

Introduction to Probability

Solution

2. Total number of possible outcomes = 36

(a) Number of favourable outcomes = 5

$$P(\text{the sum is '8'}) = \frac{5}{36}$$

(b) Number of favourable outcomes = 15

$$P(\text{the sum is } \geq 8) = \frac{15}{36} = \frac{5}{12}$$

(c) Number of favourable outcomes = 4

$$P(\text{difference} = 4) = \frac{4}{36} = \frac{1}{9}$$

3. Total number of possible outcomes = 40

(a) Number of favourable outcomes = 8

$$\therefore P(\text{square}) = \frac{8}{40} = \frac{1}{5}$$

(b) Number of favourable outcomes = $40 - 8 - 14 = 18$

$$\therefore P(\text{either a circle or a trapezium}) = \frac{18}{40} = \frac{9}{20}$$

(c) Number of favourable outcomes = $8 + 13 = 21$

$$\therefore P(\text{neither a trapezium nor a rectangle}) = \frac{21}{40}$$

4. The sample space is listed as follows:

	R_1	R_2	B_1	B_2	B_3
R_1	R_1R_1	R_1R_2	R_1B_1	R_1B_2	R_1B_3
R_2	R_2R_1	R_2R_2	R_2B_1	R_2B_2	R_2B_3
B_1	B_1R_1	B_1R_2	B_1B_1	B_1B_2	B_1B_3
B_2	B_2R_1	B_2R_2	B_2B_1	B_2B_2	B_2B_3
B_3	B_3R_1	B_3R_2	B_3B_1	B_3B_2	B_3B_3

(a) $P(\text{two black balls}) = \frac{9}{25}$

(b) $P(\text{the first ball is red and the second ball is black}) = \frac{6}{25}$

(c) $P(\text{the second ball is red}) = \frac{10}{25} = \frac{2}{5}$