

Problem Set 7.2

Express each probability to three decimal places.

1) A six-sided die is rolled.

a) What's the probability of rolling a two?

$$P(2) = \frac{1}{6} = \boxed{0.167}$$

b) What's the probability of rolling a five?

$$P(5) = \frac{1}{6} = \boxed{0.167}$$

c) What's the probability of rolling a two OR a five?

$$P(2 \text{ or } 5) = \frac{2}{6} = \boxed{0.333}$$

2) Ms. Kuchler conducted a survey of the students in her FST classes to observe the distribution of eye color. The table shows the results of the survey.

Eye color	Blue	Brown	Green	Hazel
Number	12	58	2	8

Total: 80

a) Find the experimental probability distribution for each eye color.

$$P(\text{blue}) = \frac{12}{80} = 0.15 \quad P(\text{brown}) = \frac{58}{80} = 0.725 \quad P(\text{green}) = \frac{2}{80} = 0.025 \quad P(\text{hazel}) = \frac{8}{80} = 0.1$$

b) Based on the survey, what is the probability that a student in Ms. Kuchler's FST class has blue or green eyes?

$$P(\text{Blue or green}) = \frac{14}{80} = \boxed{0.175}$$

c) If the distribution of eye color in the FST classes are similar to the distribution in the grade, about how many of the 360 students in the senior class would be expected to have brown eyes?

$$0.725(360) = \boxed{261 \text{ students}}$$

3) If a meteorologist says there is a 35% **chance** of snow tomorrow, what is the **probability** that it will not snow?

$$P(\text{no snow}) = \boxed{.65} \text{ or } 65\%$$

4) If you roll a die once, what is the probability that you will get higher than a 2?

$$P(\text{higher than } 2) = \frac{4}{6} = \boxed{0.667}$$

* 5) If you are picking a number between 1 – 20, what is the probability that you will pick an even number or a multiple of three?

$$P(\text{even or mult. of } 3) = \frac{13}{20} = \boxed{0.65}$$

3, 6, 9, 12, 15, 18

2, 4, 6, 8, 10, 12, 14, 16, 18, 20

6) A national survey was taken measuring the highest level of educational achievement among adults age 30 and over. The results are shown in the table below.

Highest level of education	Women	Men	Total
8th grade or less	35	46	81
High school graduate	232	305	537
Some college	419	374	793
Bachelor's degree	539	463	1002
Graduate or professional degree	377	382	759
Total	1602	1570	3172

What is the probability that:

- a) a randomly chosen person from the survey group is a man?

$$P(\text{male}) = \frac{1570}{3172} = 0.495$$

- b) the highest level of education completed by a randomly chosen person from the survey group is a bachelor's degree?

$$P(\text{bachelors}) = \frac{1002}{3172} = 0.316$$

- c) a randomly chosen woman has earned a bachelor's or graduate degree? (377 + 539)

$$P(\text{B or G given female}) = \frac{916}{1602} = 0.572$$

- d) a randomly chosen person whose highest level of education is high school is a man?

$$P(\text{man given HS}) = \frac{305}{537} = 0.568$$

6) Suppose a bag contains five green marbles, three blue marbles, six yellow marbles, and four white marbles. Maria shakes up the bag to mix the marbles and then draws one marble out of the bag. What is the probability that the marble Maria draws is:

Total: 18

- a) blue

$$P(\text{Blue}) = \frac{3}{18} = 0.167$$

- b) white

$$P(\text{white}) = \frac{4}{18} = 0.222$$

- c) green or yellow

$$P(\text{green or yellow}) = \frac{11}{18} = 0.611$$

- d) neither blue nor yellow

$$P(\text{Not blue or yellow}) = \frac{9}{18} = 0.50$$