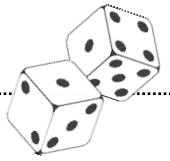
INTRO TO PROBABILITY



Vocabulary {Key Terms to Know}

- Sample Space: set of all possible outcomes
- Probability of an event: $\frac{\#\text{ of favorable outcomes}}{\text{sample space}}$
- Probability functions and distributions: each event is assigned a unique probability totaling to 1 (100%)

You have a jar of marbles containing 5 red, 6 green and 4 blue marbles. ⟹ 15 total

1. What is the probability of choosing a green marble?

$\frac{6}{15} = \boxed{\frac{2}{5}} \Rightarrow$ two in every 5 marbles are green

2. What is the probability of choosing a marble that is *not* blue?

↓ red or green = 11

$\boxed{\frac{11}{15}}$

You are rolling a single 6-sided die.

3. What is the probability of rolling a four?

$\boxed{\frac{1}{6}}$

4. What is the probability of rolling an even number?

↓ 2, 4, 6

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

From the letters in the word "probability" … 11 total letters

5. What is the probability of choosing the letter "p"?

$\boxed{\frac{1}{11}}$

6. What is the probability of choosing the letter "i"?

$\boxed{\frac{2}{11}}$

7. What is the probability of choosing a non-vowel?

↓ 4 vowels

$\boxed{\frac{7}{11}}$

You are playing TWISTER with your friends and are up to spin the spinner below.

8. What is the probability that the spinner lands on your right foot?

$\frac{4}{16}$ or $\boxed{\frac{1}{4}}$

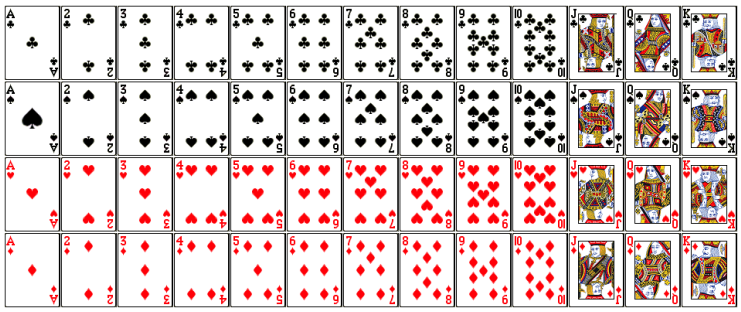
9. What is the probability that the spinner lands on either hand?

$\frac{8}{16}$ or $\boxed{\frac{1}{2}}$

10. What is the probability that the spinner lands on yellow?

$\frac{4}{16}$ or $\boxed{\frac{1}{4}}$

You are selecting one card from a standard, 52-card deck (shown below).



11. What is the probability of choosing a king?

$\frac{4}{52} = \boxed{\frac{1}{13}}$

12. What is the probability of drawing a red card (diamond or heart)?

$\frac{26}{52} = \boxed{\frac{1}{2}}$

13. What is the probability of drawing a heart?

$\frac{13}{52} = \boxed{\frac{1}{4}}$

14. What is the probability of choosing a jack or a queen?

4J, 4Q

$\frac{8}{52} = \boxed{\frac{2}{13}}$

15. What is the probability of choosing a queen, a king or an ace?

4Q, 4K, 4A

$\frac{12}{52} = \boxed{\frac{3}{13}}$

16. What is the probability of drawing a black ace?

2 black A (spade & club)

$\frac{2}{52} = \boxed{\frac{1}{26}}$

17. What is the probability of drawing the queen of hearts?

only 1

$\boxed{\frac{1}{52}}$

18. What is the probability of drawing a black diamond?

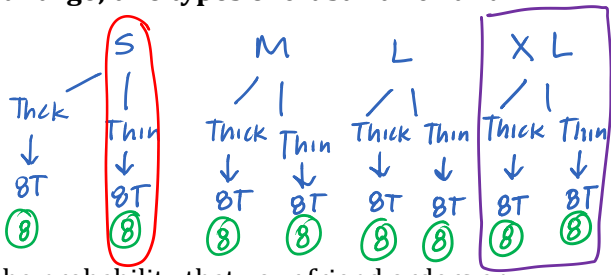
diamonds are red!

$\frac{0}{52} = \boxed{0}$ ← not possible!

A restaurant offers four sizes of pizza – small, medium, large and extra-large; two types of crust – thick and thin; and eight toppings.

19. How many possible combinations of pizza with one topping are there?

$4 \cdot 2 \cdot 8 = \boxed{64}$



Hint: a diagram might be helpful here!

20. What is the probability that your friend orders a small, thin-crust, one-topping pizza?

$\frac{8}{64} = \boxed{\frac{1}{8}}$

21. What is the probability that your friend orders an extra-large, one-topping pizza?

$\frac{16}{64} = \boxed{\frac{1}{4}}$