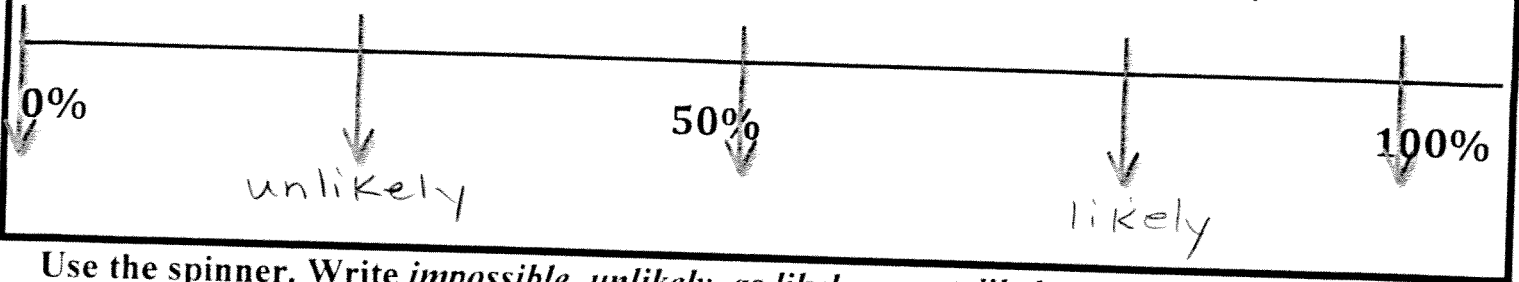


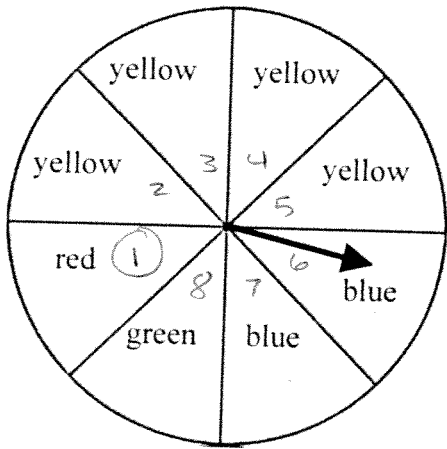
Find Probability and Predict Outcomes

(11.1, 11.2, 11.3 & 11.6)

Write unlikely, as like as not, or likely on the number line in the correct spot.



Use the spinner. Write *impossible*, *unlikely*, *as likely as not*, *likely* or *certain* to describe each event. Then write the theoretical probability for the event as a fraction, decimal and a percent.



1. The spinner lands on red.

unlikely  

$$P(\text{red}) = \frac{1}{8} = 0.125 = 12.5\%$$

2. The spinner lands on yellow.

as likely as not  

$$P(\text{yellow}) = \frac{4}{8} = \frac{1}{2} = 0.50 = 50\%$$

3a. The spinner lands on orange.

impossible  $P(\text{orange}) = 0 = 0 = 0$

3b. The spinner lands on blue.

unlikely  $P(\text{blue}) = \frac{2}{8} = \frac{1}{4} = 0.25 = 25\%$

Read and answer the question. PB

4. In Anna's cookie jar  $\frac{3}{8}$  of the cookies are peanut butter,  $\frac{1}{2}$  of the cookies are chocolate chip, and  $\frac{2}{16} = \frac{1}{8}$  of the cookies are oatmeal. The cookies are all the same size and Anna can't see into the jar. If she randomly pulls a single cookie out of the jar, what kind is it most likely to be? Explain. Chocolate chip
- $= \frac{4}{8}$  total

Find the theoretical probability.

Students placed some coins in a bag. There were 12 quarters, 7 dimes, 4 nickels, and 2 pennies. What was the theoretical probability of drawing each kind of coin? Fill in the table with each probability as a fraction in simplest form.

+ 12 quarters  
 + 7 dimes  
 + 4 nickels  
 + 2 pennies  
 -----  
 25  
 total coins

Theoretical Probability		
5.	P (quarter)	$\frac{12}{25}$
6.	P (dime)	$\frac{7}{25}$
7.	P (nickel)	$\frac{4}{25}$
8.	P (penny)	$\frac{2}{25}$

9. Suppose there is a 65% chance of snow tomorrow. What is the probability it will not snow tomorrow?

$100 - 65$

P (not snow) 35%

Error Analysis.

