Name: Key Date: _____

Basic Probability

Definition: the extent to which an event is likely to occur, measured by the ratio of the favorable cases to the whole number of cases possible.

Guided Practice:

1. One of these names is to be drawn from a hat. Determine each probability below:
Mary, Jenny, Bob, Marilyn, Bill, Jack, Jerry, Tina, Connie, Joe 10 Total

a. P(3 letter name)= 2/10 = 1/5

b. P(4 letter name)= 4/10 = 2/5

c. P(name starting with B)= 2/10 = 1/5

d. P(name starting with T)= 1/10

e. P(7 letter name)= 1/10

f. P(name starting with S)= 0/10

g. P(name ending with Y)= 3/10

Practice Problem:

2. One of these cards will be drawn without looking. 12 Total

10	4	7	J	S	9	10	2	M	5	4	J

a. P(2) = 1/12

b. P(5)= 1/12

c. P(4)= 2/12 = 1/6

d. P(J)= 2/12 = 1/6

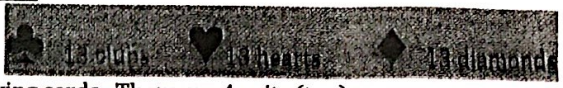
e. P(T)= 0/12

f. P(a number)= 8/12 = 2/3

g. P(a letter)= 4/12 = 1/3

Independent Practice:

♠ 13 spades



Standard deck of 52 playing cards. There are 4 suits (top), each suit has 13 cards: 2 to 10, Jack, Queen, King and Ace.

3. One card is drawn from a well-shuffled deck of 52 cards. What is the probability of drawing:

a. P(ace)= 4/52 = 1/13

b. P(a red 10)= 2/52 = 1/26

c. P(face card-K,J,Q)= 4·3 = 12/52 = 3/13

d. P(not a diamond)= 39/52

e. P(diamond)= 13/52

f. P(seven)= 4/52 = 1/13

g. P(queen)= 4/52 = 1/13

h. P(spade)= 13/52

i. P(jack)= 4/52 = 1/13

j. P(red card)= 26/52 = 1/2

k. P(queen knowing it is a club)= 1/13

l. P(spade given it is a king)= 1/4 (4)

4. Suppose you have a jar of candies : 4 red, 5 purple and 7 green. Find the following probabilities of the following events: 16 Total

a. Selecting a purple candy. 5/16

b. Selecting a green or red candy 11/16

c. Selecting a yellow candy 0/16

d. Selecting any color except a green candy 9/16

e. Find the odds of selecting a red candy 4/16 = 1/4

f. Find the odds of selecting a purple or green candy 12/16 = 3/4

Kelly

Theoretical vs. Experimental Probability Worksheet

Show your work!

Name: _____ Per: _____

1.) What is the theoretical probability that an even number will be rolled on a number cube?
3/6 = 1/2

2.) What was the experimental probability of how many times an even number was actually rolled using the table?
3+6+6 = 15/36

3.) Theoretically if you roll a number cube 36 times, how many times would you expect to roll the number one? 6/36 = 1/6

# on Cube	Frequency
1	8
2	3
3	9
4	6
5	4
6	6

36

4.) How many times did you actually roll the number one in the experiment?
8/36

5.) What is the theoretical probability for rolling a number greater than 4? (5,6)
2/6 not equal to

6.) What was the experimental probability of rolling a number greater than 4?
10/36

7.) What is the difference between theoretical and experimental probability?
what you expect → what actually happened

8.) If a car factory checks 360 cars and 8 of them have defects, how many will have defects out of 1260?
(8/360) x 1,260 (28)

9.) If a car factory checks 320 cars and 12 of them have defects, how many out of 560 will NOT have defects?
(308/320) x 560 (539)

10.) You plant 30 African violet seeds and 9 of them sprout. Use experimented probability to predict how many will sprout if you plant 20 seeds?
(9/30) x 20 (6)

11.) If you are picking a number between 1-20 what is the probability that you will pick a number greater than 14 or less than 4? (3,2,1) (3)
15,16,17,18,19,20 (6)
3+6 = 9/20

12.) If you are picking a number between 1-20 what is the probability that you will pick an even number or a multiple of three?
10 (2,4,6,8,10,12,14,16,18,20) 10+3 (13) 13/20
(3,6,9,12,15,18)

13.) If you are picking a number between 1-20 what is the probability that you will pick a multiple of two or a number greater than 15?
(2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20)
10+5-3 = 12/20 (3/5)

(#14-16 skipped)

Exercises 17 - 24: A single die is rolled. Find the theoretical probability of each.

17. P(3) = 1/6
18. P(9) = 0/6
19. P(even #) = 1/2
20. P(a # > 1) = 5/6
21. P(a # < 1) = 0/6
22. P(a # < 7) = 100%
23. P(a # divisible by 4) = 1/6
24. P(a # 3 or greater) = 4/6 = 2/3 (3,4,5,6)

not equal to

Exercises 25 - 28: Find the odds in favor of each outcome if a single die is rolled.

25. A # 3 1/6 win : loss 1:5 ("odds")
26. A # divisible by 4 _____ (EXP on calc)
27. A # 3 or greater _____
28. An even # _____

Exercises 29 - 36: 2 dice are rolled. Find the theoretical probability of each. Hint: List out all possible outcomes

29. P(sum of 2) = 1/36 (1 2 3 4 5 6 / 1 2 3 4 5 6)
30. P(sum of odd #) = 1/2
31. P(sum of even #) = 1/2
32. P(sum > 6) = 21/36
33. P(sum of < 10) = 30/36 = 5/6
34. P(sum of < 8) = 26/36 (# Put up Dice #)
35. P(sum of 11) = 2/36 = 1/18
36. P(sum of 5 or greater) = 30/36 = 5/6

Exercises 37 - 46: Find the odds in favor of each outcome if 2 dice are rolled.

37. A sum of 2 _____
38. A sum > 6 _____ (EXP on calc)
39. A sum < 10 _____
40. A sum is an odd # _____
41. A sum is an even # _____
42. A sum < 8 _____
43. A sum of 11 _____
44. A sum of 7 or 11 _____