

Trig H
Probability Day 2

Name: _____

Opener: Discuss with your partner...

1a. A die is rolled. What are all the possible outcomes?

1 2 3 4 5 6

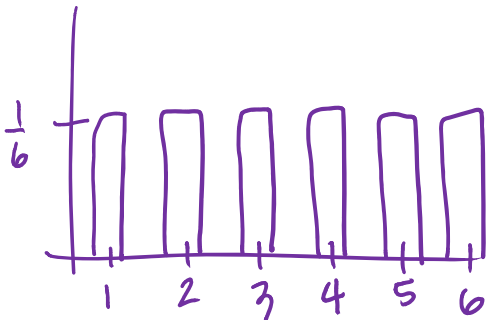
2a. A nickel and a dime fall out of your pocket onto the floor. What are all the possible outcomes (let's assume that the coin does not land on it's side;)?

HH TT
HT TH

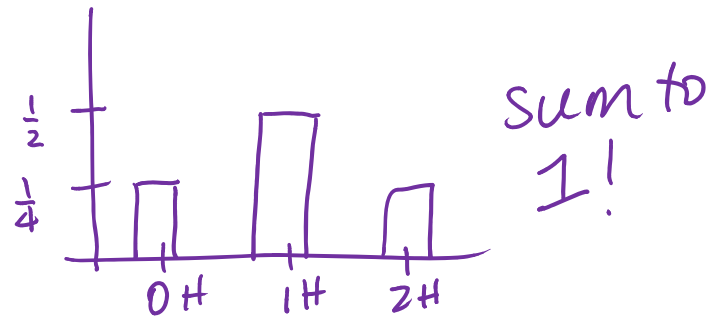
What you have found above is called a sample space ☺

Sample Space = list of possible outcomes

1b. Graph the probability distribution for the die example above.



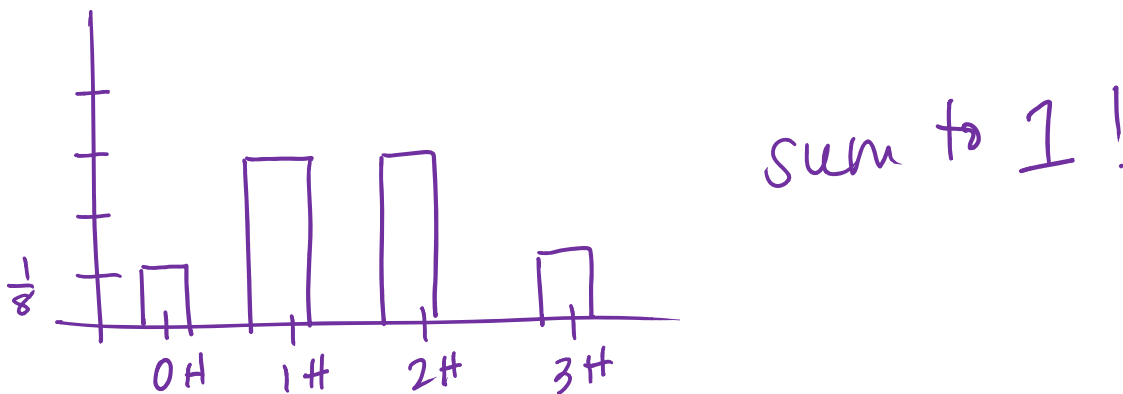
2b. Graph the probability distribution for the nickel and dime example above.



3a. Let's assume that you also had a quarter in your pocket (along with the nickel and dime), now what are all the possible outcomes?

H H H
 H T H
 T H H
 H H T
 T T H
 T H T
 H T T
 T T T

3b. Graph the probability distribution for flipping a nickel, dime, and quarter.



