

Name _____

Finite Mathematics (Math 10120), Spring 2020
Quiz 2 Solutions, Wednesday, February 19

1. A standard deck of 52 cards has 12 face cards: the jack, queen and king of each of the four suits. If you pick **two** cards at random from the full deck, what is the probability that both of them will be face cards? You can use combination and/or permutation notation in your answer.

Solution:

For the numerator, you want to know in how many ways you can choose two from the 12 face cards, which is $C(12, 2)$. For the denominator you want to know in how many ways you can choose two from the 52 cards in the deck, which is $C(52, 2)$. So the final answer is

$$\frac{C(12, 2)}{C(52, 2)}.$$

2. A tetrahedral die has four corners (vertices), numbered 1 to 4. Each corner is equally likely to be at the top when you roll the die. (In this picture, 4 is at the top.)



María has two tetrahedral dice: a blue one and a red one, and she rolls them at the same time. She records the sum of the numbers that come up on top (so the sum is a number between $1 + 1 = 2$ and $4 + 4 = 8$). What is the probability that the sum is 5? Express your answer as a number (a fraction).

Solution:

Consider this array, that gives all the possibilities for the two die. Think of the top row as giving the blue die and the side as giving the red one, and the entries as giving the sums.

		1	2	3	4
1		2	3	4	5
2		3	4	5	6
3		4	5	6	7
4		5	6	7	8

So the probability of having 5 as the sum is $\frac{4}{16} = \frac{1}{4}$.