# Learning Outcomes – MATH 10041 – Chapter 6

| Ch. | Sec. | Big idea | Learning outcomes – Conceptual | Learning Outcomes - Observable |
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| 6 | 1 | Probability models | Understand that a probability model (or probability distribution) lists the possible outcomes of an experiment and each outcome's probability; Understand that (and why) the sum of the probabilities in a probability distribution is 1; Understand the difference between discrete and continuous numerical variables; Understand that the expected value of a discrete probability distribution is the mean of that distribution. | Explain, in their own words, what a probability distribution is; Given a numerical random variable, determine if it is discrete or continuous; Given a graph of a discrete probability distribution, create the corresponding probability distribution table; Given a discrete probability distribution in table form, construct a graph of the distribution; Given a probability experiment involving a discrete random variable, list all the outcomes; Given a probability experiment involving a discrete random variable, calculate the expected value. |
| | 2 | The Normal Probability Model | Interpret the area under the density curve for a continuous distribution and use it to approximate probabilities or proportions; Understand the benefits of making a sketch when finding probabilities using the Normal Probability model; Understand what the Standard Normal Curve is and how it is used. | Given a probability experiment involving the Normal Distribution model, make a reasonable sketch, label it appropriately, and shade the region of interest; Understand and use the correct symbols for the mean and standard deviation of a probability distribution; Given a probability experiment involving the Normal Distribution model, find the area of concern using technology and interpret it as a probability; Given a probability experiment involving the Normal Distribution model, find the area of concern using z-scores and a z-table and interpret it as a probability; Using technology or a z-table and given a percentile or an area under the Normal Curve, find the corresponding data point (score). |
| | 3 | The Binomial Distribution | Understand that the binomial distribution model applies only for some discrete probability experiments; Recognize when the binomial model is an appropriate model for calculating probabilities. | Given a probability experiment involving a discrete random variable, determine if the binomial model applies; Given a probability experiment for which the binomial distribution applies, correctly identify $n,p,x$; Given a probability experiment for which the binomial distribution model applies, use technology to find the probability of a given event. |