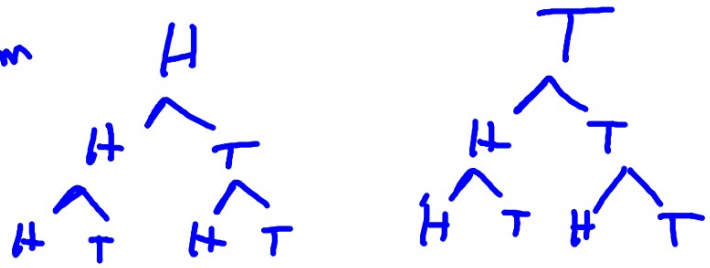
Algebra 1 0.11 Simple Probability and Odds

Find the probability of simple events
Find the odds of simple events

probability
sample space
tree diagram
Fundamental Counting Principle
odds
number cube (dice)
complementary events

How likely?
H T - $\frac{1}{2}$

Tree diagram



List

HHH
HHT
HTH
HTT
THH
THT
TTH
TTT

1 2 3 4 5 6

Ex. 1

A number cube (~~die~~) is rolled. Find each probability.

a. Rolling a 1 or a 5

$\frac{1}{6} + \frac{1}{6} = \frac{2}{6} = \frac{1}{3}$

$\frac{1}{3}$

b. Rolling an even number

$\frac{3}{6} = \frac{1}{2}$

Complements:

P(1) + P(not 1)=

Ex. 2 $T = 28$

A bowl contains 5 red chips, 7 blue chips, 6 yellow chips, and 10 green chips. One chip is randomly drawn.

a. P(blue) $\frac{7}{28} = \frac{1}{4}$

b. P(red or yellow) $\frac{11}{28}$

c. P(not green) $\frac{18 \div 2}{28 \div 2} \quad \frac{9}{14} \approx 0.64 \approx 64\%$

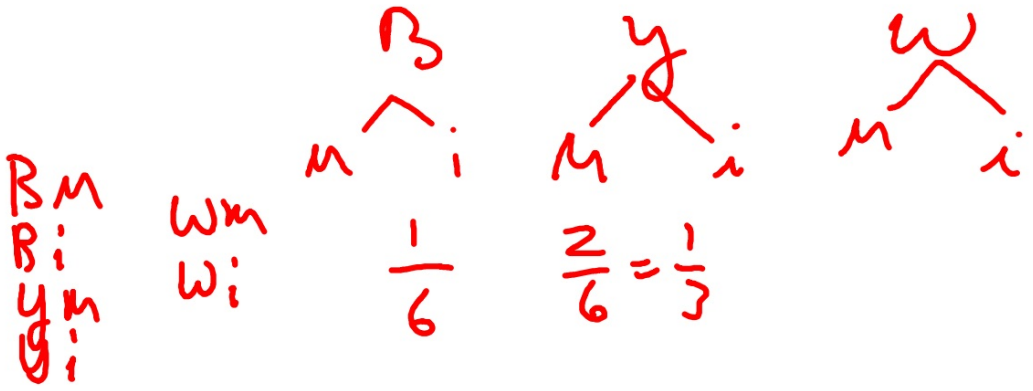
Tree diagram: counting possible outcomes

3 coats

2 hats

Ex. 3 $3 \cdot 2$

School baseball caps come in blue, yellow or white. The caps have either the school mascot or the school's initials. Use a tree diagram to determined the number of different caps possible.

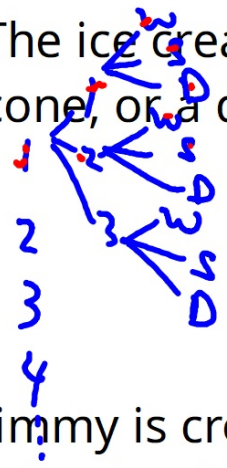


Fundamental Counting Principle =

$12 \cdot 3 \cdot 3 = 108$

Ex. 4

An ice cream shop offers one, two, or three scoops of ice cream from among 12 different flavors. The ice cream can be served in a wafer cone, a sugar cone, or a dish. How many choices are possible?



$9 \cdot 12 = 108$

$10 \quad 9 \quad 8$

Jimmy is creating a 3-digit password for his login on the school website. The password can include any digit from 0-9 but the digits may not repeat. How many possible 3-digit passwords are there?

$10 \cdot 9 \cdot 8$

The odds of an event occurring is the ratio that compares the number of ways and event can occur (success) to the number of ways it cannot occur (failure).

Ex. 5

A number cube is rolled.
Find the odds of rolling a number less than 3.

3·3