Section 1-6: Probability

2 kinds of probability

Experimental Probability

Using the results of an experiment to predict future outcomes.

$$= \frac{\text{\# times an event occurs}}{\text{Total \# of trials}}$$

Theoretical Probability

Using knowledge of a situation to predict future outcomes.

$$= \frac{\text{\# of favorable outcomes}}{\text{Total possible outcomes}}$$

Sample space

A number is considered Prime if it has only two distinct factors: 1 and itself.

Is this Experimental or Theoretical Probability?

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

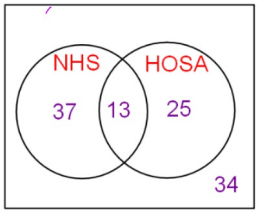
1. P(Factor of 12) = $\frac{5}{8}$
2. P(multiple of 3) = $\frac{2}{8}$
3. P(Prime #) = $\frac{4}{8}$

3, 6, 9, 12, ...

4. P(Red or Blue) = $\frac{6}{8}$ $\frac{2}{8}$
5. P(Blue and Mult of 4) = $\frac{2}{8}$
6. P(Prime # or Blue) = $\frac{7}{8}$

Is this Experimental or Theoretical Probability?

The Venn Diagram below shows after school activities that students belong to.



You will select a student at random, find each probability as a fraction.

1. P(NHS but not HOSA) = $\frac{37}{109}$
2. P(Neither HOSA nor NHS) = $\frac{34}{109}$
3. P(HOSA and NHS) = $\frac{13}{109}$
4. P(not NHS) = $\frac{59}{109}$

Is this Experimental or Theoretical Probability?

A survey of people's favorite fruit was conducted.
The results are shown below.

	Apple	Pear	Orange	Banana	Total
Male	73	64	80	51	268
Female	68	75	83	56	282
Total	141	139	163	107	550

1. P(Apple) = $\frac{141}{550}$

2. P(Banana or Orange) = $\frac{270}{550}$

3. P(Female and Pear) = $\frac{75}{550}$

4. P(Male or Apple) = $\frac{336}{550}$

$268 + 141 - 73$

5. If 75 more people are surveyed approximately how many of them will say that Banana is their favorite?

$\frac{107}{550} = .19 \times 75$

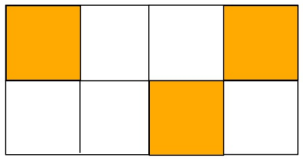
OR

$\frac{107}{550} = \frac{x}{75}$

≈ 15 people

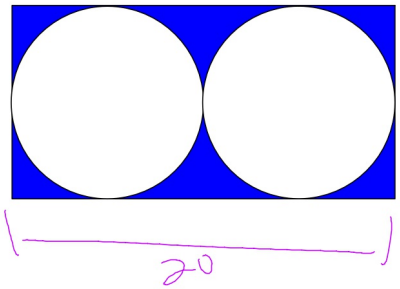
Geometric Probability = $\frac{\text{Area of Favorable Region}}{\text{Total Area}}$

Find the probability that if a dart lands in the rectangle that it lands in the shaded region. Give your answer as a percent. Round to the nearest hundredth as needed.



$= \frac{3}{8}$

Find the probability that if a dart lands in the rectangle that it lands in the shaded region. Give your answer as a percent. Round to the nearest tenth as needed.



the diameter of each circle is 10 inches.

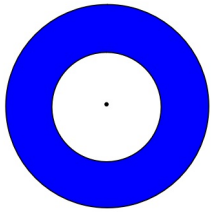
$\frac{\text{Rect} - 2\text{ circles}}{\text{Rect}}$

$= \frac{200 - 2\pi(5)^2}{200}$

$= \frac{200 - 50\pi}{200}$

$= 21.5\%$

Find the probability that if a dart lands on the target that it lands in the shaded region. Give your answer as a fraction.



The radius of the smaller circle is 12 cm and the radius of the larger circle is 20 cm.

$\frac{\text{Big} - \text{Little}}{\text{Big circle}} = \frac{400\pi - 144\pi}{400\pi}$

$= \frac{256\pi}{400\pi}$

$= \frac{256}{400}$