Test Review: Probability

NAME_____

7th Grade Math

1. Fill in the table below...

Fraction	Decimal	Percent
2/3	0.6	66.6%
21/25	0.84	84%
13/50	0.26	26%
2/9	0.2	22.2%
1/20	.05	5%
1/2	0.5	50%
1/4	0.25	25%

84/100 = 21/25

26/100

5/100 = 1/20

5/10

25/100 =

2. What is the difference between *theoretical* and *experimental* probability?

Theoretical probability is what we think will happen based on the possible outcomes. Experimental probability is what actually happens when we test the situation.

3. Consider the situation below...

You roll a fair six sided die 20 times. Your results are found in the table below...

Dice #	Frequency
#1	2
#2	6
#3	5
#4	1
#5	3
#6	3

a. Find the **theoretical** probability of rolling the #5.

Fraction: 1/6 Decimal: 0.16 Percent: 16.6%

b. Find the **experimental** probability of rolling the #5.

Fraction: 3/20 Decimal: 0.15 Percent: 15%

c. Find the **theoretical** probability of rolling an odd number.

Fraction: 3/6 = 1/2 Decimal: 0.5 Percent: 50%

d. Find the **experimental** probability of rolling an odd number.

Fraction: 10/20 = 1/2 Decimal: 0.5 Percent: 50%

e. Find the **theoretical** probability of rolling the #7.

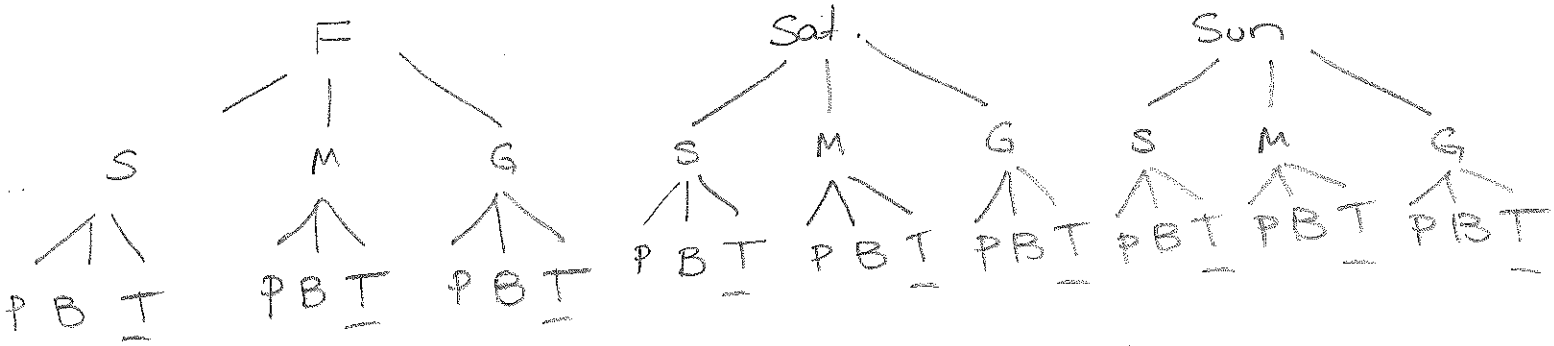
Fraction: 0/6 Decimal: 0 Percent: 0%

f. Find the **experimental** probability of rolling the #7.

Fraction: 0/20 Decimal: 0 Percent: 0%

4. Jacob and Jeff are twins and they are having trouble deciding what to do for their birthday party. It can be on Friday, Saturday, or Sunday. They can either swim, watch movies, or play games, and they can eat pizza, burgers, or tacos.

   a. Draw a **tree diagram** to show all of the possible party combinations.



   b. Use the **basic counting principle** to determine the total number of different party combinations.

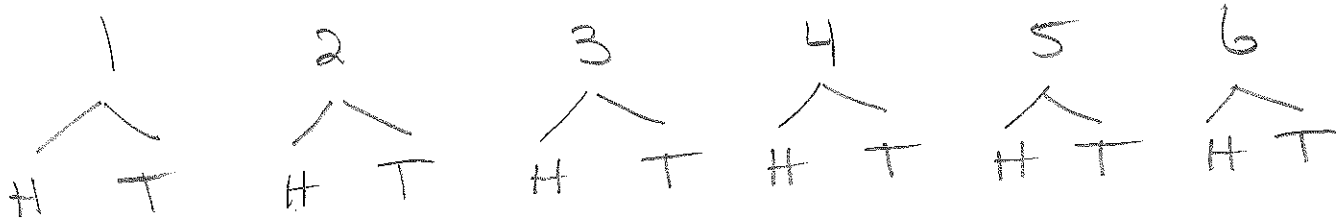
$3 \times 3 \times 3 =$ 27 combinations

   c. If they choose randomly from each category, what is the probability that they will choose to eat tacos?

