

MATH 1 – Sections 16 & 17 Chapter 12

In Chapter 12 the concepts of probability are introduced. Technical terms you need to learn along with their definitions are

12.1: RANDOM PHENOMENON, EXPERIMENT, OUTCOME, SAMPLE SPACE, EVENT, EQUALLY LIKELY OUTCOMES, THEORETICAL PROBABILITY FORMULA (P.725), EMPIRICAL PROBABILITY FORMULA (P.726), THE LAW OF LARGE NUMBERS (P.728), ODDS (P.730),

12.2: PROPERTIES OF PROBABILITY (P. 736), COMPLEMENT RULE (P.737), ADDITION RULES (P.739), TO UNDERSTAND PROBLEMS INVOLVING A *standard deck of cards* SEE P.698 FIRST.

12.3: CONDITIONAL PROBABILITY (P.744-745), INDEPENDENT EVENTS (P.745), MULTIPLICATION RULES OF PROBABILITY (P.746), THE BIRTHDAY PROBLEM (P.751),

12.4: BINOMIAL PROBABILITY DISTRIBUTION (P. 755 - 759),AND

12.5: EXPECTED VALUE (P. 762-768).

- Read 12.1. Pay attention to the concept of equally likely outcomes. Read the examples. Probability in Genetics (p.729–730) along with Exercises 19–38 educates about you the implications of modern research.
HW for 12.1: 7, 11, 13, 15, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 43, 59, 63, 65, 67.
- The basic properties of Probability, Probability of events involving “Not” ($P(\text{not } E) = P(E')$), $P(A \text{ or } B) = P(A \cup B)$ (The Addition Rule), and the Special Addition Rule are treated in 12.2. Go over the worked examples.
HW for 12.2: 1, 5, 7, 9, 11 (see page 698 if needed), 13, 15, 17, 19, 26–31.

- The conditional probability of B given A, $P(B|A)$, independence of events, The multiplication rule, and the Birthday problem (p.751) are discussed in 12.3. See Example 4 for applying probability to tabular data. Go over Examples 6, 7, 9, 10.

HW for 12.3: 1, 2, 5, 6, 7, 9, 11, 23–32, 51, 53 - 57, 58–61, 67–70.

- The binomial random variable, its probability distribution, and The Binomial probability formula (p.758), are given in 12.4.

HW for 12.4: 1, 3, 5, 7, 21, 23, 25, 27, 33, 35, 41, 43.

- Expected value or the mathematical expectation of a random variable is given in 12.5 with applications. Note that for the Binomial distribution the expectation is np .

HW for 12.5: 3, 5, 7, 11, 24, 25, 26.

Ch. 12 Test: 3, 5, 6–8, 9, 11, 13, 15, 17, 19, 21, 27, 29.