4. In an experiment, a bag contains 2 blue marbles and 3 red marbles. If you select two marbles...

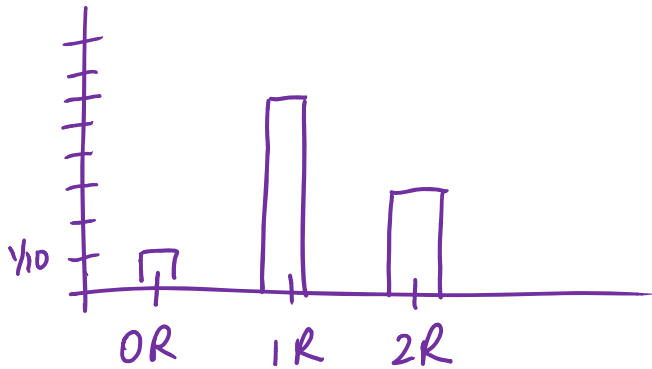
a. List the sample space.

$B_1 R_1$ $B_2 R_1$ $B_1 B_2$
 $B_1 R_2$ $B_2 R_2$ $R_1 R_2$
 $B_1 R_3$ $B_2 R_3$ $R_1 R_3$
 $R_2 R_3$

(order does not matter)



b. Graph the probability distribution for choosing 2 marbles from the bag.



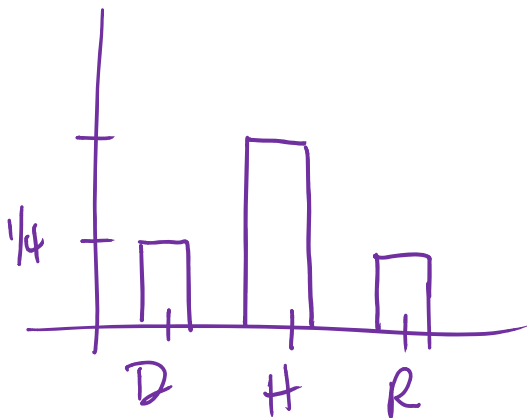
5. The following table shows inherited gene pairs from two hybrid corn plants.

| | | Parent Corn Plant 1 | |
|---------------------|---|---------------------|----|
| | | G | w |
| Parent Corn Plant 2 | G | GG | Gw |
| | w | Gw | ww |

KEY:
 GG = dominant gene pair (green plant)
 Gw = hybrid gene pair (green plant)
 ww = recessive gene pair (white plant)

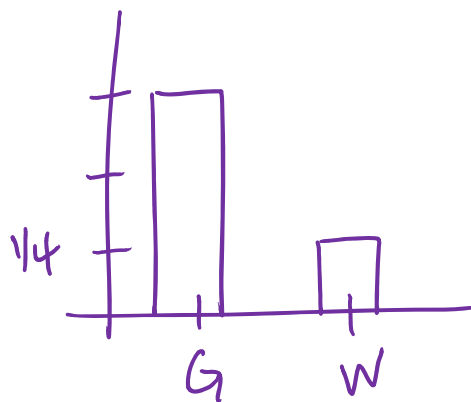
Make two probability distributions: one by genotype (dominant, hybrid, recessive) and one by plant color.

Genotype distribution



sum to 1!

