## Probability

Probability is the likelihood of something happening.
The probability of event $A$ is $P(A)$.
Probability can be written as a fraction, decimal, or percent and it is always between 0 and 1.
$P=0$
Not going
to happen

$$
P=0.5
$$

Equally likely
to happen or not happen

$$
P=1
$$

Definitely going
to happen

## Probability and Length

If I have line $A B$, that is 4 cm long, and line $C D$ on $A B$ that is 2 cm long. What's the likelihood of point $K$ landing on line CD?

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The likelihood of a point $K$ landing on line $C D$ is the ratio of the length of $C D$ to the length of $A B$.

$$
P(k \text { landing on } C D)=\frac{\text { Length of } C D}{\text { Length of } A B}
$$

Find the probability that a point chosen at random on $P Q$ is on $R S$.


If point $K$ is on circle $C$. What is the likelihood of it being on arc $A B$ ?



In the game wheel of fortune, you spin the wheel and hope you don't land on Bankrupt. You are equally likely to land on any one of these sections.

There are 24 sections of equal size. Two of the sections are split into thirds and contain 2 Bankrupt and the Million Dollar or \$10,000.

If the wheel is 10 feet across, what is the likelihood of landing on Bankrupt? What is the likelihood of landing on 1 Million Dollars?

## Probability and Area

The likelihood that a point $K$ randomly chosen from the region $J$ also lies in region M is equal to the ratio of the areas.


$$
P(K \text { in Region } M)=\frac{\text { Area of } M}{\text { Area of } J}
$$



The diameter of the target shown is 80 cm . The diameter of the yellow center circle is 16 cm . An arrow is shot and hits the target. If the arrow is equally likely to land on any point on the target, what is the probability that it lands in the yellow circle?

A dart game uses a target with concentric circles with radii 5,8 , and 12 inches. A dart is thrown and hits the target. If the dart is equally likely to hit any point on the target, what is the probability of earning 20 points?


