

Algebra 1 0.11 Simple Probability and Odds

Find the probability of simple events

Find the odds of simple events

probability How likely? % frac. dec.
sample space Sample space = list of possible

tree diagram

Fundamental Counting Principle

odds

number cube (dice)

complementary events

$$P = \frac{\text{success}}{\text{total}}$$

Ex. 1

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

a. Rolling a 1 or a 5 $= \frac{1}{3}$

$$\frac{2}{6}$$

1 2 3 4 5 6

b. Rolling an even number

$$\frac{3}{6}$$

$$\frac{1}{2} \quad 50\% \quad 0.5$$

$$\frac{1}{3} + \frac{2}{3} = \frac{3}{3} = 1 \quad 100\%$$

$$\underbrace{20\% + 80\%}$$

Complements:

$$P(1) + P(\text{not } 1) =$$

$$P_{1 \text{ or } 5} \quad \frac{1}{3}$$

$$P_{\text{not } 1 \text{ or } 5} = \frac{4}{6} = \frac{2}{3}$$

Ex. 2

(28)

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

a. $P(\text{blue}) = \frac{7}{28} = \frac{1}{4} = 0.25 = 25\%$

b. $P(\text{red or yellow})$

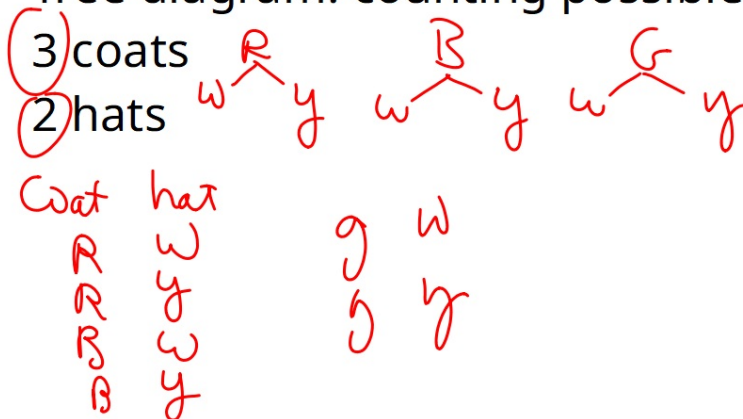
c. $P(\text{not green}) = \frac{11}{28} = \frac{9}{14}$

$P_G = \frac{5}{14} + P_{\text{not G}} = \frac{9}{14}$

$\frac{14}{14}$

3.2 - 6

Tree diagram: counting possible outcomes



Ex. 3

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 determine the number of different caps possible.



Fundamental Counting Principle

$$3 \cdot 12 \cdot 3 = 108$$

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?

Scoops 1, 2, 3
Flavor 12
dish 3

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?

$$P = \frac{\text{Success}}{\text{total}}$$

Odds success: failure

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

1 2 3 4 5 6

2:4

1:2

Ex. 5

A number cube is rolled.

Find the odds of rolling a number less than 3.

