Practice - Intro to Probability
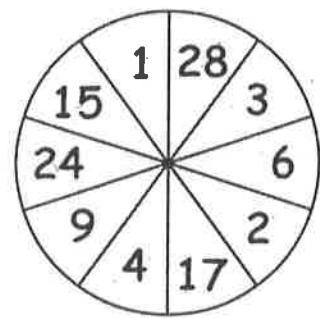**Theoretical vs. Experimental**

Name: _____

Explain the meaning of each probability. (Describe a scenario for each probability.) ※ Answers Vary	1. A probability of 0: The event will occur zero times for any number of chance of snow in the Amazon in the summer.	2. A probability of 25%: · The event should occur 25 times out of 100 trials · Drawing a heart in a deck of cards.
3. A probability of 0.5: · The event should happen 1 time out of every 2 trials · Flipping heads on a coin.	4. A probability of ¾: · The event should occur 3 times out of 4 trials · Not drawing a spade in a deck of cards.	5. A probability of 1: · The event will happen every time · Flipping heads or tails on a coin.

Consider the letters in the state of NORTH CAROLINA. Suppose you took each letter of the word and put them into a bag. Find the probability of picking out the following at random.

6. P(choosing an A) = $\frac{2}{13}$ 15%	7. P(choosing a consonant) $\frac{8}{13} \approx 62\%$	8. P(choosing a letter) $1 = 100\%$
9. P(choosing a K) $\frac{0}{13} = 0\%$	10. P(choosing an O or R) $\frac{4}{13} \approx 31\%$	11. P(choosing a vowel) $\frac{5}{13} \approx 38\%$

Use the spinner on the ~~left~~ right to answer questions 12 – 20.
Write your answer as a fraction, decimal and a percent.

12. P(even number) 28 6 2 4 24 $\frac{5}{10} = \frac{1}{2}$	13. P(negative number) $\frac{0}{10} = 0$	14. P(odd number) 1 3 17 9 15 $\frac{5}{10} = \frac{1}{2}$
15. P(multiple of 3) 3 6 9 24 15 $\frac{5}{10} = \frac{1}{2}$	16. P(factor of 24) 1 24 3 6 2 4 $\frac{6}{10} = \frac{3}{5}$	17. P(prime number) 2 3 17 $\frac{3}{10}$

ALL SECTIONS ARE EQUAL

You spin the spinner 50 times. It landed on 24 ten times.

18. According to the result of the experiment, find the experimental probability of landing on 24. $\frac{10}{50} = \frac{1}{5} \approx 20\%$	19. According to the theoretical probability, how many times should the spinner have landed on 24? $\frac{1}{10} = 10\%$	20. Compare the theoretical and experimental probabilities. The experimental probability of 20% was 10% higher than the theoretical probability

The following question was asked to survey 6th graders at a Wake County middle school: What college in North Carolina do you want to attend? Below are the results.

	NC State 95 students	Duke 60 students	North Carolina 45 students	East Carolina 50 students	⇒ total 250

21. Find the probability of a student choosing NC State.

$$\frac{95}{250} = \frac{19}{50}$$

22. Find the probability of a student choosing either East Carolina or Duke.

$$50 + 60 = \frac{110}{250} = \frac{11}{25}$$

23. Find the probability of a student choosing a college that does not have a shade of blue as their school color. NC + EC

$$\frac{29}{50} \quad\leftarrow\quad 95 + 50 = \frac{145}{250}$$

24. Find the probability of a student choosing a college that is located in the triangle.

NC + Duke + UNC

$$95 + 60 + 45 = \frac{200}{250} = \boxed{\frac{4}{5}}$$

Find the probability of the missing outcome.

25. There are three choices of pets to pick out at Pick-A-Pet. You can choose from a dog, cat or hamster. The probability of getting a dog is 3/8 and the probability of getting a cat is 1/4. Find the probability of getting a hamster.

$$\frac{3}{8} + \frac{1}{4} + P(hamster) = 1$$

$$\frac{3}{8} + \frac{2}{8} + \frac{x}{8} = \frac{8}{8} \quad x = 3, SO \quad \boxed{\frac{3}{8}}$$

26. There are four types of candy in a bag – starbursts, jolly ranchers, snickers and milky ways. At random, the probability of picking a starburst is 2/5, a jolly rancher is 18% and a milky way is 0.2. What is the probability of picking a snickers at random?

$$\frac{2}{5} + 18\% + .2 + P(snickers) = 1$$

$$.4 + .18 + .2 + \quad x = 1$$
$$.78 + x = 1, \quad SO \quad x = .22$$

Describe a bag of M&M's in which each of the following probabilities exists.

27.

$$P(yellow) = \frac{3}{8} \quad P(brown) = \frac{1}{2} \quad P(green) = \frac{1}{8}$$

$$\frac{1}{2} = \frac{x}{8}$$

yellow: 3   brown: 4   green: 1   total: 8

28.

$$P(red) = \frac{1}{6} \quad P(red\ or\ orange) = \frac{5}{6} \quad P(blue) = \frac{1}{6}$$

$$5 - 1 = 4$$

red: 1   orange: 4   blue: 1   total: 6

Determine the likelihood and write a ratio to represent each probability (if possible).

29. I am going to have math homework tomorrow night.	30. It is going to rain tomorrow.	31. I will pick a "S" or a "T" from the word "Skittles".	32. I will choose a quarter from a bag that has only 7 quarters.
likely		equally likely	Likely