3(c): ≈ 0.0034

P4: ≈ 0.0027

P5: $33/323 \approx 0.102$