$\frac{9}{27} = \frac{1}{3} = 33.\overline{3}\%$

5. In a new board game, players have to roll a fair, six sided die and flip a coin.

   a. Draw a **tree diagram** to illustrate the total number of combinations that can occur.



b. Use the **basic counting principle** to determine the total number of outcomes.

$6 \times 2 =$ 12 combinations

c. What is the probability that a player will roll the #1 and flip tails in the same turn?

$\frac{1}{6} \cdot \frac{1}{2} = \frac{1}{12} = 8.3\%$

d. What is the probability that a player will roll an even number and flip heads in the same turn?

$\frac{3}{6} \cdot \frac{1}{2} = \frac{3}{12} = \frac{1}{4} = 25\%$

6. Explain the difference between *independent* and *dependent* events.

Independent events are completely separate & not affected by eachother.
Dependent events do affect eachother.

7. State if the following are examples of independent or dependent events:

a. I pull a card from a deck, then I flip a coin 2 times. independent

b. I pull a card from a deck, then I pull another (without replacing). dependent

c. I spin a spinner 3 times. independent

d. I pull a test from the pile (question #2), replace it, then pull another test. Independent

e. I hand out candy from my drawer one at a time for students to eat. dependent.

8. On the last test, there were 3 A's, 6 B's, 3 C's, 2 D's, and 2 F's. If I grab one test at random, what is the probability I will grab and A or B?

$\frac{9}{16} = 0.56 = 56\%$

9. A container initially contains 18 titles for a game of charades: 8 movie titles, 3 book titles, 4 TV shows, and 3 plays. Titles are *not replaced* once used.

   a. Is this an example of **independent** or **dependent** events? Explain.

   Dependent because the titles are not replaced.

   b. What is the probability that Susan draws a book title, Ted draws a movie title, and Ann randomly selects a movie title in that order?

$$\frac{3}{18} \cdot \frac{8}{17} \cdot \frac{7}{16}$$

$$\frac{1}{\cancel{3}_{6}} \cdot \frac{\cancel{8}^{4}}{17} \cdot \frac{7}{\cancel{16}_{4}} = \boxed{\frac{7}{264}} = .03 = \boxed{3\%}$$

10. The bag of assorted granola bars that Jeanne bought came with 3 chocolate chip, 3 peanut butter, 2 coconut, and 2 fruit bars.

   a. What is the probability that she eats 2 chocolate chip, then 2 peanut butter bars if they are chosen at random? Show your work.

$$\frac{\cancel{3}^{1}}{\cancel{16}_{8}} \cdot \frac{\cancel{2}^{1}}{\cancel{9}_{3}} \cdot \frac{\cancel{3}^{1}}{\cancel{8}_{4}} \cdot \frac{2}{7} = \boxed{\frac{1}{140} = .7\%}$$

   b. Is this an example of **independent** or **dependent** probability? Explain.

   Dependent because the bars are not replaced.

11. Luke's math teacher writes a number from 1 to 10 in a notebook. She then asks students to guess the number.

   a. If Luke has guessed the number correctly three times in a row, what is the probability he will guess the correct number the next time?

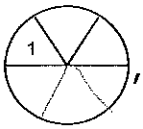
$$\frac{1}{10} = 10\%$$

   b. Is this an example of **independent** or **dependent** probability? Explain.

   Independent because every time Luke guesses, his chances of getting the right # stay the same.

12. If I flip a coin 6 times, find the probability that they all will land on heads.

$$\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} = \boxed{\frac{1}{64} = 2\%}$$

13. If I flip a coin, spin the spinner 

, then roll a die, find the probability that the coin is tails, the spinner lands on 1 and the die lands on a number greater than 4.

$\frac{1}{2} \cdot \frac{1}{6} \cdot \frac{2}{6} = \frac{1}{36} = 2.7\%$ or 3%

14. On the last test, there were 3 A's, 6 B's, 3 C's, 2 D's, and 2 F's. What is the probability that I pull out a C exam, then an F (with replacement)?

