Probability Continued... -Notes

Probability of Compound Events - A compound event consists of 2 or more events. When this happens, you find probability by multiplying your probabilities.

Ex: What is the probability of flipping a coin 2 times and getting a heads and then tails.

$$P(H \text{ and } T) = \underset{\text{Heads}}{\text{Prob. of}} \times \underset{\text{Tails}}{\text{Prob. of}}$$

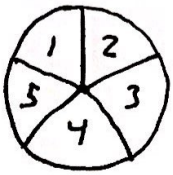
$$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4} \text{ or } .25 \text{ or } 25\%$$

Ex: 2 What is the probability of getting Tails 3 times when flipping a coin 3 times

$$P(T, T, \text{and } T) = \underset{\text{Tails}}{\text{Prob. of}} \times \underset{\text{Tails}}{\text{Prob. of}} \times \underset{\text{Tails}}{\text{Prob of}}$$

$$\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \boxed{\frac{1}{8}}$$

Flip and Spin Probability - The same happens when doing 2 different things like flipping a coin and spinning a spinner.



Ex: What is the probability of tossing a tails and spinning a 3.

$$P(T \text{ and } 3) = \underset{\text{Tails}}{\text{Prob. of}} \times \underset{3}{\text{Spinning}}$$

$$\frac{1}{2} \times \frac{1}{5} = \boxed{\frac{1}{10}} \text{ or } = .1 \text{ or } = 10\%$$

Ex: 2 What is the probability of landing heads and spinning an odd number.

$$P(H \text{ and } \underset{1,3,5}{\text{odd}}) = \underset{\text{Heads}}{\text{Prob. of}} \times \text{odd}$$

$$\frac{1}{2} \times \frac{3}{5} = \boxed{\frac{3}{10}} \text{ or } = .3 \text{ or } = 30\%$$

Probability with Dependent Events - Notes

- This is similar to the last page of notes but the second or more events is affected by the event before it.

Ex: 1 In a container of marbles there are 5 red, 3 blue, and 2 green marbles. There are a total of 10 marbles. If I take a marble out and don't replace it, there are only 9. What is the probability of drawing a red and then blue, if I don't replace the one marble I took out?

$$P(\text{red and blue - without replacement}) = \frac{5}{10} \times \frac{3}{9} = \boxed{\frac{15}{90}} \overset{\text{or}}{=} \frac{1}{6} \overset{\text{or}}{=} .16$$

(take one away)

Ex: 2 Same situation but probability of drawing a blue marbles 2 times

$$P(\text{blue and blue - without replacing}) = \frac{3}{10} \times \frac{2}{9} = \frac{6}{90} = \frac{1}{15} = .0\overline{6}$$

(take one blue away; take one away)

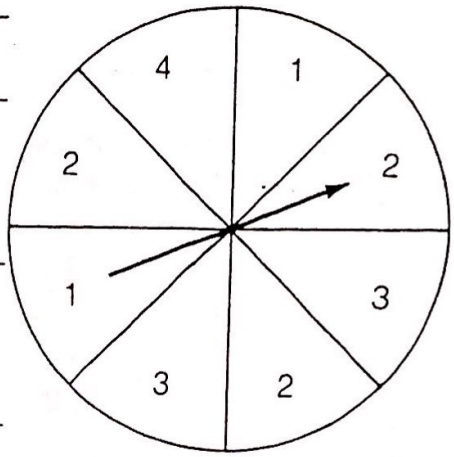
Ex: 3 If I did replace the marble (put it back) the fraction would be the same both times because the total (10) and the total blue (3) would still be 3 out of 10.

$$P(\text{blue and blue - with replacement}) \quad \frac{3}{10} \times \frac{3}{10} = \frac{9}{100} \overset{\text{or}}{=} .09 \overset{\text{or}}{=} 9\%$$

Math

Name _____

Use the spinner at the right to answer the following.



1) On what number is the spinner least likely to stop? ____

2) On what number is the spinner most likely to stop? ____

3) What is the probability of stopping on an odd number? _____

4) What is the probability of stopping on an even number? _____

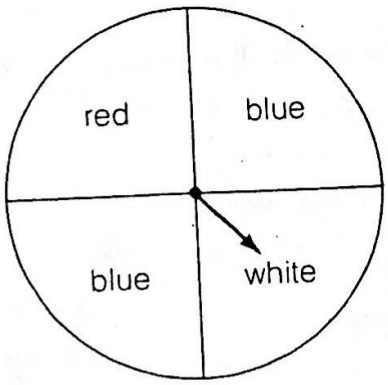
5) What is the probability of stopping on 3? _____

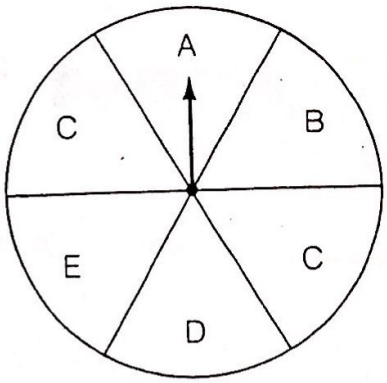
6) A jar contains 3 blue marbles, 4 green marbles, and 8 yellow marbles. What is the probability of drawing a blue or green marble?

_____

7) A marble is drawn from the jar and then replaced. A second marble is drawn. What is the probability that a yellow marble was drawn both times?

_____





8) P(red and C) _____

9) P(blue and E) _____

10) P(white and E) _____

11) P(blue and C) _____

12) P(white and A) _____

13) P(red and D) _____

14) P(blue and A) _____

15) P(blue and B) _____

Solve.

16) What is the probability of tossing heads on a nickel and rolling 6 on a cube numbered from 1 to 6?

_____

17) What is the probability of tossing tails on a nickel and a number greater than 2 on the cube?

_____

18) What is the probability of tossing heads on a nickel, tails on a dime, and rolling a 3 on the cube?

_____

19) What is the probability of tossing heads on both coins and rolling a 2 or a 4 on the cube?

_____

Use the following information to write the probability for each.

A bag of marbles contains 5 red marbles, 3 blue marbles, 6 green marbles, and 2 white marbles. The first marble and any other marbles drawn are not replaced.

20) P(red then red) _____

21) P(red then white) _____

22) P(blue then blue) _____

23) P(blue then white) _____

24) P(green then green) _____

25) P(red then green) _____

26) P(W, G) _____

27) P(R, B) _____

28) P(R, W, B) _____

29) P(G, G, G) _____

30) P(B, R, G) _____

31) P(R, G, G) _____

Name_____

James polled the 30 kids in his homeroom as a sample of the 400 students in the high school to find out their favorite colors. 11 people chose red, 8 blue, 4 green, 2 yellow, and 5 other. How many total kids out of the 400 would you expect to choose the following:

① P(Red)

② P(yellow)

③ P(blue or green)

④ P(Not blue)

⑤ P(Red or green)

⑥ P(yellow or other)

The local paper did a poll sampling 200 voters of the 2,300 people registered to vote. 110 said they were voting for Brown, 35 for Harris, 18 for Smith, 25 for Williams, and 12 were undecided. How many total people would expect to vote for the following:

⑦ P(Williams)

⑧ P(Smith)

(9) P(Harris or Williams)

(10) P(Brown)

(11) P(undecided)

(12) P(not Harris)