

## Quiz 4

Date: October 3, 2019

**Name:**

1. (40 points) When you roll a (fair) 6-sided die, there are six possible outcomes.
- (a) (10 points) If the box below represents the sample space  $\Omega$ , draw and label all the possible outcomes.

$\Omega$

1	2
3	4
5	6

- (b) (10 points) In the sample space above, highlight the event that the roll is less than four.
- (c) (10 points) What is the probability of rolling less than 4? Show your work, don't just write down a number.

**Solution:**

$$P(\text{Less than 4}) = P(1) + P(2) + P(3) = \frac{1}{6}$$

- (d) (10 points) In the dice rolling example, let  $E_1$  be the event that your roll a 1 or a 2 and let  $E_2$  be the event that your roll a 1 or a 4. Calculate  $P(E_1 \cup E_2)$ .

**Solution:**

$$P(E_1 \cup E_2) = P(E_1) + P(E_2) - P(E_1 \cap E_2) = \frac{2}{6} + \frac{2}{6} - \frac{1}{6} = \frac{3}{6}$$