$\frac{3}{16} \cdot \frac{2}{16} = \frac{3}{128} = 2.3\%$ or 2%

15. You have 3 pairs of red socks, 2 pairs of green socks, and 7 pairs of white socks. What is the probability of pulling out one red pair and then pulling out one white pair without replacement?

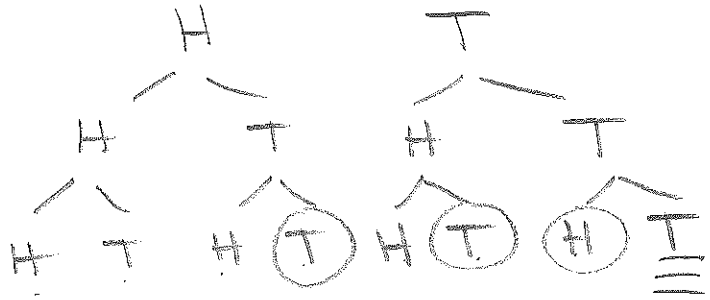
$\frac{3}{12} \cdot \frac{7}{11} = \frac{7}{44} = 15.9$ or 16%

16. On the last test, there were 3 A's, 6 B's, 3 C's, 2 D's, and 2 F's. What is the probability that I pull out a C exam, then an F, then another C exam without replacement?

$\frac{3}{16} \cdot \frac{2}{15} \cdot \frac{2}{14} = \frac{1}{280} = .4\%$

17. I flip a coin 3 times...

a. draw a tree diagram.



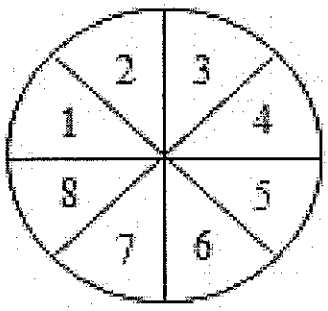
b. What is the probability of flipping all tails?

$\frac{1}{8} = 12.5\%$

c. What is the probability of flipping 2 tails and 1 heads? (count on your tree diagram!)

$\frac{3}{8} = 37.5\%$

18. I spin the spinner , then roll a die...



a. draw a tree diagram.

1 — 1 2 3 4 5 6

2 — 1 2 3 4 5 6

3 — 1 2 3 4 5 6

4 — 1 2 3 4 5 6

5 — 1 2 3 4 5 6

6 — 1 2 3 4 5 6

7 — 1 2 3 4 5 6

8 — 1 2 3 4 5 6

b. What is the probability that the sum of the numbers is 5?

$\frac{4}{48} = \frac{1}{12} = 8.3\%$

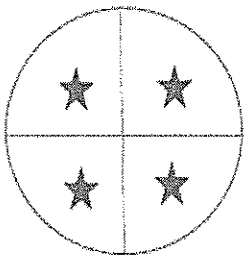
19. What is the probability of pulling a red Starburst in a jar that contains the following colors: 4 pink and 7 yellow.

$\frac{0}{11} = 0\%$

Circle the likelihood of the situation above occurring.

not possible unlikely even chance likely certain

20. What is the probability of landing on a star.



$\frac{4}{4} = 100\%$

Circle the likelihood of the situation above occurring.

not possible unlikely even chance likely certain

Answers:

1) .67, 67%
   21/25, 84%
   13/50, .26
   .22, 22%
   1/20, .05
   ½, 50%
   ¼, .25
3) a. 1/6, .17, 17%
   b. 3/20, .15, 15%
   c. ½, .5, 50%
   d. ½, .5, 50%
   e. 0, 0, 0
   f. 0, 0, 0
4) b. 27
   c. 1/3 = 33%
5) b. 12
   c. 1/12 = 8%
   d. ¼ = 25%
7) I, D, I, I, D
8) 9/16 = 56%
9) a. D
   b. 7/204 = 3.4%
10) a. 1/140 = 0.7%
    b. D
11) a. 1/10 = 10%
    b. I
12) 1/64 = 1.6%
13) 1/36 = 2.8%
14) 3/128 = 2.3%
15) 7/44 = 16%
16) 1/280 = 0.36%
17) b. 1/8 = 13%
    c. 3/8 = 38%
18) 1/12 = 8%
19) Probability: 0
    Likelihood: Not Possible
20) Probability: 1
    Likelihood: Certain