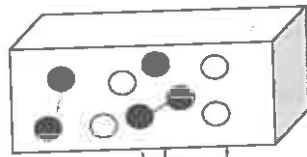


$$P(A) = \frac{n(A)}{n(S)}$$

Example 2 – Using a sample space that is represented as a diagram

Consider the box filled with white and black marbles as shown below. While blindfolded, Kerri selects one marble from the box.



total = 9

4 whites 5 black

$$P(\text{black}) = \frac{\# \text{ of black marbles}}{\text{TOTAL marbles}}$$

a) Determine the probability of Kerri selecting a black marble:

$$P(\text{black}) = \frac{5 \text{ (black)}}{9 \text{ (total)}}$$

b) Determine the probability of Kerri selecting a white marble:

$$P(\text{white}) = \frac{4}{9}$$

c) Determine the probability of selecting a green marble:

no green marbles

$$P(\text{green}) = \frac{0}{9}$$

d) Determine the probability of selecting a black or white marble:

$$P(\text{black or white}) = \frac{\# \text{ black + white}}{\text{TOTAL marbles}}$$

Example 3 – Using a sample space given in chart form

The table below shows the breakdown of students in a high school. Since this graphic organizer shows a lot of information about the sample space, we can use it to answer the questions that follow.

Grade	Boys	Girls	Total
10	20	40	60
11	30	40	70
12	50	30	80
Total	100	110	210

If one student is selected at random from this high school, determine the following:

a) The probability that the randomly selected student is a Girl:

$$P(\text{girl}) = \frac{\# \text{ girls}}{\text{TOTAL}} \Rightarrow \frac{110}{210}$$

b) The probability that the randomly selected student is a Boy:

$$P(\text{boy}) = \frac{\# \text{ boys}}{\text{TOTAL}} = \frac{100}{210}$$

c) The probability that the randomly selected student is in Grade 12:

$$P(\text{G.12}) = \frac{\# \text{ of grade 12}}{\text{TOTAL}} = \frac{80}{210}$$

d) The probability that the randomly selected student is not in Grade 12:

$$210 - 80 = 130$$

$$P(\text{G.12}') = \frac{130}{210}$$

e) The probability that the randomly selected student is in Grade 10 and is a girl:

$$P(\text{G.10 girl}) = \frac{40}{210}$$

f) The probability that the randomly selected student is a Grade 10 girl or a Grade 11 boy:

$$P(\text{G.10 Boy/Girl}) = \frac{70}{210}$$

$$40 + 30 = 70$$

g) The probability that the randomly selected student is a Boy or a Grade 10 girl:

$$100 + 40 = \frac{140}{210}$$

h) ***The probability that the randomly selected student is a girl or a Grade 12 student:

$$(110 - 30) + 80 = \frac{160}{210}$$