

Kari has a bag of 6 red cubes, 4 red balls, 5 blue cubes, 7 green cubes and 3 green balls. What is the probability for each selection below?

1) Picking a green ball **or** blue cube?

$$\frac{3}{25} + \frac{5}{25} = \frac{8}{25}$$

2) Picking a red object **or** a ball?

$$\frac{10}{25} + \frac{7}{25} - \frac{4}{25} = \frac{13}{25}$$

3) Picking a green cube then a red ball?

$$\frac{7}{25} \cdot \frac{4}{24} = \frac{7}{150}$$

4) Picking a blue cube then a green ball, replacing after the first?

$$\frac{5}{25} \cdot \frac{3}{25} = \frac{3}{125}$$

Kari has a bag of 6 red cubes, 4 red balls, 5 blue cubes, 7 green cubes and 3 green balls. What is the probability for each selection below?

5) Picking 4, 2 green cubes and 2 red objects?

$$\frac{{}^7C_2 \cdot {}^{10}C_2}{{}^{25}C_4}$$

6) Picking 4, at least 3 green objects?

$$\frac{{}^{10}C_3 \cdot {}^{15}C_1}{{}^{25}C_4} + \frac{{}^{10}C_4}{{}^{25}C_4}$$

U2: Probability

Conditional Probability

U1 Topics

Basic Probability

Consecutive Events

Compound Events

Conditional Probability::

Knowing what the first outcome is, what is the probability of the second.

* Given Information / (|)

$$\frac{P(\text{Both})}{P(\text{Known})}$$



	20s	30s	40+	Tot
Men	12	20	23	55
Women	15	22	21	58
Total	27	42	44	113

The table above shows a breakdown of employees at a company. One employee is going to be selected at random for a survey. What is the probability for each?

1) Selecting a woman? $\frac{58}{113}$

2) Selecting someone in their 20s? $\frac{27}{113}$

3) Selecting a man in his 30s? $\frac{20}{113}$

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Total	27	42	44	113

The table above shows a breakdown of employees at a company. One employee is going to be selected at random for a survey. What is the probability for each?

4) A woman selected being in her 40s?

Known

$$\frac{21}{58}$$

*Both
Known*

5) Someone in their 20s being selected being a man?

$$\frac{12}{27} \rightarrow \frac{4}{9}$$

Problem 1 Finding Conditional Probability

The table shows the number of male and female freshmen who chose to play one of the three intramural sports offered at a small college.

	Male	Female
Basketball	54	40
Soccer	36	61
Volleyball	10	12

What is $P(\text{soccer} | \text{female})$?

$$\frac{61}{113} \quad \text{known}$$



Just copy tables and questions

"given that"

What is $P(\text{female} | \text{soccer})$?

$$\frac{61}{97}$$

What is $P(\text{basketball} | \text{male})$?

$$\frac{54}{100} \rightarrow \frac{27}{50}$$

What is $P(\text{male} | \text{basketball})$?

$$\frac{54}{94} \rightarrow \frac{27}{47}$$

There is a $\frac{2}{5}$ chance of rain and a $\frac{1}{5}$ chance of lightning the next two days. If there is a $\frac{1}{10}$ chance of both on the same days find the following:

1) P(rain OR lightning)

$$\frac{2}{5} + \frac{1}{5} - \frac{1}{10} = \frac{1}{2}$$

2) P(rain | lightning)

$$\frac{\frac{1}{10}}{\left(\frac{1}{5}\right)} = \frac{1}{2} \text{ Both}$$

3) P(lightning | rain)

$$\frac{\frac{1}{10}}{\left(\frac{2}{5}\right)} = \frac{1}{4} \text{ Known}$$

4) P(only rain both days)

$$\begin{array}{c} \text{Rain} \\ \frac{2}{5} \end{array} - \begin{array}{c} \text{Rain +} \\ \text{Lightning} \\ \frac{1}{10} \end{array} = \begin{array}{c} \text{Only Rain} \\ \frac{3}{10} \end{array}$$

$$\frac{3}{10} \cdot \frac{3}{10} = \frac{9}{100}$$

5) The probability of winning a new game is $\frac{4}{9}$ and the probability of scoring 30 points is $\frac{2}{3}$. The probability of scoring 30 points **and** winning is $\frac{2}{5}$. What is the probability of scoring 30 points **or** winning?

$$\frac{2}{3} + \frac{4}{9} - \frac{2}{5} = \left(\frac{32}{45}\right)$$

6) The probability of winning a new game is $\frac{4}{9}$ and the probability of scoring 30 points is $\frac{2}{3}$. The probability of scoring 30 points and winning is $\frac{2}{5}$. What is the probability of winning if you already scored 30 points?

Known

$$\frac{\frac{2}{5}}{\left(\frac{2}{3}\right)} = \left(\frac{3}{5}\right)$$

Both Known

WB 204 Conditional

1-8

E.C. #9-11

Don't Do Mixed Review