Each of these spinners has two sections (one black and one white).



10. Your classmate said that the probability of spinning black is 33% on each spinner. Explain why she is wrong.

None of them have a 33% chance  
 The three spinners are not equal

**Experimental Probability.**

Michael surveyed his classmates to determine their favorite type of cookies. His results are recorded in the table.

11.

Cookie	Chocolate Chip	Sugar	Peanut Butter	M & M
Frequency	12	10	8	15

= 45 total

Identify the sample space for Michael's experiment.

{chocolate chip, sugar, peanut butter, M&M}

12. Find the experimental probability for a student's favorite cookie as a fraction in simplest form.

$P(\text{Peanut Butter}) = \frac{8}{45}$ 
 $P(\text{Sugar or M \& M}) = \frac{10 + 15}{45} = \frac{25}{45} = \frac{5}{9}$

Anna recorded the low temperatures every day in January. She organized her results in the frequency table.

Temperature (°F)	-10 to -1	0 to 9	10 to 19	20 to 29	30 to 39
Number of Days	8	12	5	2	4

warmer than 9° →

$5 + 2 + 4 = 11$

= 31 total days

13. According to Anna's results, what is the probability that a day in January will get warmer than 9°F?

$\frac{11}{31}$

**Make Predictions. Show work to justify your answers.**

14. A local restaurant reports that 60% of its customers purchase soda with their dinner. If 200 people ate dinner at this restaurant this evening, how many would you expect would buy soda with their dinner?

$\frac{60}{100} = \frac{n}{200}$

$n = 120$

15. If you roll a fair number cube (**this means a regular dice!**) 60 times, how many times would you expect to roll a number that is greater than or equal to 4?

1, 2, 3, 4, 5, 6

$\frac{3}{6} \cdot 60 = 30$

$n = 30$

30 times

**Find Measures of Central Tendency**

(6.2 & 6.3)

Find the range, mean, median, and mode of the data set.

16.

5-day forecast (low temperatures)	12	18	16	15	20
--------------------------------------	----	----	----	----	----

$$\begin{array}{r}
 212 \\
 18 \\
 16 \\
 15 \\
 20 \\
 \hline
 81
 \end{array}$$

Range:  $20 - 12 = 8$

Median:  $16$

Mean:  $81 \div 5 = 16.2$

Mode:  $\text{no mode}$

$$\begin{array}{r}
 16.2 \\
 5 \overline{) 81} \\
 \underline{30} \\
 51 \\
 \underline{30} \\
 21
 \end{array}$$

The data in the table tells the number of pages for each personal reading book that Hailey read during first semester.

Number of Pages for each Book						
140	250	220	130	600	165	185

130, 140, 165, 185, 220, 250, 600

17. Find the mean, median and mode of the pages read.

Mean:  $\approx 241$

Median:  $185$

Mode:  $\text{no mode}$

$$\begin{array}{r}
 270 \\
 765 \\
 470 \\
 185 \\
 \hline
 1690 \\
 241 \\
 7 \overline{) 1690} \\
 \underline{14} \downarrow \\
 29 \\
 \underline{28} \downarrow \\
 10 \\
 \underline{7} \\
 3
 \end{array}$$

18. Hailey realized that she did not read the 600 page book during first semester, but had actually read that one over the summer, so it shouldn't count for first semester. Remove the 600 page book from the data.

a) How will this change the mean for her data set? Justify your answer.

$$1690 - 600 = 1090 \div 6 = 181.6$$

the mean decreases to

b) How will this change the median for her data set? Justify your answer.

$$165 \quad 185$$

175 is the new median; it decreases

c) How will this change the mode for her data set? Justify your answer.

Does not change the mode  
still no mode

$$\begin{array}{r}
 181.6 \\
 6 \overline{) 1090} \\
 \underline{6} \downarrow \\
 49 \\
 \underline{48} \downarrow \\
 10 \\
 \underline{6} \\
 40
 \end{array}$$