

# Unit 6 Review KEY

A single die is rolled twice.  
Find the probability of getting two numbers whose sum is greater than 10.

	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

$\frac{3}{36} = \frac{1}{12}$

$$\frac{1}{12}$$



The biology faculty at a college consists of 4 professors, 12 associate professors, 13 assistant professors, and 6 instructors. If one faculty member is randomly selected, find the probability of choosing a professor or an instructor.

$$\frac{4}{35} + \frac{6}{35} = \frac{10}{35} = \frac{2}{7}$$

professors + instructors

$$\frac{2}{7}$$



You are randomly dealt one card from a 52-card deck. Find the probability that you are not dealt a 9 or a 10.

$$P(\text{not 9 or 10}) = 1 - P(9 \text{ or } 10)$$

$$= 1 - \frac{8}{52} = \frac{11}{13}$$

$$\frac{11}{13}$$



The physics department of a college has 7 male professors, 11 female professors, 16 male teaching assistants, and 8 female teaching assistants. If a person is selected at random from the group, find the probability that the selected person is a teaching assistant or a female.

$$\frac{24}{42} + \frac{19}{42} - \frac{8}{42} = \frac{35}{42}$$

(T.A.S) (F.M. Professor) (F.M. T.A.S)

$$\frac{5}{6}$$



You are dealt one card from a standard 52-card deck. Then the card is replaced in the deck, the deck is shuffled, and you draw again. Find the probability of getting a face card the first time and a black card the second time.

$$\left(\frac{12}{52}\right)\left(\frac{26}{52}\right) = \frac{3}{26}$$

(face) (black)

$$\frac{3}{26}$$



How many different ways can letters in the word *MIRACLE* be arranged?

$$7!$$

or  
 $7P7$

5,040



Calculate the following probability of selecting a diamond or a face card from a standard 52-card deck

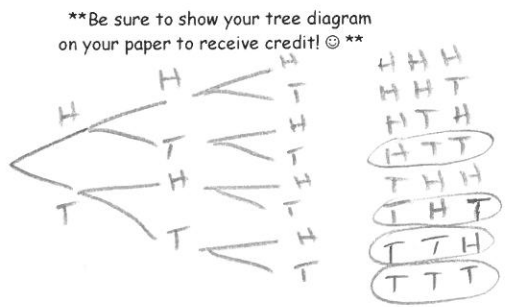
$$\frac{13}{52} + \frac{12}{52} - \frac{3}{52} = \frac{22}{52}$$

$$= \frac{11}{26}$$

$$\frac{11}{26}$$



Coins: Write out the tree diagram showing the results of tossing a coin 3 times. Then, find the probability of having the coin land on tails at least twice.



$$\frac{1}{2}$$



$$\frac{4}{8} = \frac{1}{2}$$

A cell phone store sells 5 models of phones (Mach, Spectrum, Optimus, Intuition, Freedom). Each phone can be ordered in 3 different colors (Black, Red, White)

What is the probability of choosing a Optimus in red at random?

\*Hint → List your sample space\*

$$5 \cdot 3 = 15$$

$$\frac{1}{15}$$

$$\frac{1}{15}$$



A playlist on your iPod has 9 songs. In how many different orders can the nine songs be played?

$$362,880$$

$$9P9 = 362,880$$



Degree	Male	Female
Associate's	224	387
Bachelor's	547	776
Advanced	245	322

1323

= 567

$$\frac{46}{81}$$

Find the probability that the recipient is female given the degree is advanced.

$$P(\text{female} | \text{advanced}) = \frac{P(\text{female and advanced})}{P(\text{advanced})}$$

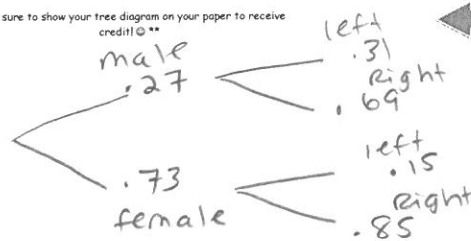
$$= \frac{322}{567}$$



Make a tree diagram for the survey results. Of all survey respondents 27% are male. Of all male respondents 31% are left handed. Of female respondents 85% are right handed. Find the probability that a respondent is both female and left handed.

$$0.1095$$

\*\*Be sure to show your tree diagram on your paper to receive credit! \*\*



$$(.73)(.15) = .1095$$



In Florida, 62% of all teenagers own a cell phone and 23% of all teenagers own a cell phone and an ipod. What is the probability that a teenager owns an ipod given that the teenager owns a cell phone?

