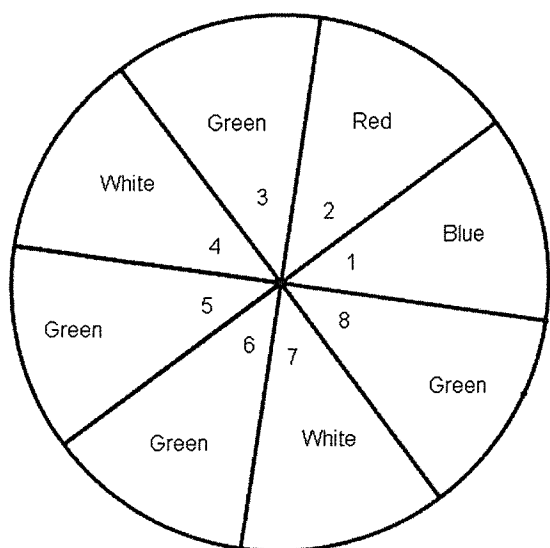


1. You will spin the spinner once. Find each probability as a fraction



- a) $P(\text{Green or White})$ b) $P(\text{Green and Prime})$ c) $P(\text{Blue and Even})$
 d) $P(\text{Green or Odd})$ e) $P(\text{Multiple of 3 or \# greater than 5})$

2. Use the results of the survey shown below of their favorite sports. You will select one person at random. Find each probability as a fraction.

	Baseball	Football	Hockey	Basketball	Total
Boys	18	23	8	14	63
Girls	21	14	16	13	64
Total	39	37	24	27	127

- a) $P(\text{Baseball or Football})$ b) $P(\text{Girl or Hockey})$ c) $P(\text{Boy and Basketball})$
 d) $P(\text{Hockey and Basketball})$ e) $P(\text{Boy} \mid \text{Football})$ f) $P(\text{Basketball} \mid \text{Girl})$

Use this information for problems 3 and 4: In the silverware drawer there are 12 spoons, 10 forks, and 8 knives.

3. You take a random utensil and put it on the table then you take another random utensil. Find each probability as a fraction.

- a) $P(\text{Spoon and Fork})$ b) $P(\text{Knife and Knife})$

4. You take a random utensil, notice it is dirty and return it to the drawer, then take another random utensil. Find each probability as a fraction.

- a) $P(\text{Fork and Fork})$ b) $P(\text{Knife and Spoon})$

5. Given the following Scrabble tiles: E R W X M H C

- a) How many ways can you arrange all of the tiles on the table in front of you?
 b) How many ways can you take four of the tiles and return them to the pile of unused tiles?
 c) How many ways can you arrange 5 of the tiles on the Scrabble board?

6. There are 149 Seniors at a school.

- a) How many ways can 4 of them be elected to serve as President, Vice President, Secretary, and Treasurer?
 b) How many ways can 8 of them be selected to go visit the Governor?

7. At a furniture store there are 24 couches, 16 tables, and 26 recliners to choose from.

- a) Given your budget, how many ways can you select one of each?
- b) How many ways could you select 1 table, 1 couch, and 2 recliners?

8. A password for your email must consist of 7 characters. The first three must be a letter (Upper and Lower case is considered different) and the last four must be a digit from 0 to 9.

- a) Find the number of possible passwords if no character can repeat.
- b) Find the number of possible passwords if not letter can repeat but numbers can.

9. The number from 1 to 20 are in a bag. You will take out a random number. Find each probability as a fraction.

- a) $P(\text{Multiple of 6})$
- b) $P(\text{Multiple of 5 and even})$
- c) $P(\text{Factor of 12 or odd})$
- d) $P(\text{Prime or a Multiple of 4})$

10. At an art fair the judges must select the top three paintings. The prize for first is a \$5000 scholarship. The 2nd place prize is a \$1000 scholarship. The 3rd place prize is a \$500 gift card. If there were 40 entries find the number of ways that the prizes could be awarded.

11. In a vending machine of an office building there are machines that sell chips, ones that sell pop, and ones that sell candy. The chip machine has 12 different choices. The pop machine has 6 different choices. And the candy machine has 9 different choices.

- a) How many different "meals" are possible if you select one of each?
- b) How many different "meals" are possible if you select 2 different chips, 2 different pops, and 3 different candies?

