

# Lesson 1: Probability; Discrete Random Variables

## Preparation

### Solutions

Please note that the steps show rounded numbers, but that the final answers to the problems are calculated without rounding.

| Problem | Part | Solution   |
|---------|------|--|
| 1       | -    | $P(x)$   |
| 2       | -    | 1. A probability is a number between 0 and 1.<br><br>2. If you list all the outcomes of a probability experiment the probability that one of these outcomes will occur is 1. In other words, the sum of the probabilities in any probability is 1.<br><br>3. The probability that an outcome will not occur is 1 minus the probability that it will occur. |
| 3       | -    | When something is random, it follows a long term pattern, but we usually do not know the outcome of the next experiment.   |
| 4       | -    | A discrete random variable is something that varies following a specific pattern or distribution over the long run. They are discrete if they can be listed.   |
| 5       | -    | $P(\text{Roll Greater Than 5}) = 3/8$ or 0.375   |
| 6       | -    | $P(\text{Not a Roll Greater Than 5}) = 5/8$ or 0.625   |