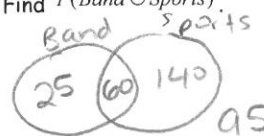
$$\frac{.23}{.62} = .37$$

$$37\%$$



In a school of 320 students, 85 students are in the band, 200 students are on sports teams, and 60 students participate in both activities.

Find  $P(\text{Band} \cup \text{Sports})$ .



$$25 + 60 + 140 = 225$$

$$225 / 320 = 45 / 64$$

$$\frac{45}{64}$$



Martha has 4 pairs of sneakers and 5 pairs of sandals. Without looking, she pulls a sandal from the closet. What is the probability that the next shoe she pulls out will also be a sandal?

1st draw Sandal → so 9 left  
9/17

$$\frac{9}{17}$$



Given the following information, find  $P(9^{\text{th}} \text{ grade} | \text{swimmer})$ .

	Swimmers	Runners
9 <sup>th</sup> Grade	4	16
10 <sup>th</sup> Grade	16	64

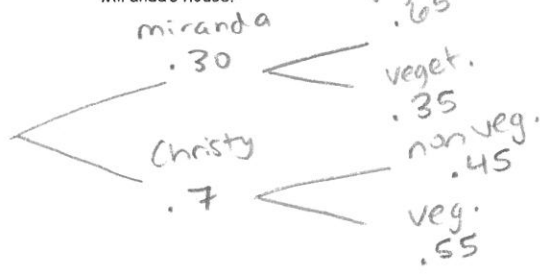
$$P(9^{\text{th}} \text{ grade} | \text{swimmer}) = \frac{P(9^{\text{th}} \text{ grade} \cap \text{swimmer})}{P(\text{swimmer})}$$

$$= \frac{4}{20} = \frac{1}{5}$$

$$\frac{1}{5}$$



Miranda and Christy are best friends and neighbors. About 30% of the time, they eat at Miranda's house and her mother makes a non vegetarian meal 65% of the time. The rest of the time, they eat at Christy's house and her mother serves a vegetarian meal 55% of the time. If the girls ate a vegetarian meal, what is the probability that they ate at Miranda's house?



21.4%



$$P(\text{Miranda}|\text{veg}) = \frac{P(\text{Mir} \& \text{veg})}{P(\text{veg})} = \frac{(.3)(.35)}{(.3)(.35) + (.7)(.55)} = .214$$

The manager of a restaurant needs to choose 5 waiters, 3 cooks, and 1 shift manager for a shift. She has 9 waiters, 7 cooks, and 4 shift managers to choose from. In how many ways can she choose the employees for the shift?

17,640



$$9C_5 \cdot 7C_3 \cdot 4C_1 = 17,640$$

A box of markers contains 5 purple, 3 green, 4 red, and 7 yellow markers. You choose one marker at a time, with replacement. What is the probability that you choose 2 yellow and 1 purple marker?

735 / 6859



There are 8 desserts on the menu at a restaurant and you will choose 3 to share with your friends at the table. In how many ways can you do this?

56

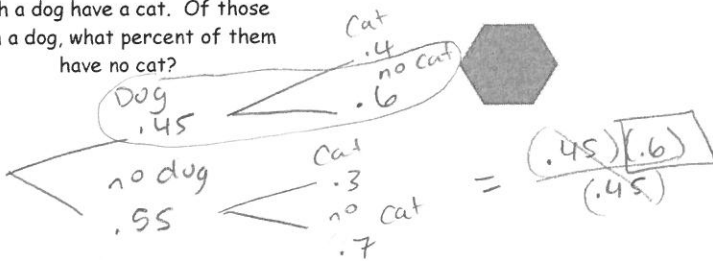


$$8C_3 = 56$$

$$YYP + PY Y + YPY = \left(\frac{7}{19}\right)\left(\frac{7}{19}\right)\left(\frac{5}{19}\right) + \left(\frac{5}{19}\right)\left(\frac{7}{19}\right)\left(\frac{7}{19}\right) + \left(\frac{7}{19}\right)\left(\frac{5}{19}\right)\left(\frac{7}{19}\right) = \frac{735}{6859}$$

45% of the children in a school have a dog, 30% of those with no dog have a cat, and 40% of those with a dog have a cat. Of those with a dog, what percent of them have no cat?

60%



How many different ways can letters in the word REARRANGED be arranged?

151,200



$$\frac{10!}{2!3!2!} = 151,200$$

$$E = 2 \\ A = 2 \\ R = 3$$

