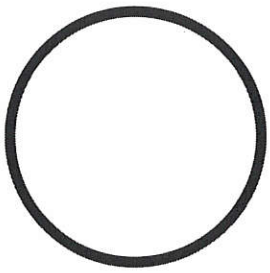
Math 7
Chapter 10: Probability & Statistics

Name: _____ Period: _____

Worksheet 10-4: Experimental Probability

1. Design a spinner that has a $\frac{2}{3}$ probability of landing on the number 3. Explain how you could precisely draw this spinner.



divide into 3 equal sections.
assign 2 of the 3 the number 3.

could also do an equivalent fraction
$\frac{4}{6}, \frac{6}{9}, \frac{8}{12}, \frac{10}{15}, \ldots$

2. What does it mean for an event to have a probability of 1? Give an example.

The event is certain to happen.

3. A fair number cube with the numbers 1, 2, 3, 4, 5, and 6 is rolled.
   a. What is the probability of getting an even number? 2, 4, 6
   $P(\text{even}) = \frac{3}{6} = \frac{1}{2}$
   b. What is the probability of getting a factor of 6? 1, 2, 3, 6
   $P(\text{factor of 6}) = \frac{4}{6} = \frac{2}{3}$
   c. What is the probability of getting a 5?
   $P(5) = \frac{1}{6}$
   d. What is the probability of not getting a 5?
   $P(\text{not } 5) = \frac{5}{6}$

4. The likelihood that Han makes a free throw in basketball is 60%. The likelihood that he makes a 3-point shot is 0.345. Which event is more likely, Han making a free throw or making a 3-point shot? Explain your reasoning.

60% = 0.6
0.345 = 34.5%
60% > 34.5%
more likely to make a free throw.

5. Different events have the following likelihoods. Sort them from least to greatest:

0.60 $\frac{8}{10}$(0.8) 0.2 56.0
60%, 8 out of 10, 0.37, 20%, 56

20%, 0.37, 60%, 8 out of 10, 56.

6. List the sample space for each chance experiment.
   a. Flipping a coin
   heads or tails
   b. Selecting a random season of the year
   winter, spring, summer, fall
   c. Selecting a random day of the week
   Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday

7. There are 25 prime numbers between 1 and 100. There are 46 prime numbers between 1 and 200. Which situation below is more likely? Explain your reasoning.
   - A computer produces a random number between 1 and 100 that is prime.
   - A computer produces a random number between 1-200 that is prime.

1-100 ($\frac{25}{100}$ or $\frac{1}{4}$ of the numbers are prime) but for 1-200 only $\frac{46}{200}$

$\frac{25}{100} = \frac{50}{200}$ → $\frac{50}{200} > \frac{46}{200}$

8. What is the probability of selecting a random month of the year and getting a month that starts with the letter "J?" If you get stuck, consider listing the sample space.

(J) F M A M (J)
(J) A S O N D

$\frac{3}{12} = \boxed{\frac{1}{4}}$

9. Noah will select a letter at random from the word "FLUTE." Erin will select a letter at random from the word "CLARINET."

   a. what is the probability that Noah selects ~~an "E"~~ a vowel from "FLUTE"?

   P(vowel) = $\frac{2}{5}$

   b. What is the probability that Erin selects ~~an "E"~~ a vowel from "CLARINET"?

   P(vowel) = $\frac{3}{8}$

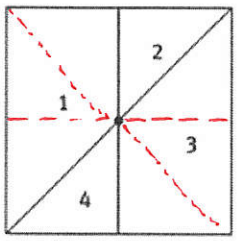
   c. Which person is more likely to pick a vowel? Explain your reasoning.

   is $\frac{2}{5}\cdot\frac{8}{8}$ or $\frac{3}{8}\cdot\frac{5}{5}$ larger?

   0.4 vs. 0.375 or $\frac{16}{40}$ vs. $\frac{15}{40}$

   Noah because $\frac{2}{5} > \frac{3}{8}$

10. Using this spinner, find P(4)



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

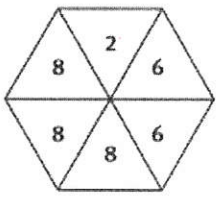
11. Using this spinner, find:

   a. P(2) $\frac{1}{6}$

   b. P(5) $\frac{0}{6}$

   c. P(6) $\frac{2}{6} = \frac{1}{3}$

   d. P(8) $\frac{3}{6} = \frac{1}{2}$



12. A dodecahedron has twelve sides numbered 1 through 12. To win $1,000,000, you have to roll a number that is a multiple of 2, 3, and 4. What's the probability that you will win?

12 numbers: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

only 12 is a multiple of 2, 3, & 4

$\boxed{\frac{1}{12}}$