

MATH 111: HW 8 SOLUTIONS AND COMMENTS

7.1, #3. Since 53 out of 100 tosses came up heads, $100 - 53 = 47$ of them came up tails. So, 47 out of 100, or 47%, of the tosses were tails.

7.1, #7. In case you're curious, 1572 of the class' 3100 spins came up heads, or approximately 50.7%.

7.1, #9. The king was found in 491 of the class' 1250 trials, which is approximately 39% of the trials.

7.2, #1. The probability that he wears the black shoes is $1 - \frac{3}{5} = \frac{2}{5}$.

7.2, #2. There are four equally likely possible outcomes:

Dime	Penny
H	H
H	T
T	H
T	T

Of these outcomes, the first three (HH, HT, TH) comprise the event that at least one head is flipped. Therefore, the probability of this event is $3/4$.

7.2, #3. There are a total of 14 chocolates, each of which was equally likely to have been picked. Therefore, the probability of picking a green chocolate was $2/14 = 1/7$. The probability of picking a blue chocolate was $5/14$.

I like chocolate, so the probability that I would eat the chocolate is 1. This probability may or may not be different for you!

7.2, #13. There are 6 equally likely outcomes of the die roll, and 2 equally likely outcomes of the coin flip, so there are $6 \times 2 = 12$ equally likely outcomes for this experiment (in which a die is rolled and independently a coin is flipped). The event that Roosevelt can be seen (i.e., the coin lands heads) and 4 is rolled is one of these 12 outcomes; therefore, the probability of this event is $1/12$.

If we're told that the die roll was 2, then there are only two remaining possible equally likely outcomes: 2 with heads; and 2 with tails. The dime lands tails in one of these two outcomes, so the probability that the dime lands tails under these circumstances is $1/2$.

7.2, #18. There are 38 equally likely outcomes (0, 00, and 1 through 36). The probability of the single outcome 13 is therefore $1/38$.

The event that the spin lands on red consists of 18 of the outcomes (half of the outcomes 1 through 36). The probability of this event is therefore $18/36 = 9/18$.

7.2, #21. Of the 36 equally likely rolls of a pair of dice, 6 are doubles; therefore, the probability of this event is $6/36 = 1/6$.

7.2, #27. There are eight equally likely possible outcomes of three coin flips: HHH, HHT, HTH, HTT, THH, THT, TTH, TTT. However, we've been told that the coin flips were not all tails, so TTT is not a possibility. This leaves seven equally likely possible outcomes: HHH, HHT, HTH, HTT, THH, THT, TTH. The probability that all the flips were heads is just the probability of the outcome HHH; this is one out of seven equally likely outcomes, so the probability is $1/7$.