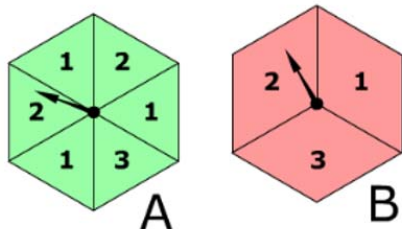
Plant color distribution



Probability – Day 2

HW: Sample Space, Probability Distribution

1. Two spinners A and B are spun and the scores are added together.

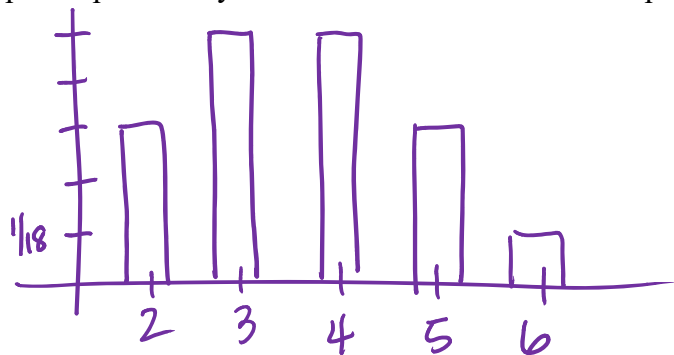


| | | Spinner A | | | | | |
|-----------|---|-----------|---|---|---|---|---|
| | | 1 | 1 | 1 | 2 | 2 | 3 |
| Spinner B | 1 | 2 | 2 | 2 | 3 | 3 | 4 |
| | 2 | 3 | 3 | 3 | 4 | 4 | 5 |
| | 3 | 4 | 4 | 4 | 5 | 5 | 6 |

a. Using the table provided, find the sums. How many outcomes are there?

5 outcomes

b. Graph the probability distribution for the sum of the spinners.



c. What is the probability of spinning a sum of 2?

$3/18 = 1/6$

d. What is the probability of spinning an even total?

$10/18 = 5/9$

2. Using our notes from today, a penny, nickel, and a dime fall out of your pocket onto the floor at the same time. The eight outcomes were listed in our notes.

a. Does the probability distribution help you calculate P(HHT)? Explain.

Yes + No. There is only 1 way to get HHT, but the distribution does not distinguish and records P(2H). we could divide it by 3.

b. What do all the probabilities in the distribution add to?

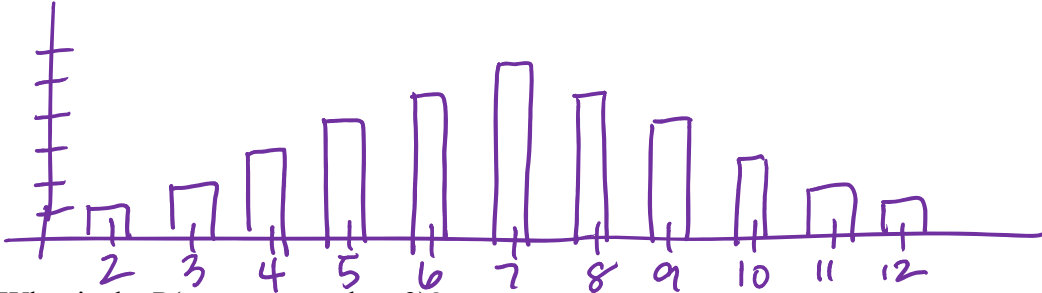
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3. Below is a table for rolling two dice, computing the sum and determining the frequency and theoretical probabilities.

a. Complete the table.

| Sum | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Frequency | 1 | 2 | 3 | 4 | 5 | 6 | 5 | 4 | 3 | 2 | 1 |
| Probability | $\frac{1}{36}$ | $\frac{2}{36}$ | $\frac{3}{36}$ | $\frac{4}{36}$ | $\frac{5}{36}$ | $\frac{6}{36}$ | $\frac{5}{36}$ | $\frac{4}{36}$ | $\frac{3}{36}$ | $\frac{2}{36}$ | $\frac{1}{36}$ |

b. Graph the probability distribution for the sum of two dice.



c. What is the P(sum greater than 9)?

$\frac{1}{6}$

d. In the dice game called craps a player (called the shooter) rolls two dice. If the shooter rolls a sum of 4, 5, 6, 8, 9, or 10 then he keeps rolling until he rolls that same sum again. If the player rolls a 7, he loses. Based on the information you calculated above, why is the 7 used for losing?

It happens the most!

4. In the game Rock-Paper-Scissors: scissors cut paper, rock crushes scissors, and paper covers rock.

The results of a 12 round game of rock-paper-scissors is shown below.

| | | | | | | | | | | | | |
|----------|---|---|---|---|---|---|---|---|---|---|---|---|
| Player 1 | R | S | P | P | S | R | S | S | R | P | S | S |
| Player 2 | S | P | R | S | P | P | R | S | R | S | R | R |

a. Circle the winner for each round (if there is a tie, circle both).

b. Make a probability distribution for the winning players: Player 1, Player 2, or tie.