12. There are 20 seats available on a bus. At the first stop 28 people are waiting.

- a) The bus driver only lets enough people on the bus to fill the available seats. How many ways can 20 people be let on the bus?
- b) Once the 20 people are allowed on the bus, how many different ways can the 20 seats be filled?

13. You wake up in the morning and randomly grab a pair of pants and a shirt. The probability that you put on a pair of blue pants is $\frac{3}{11}$, the probability that you put on a pair of tan pants is $\frac{5}{11}$, and the probability that you put on a green shirt is $\frac{4}{13}$. Find each probability as a fraction.

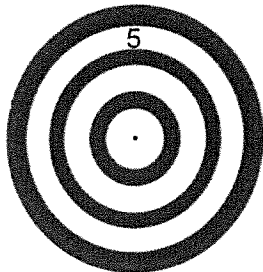
- a) $P(\text{blue pants or tan pants})$
- b) $P(\text{tan pants or green shirt})$

14. A box of colored pencils has the following colors: 8 blue, 9 red, 4 green, and 2 yellow.

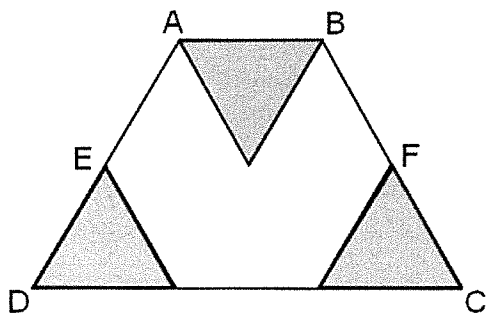
- a) You grab a pencil at random, notice it is broken, and set it aside. Then you grab another pencil. Find the following probability as a fraction: $P(\text{red and green})$
- ~~b) You grab a pencil at random don't like the color so you put it back and grab another pencil. Find the following probability as a fraction: $P(\text{yellow and yellow})$~~

15. When you drive home at noon the sun is bright. The probability that you wear a hat is 48% and the probability that you wear your sunglasses is 35%. Find the following probability as a percent rounded to the nearest tenth. $P(\text{wear a hat or wear sunglasses})$

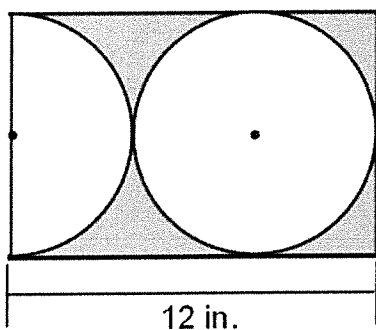
16. Find the probability that if a dart lands on the following target it lands in the 5 point ring. Give your answer as a fraction. The bulls-eye has a radius of 2in and each ring is 2in wide.



17. ABCD is an Isosceles Trapezoid and points E and F are midpoints. Find the probability that a point picked at random is in the shaded region. Give your answer as a fraction.



18. Find the probability that a point picked at random is in the shaded region. Give your answer as a percent rounded to the nearest hundredth.



1. a) $\frac{6}{8}$ b) $\frac{2}{8}$ c) $\frac{0}{8}$ d) $\frac{6}{8}$ e) $\frac{4}{8}$

2. a) $\frac{76}{127}$ b) $\frac{72}{127}$ c) $\frac{14}{127}$ d) $\frac{0}{127}$ e) $\frac{23}{37}$ f) $\frac{13}{64}$

3. a) $\frac{120}{870}$ b) $\frac{56}{870}$

4. a) $\frac{100}{900}$ b) $\frac{96}{900}$

5. a) 5040 b) 35 c) 2520

6. a) 473,280,024 b) 4,976,826,801,000

7. a) 9984 b) 124,800

8. a) 668,304,000 b) 1,326,000,000

9. a) $\frac{3}{20}$ b) $\frac{2}{20}$ c) $\frac{14}{20}$ d) $\frac{13}{20}$

10. 59,280

11. a) 648 b) 83,160

12. 7.56×10^{24}

13. a) $\frac{8}{11}$ b) $\frac{89}{143}$

14. a) $\frac{36}{506}$ b) $\frac{4}{529}$

15. 66.2%

16. $\frac{36}{144}$

17. $\frac{3}{8}$

18. 21.46%