Name: Key

Review for
Std. 5A and 5B

1. What is the theoretical probability that an even number will be rolled on a number cube? $\frac{3}{6}$ [.5]

2. What was the experimental probability of how many times an even number was actually rolled using the table? $\frac{15}{36} = \frac{5}{12}$ [.42]

3. If you roll a number cube 36 times, how many times would you expect to roll the number one? $\frac{1}{6} \cdot 36 =$ [6]

4. How many times did you actually roll the number one in the experiment? [8]

5. What is the theoretical probability for rolling a number greater than 4? $\frac{2}{6} = \frac{1}{3} =$ [.33]

6. What was the experimental probability of rolling a number greater than 4? $\frac{9}{36} = \frac{1}{4} =$ [.25]

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

7. What is the difference between theoretical and experimental probability?
Theoretical is what it should be and experimental is what it actually was when doing an experiment

8. You go to a dance and help clean up afterwards. To help, you collect the soda cans to recycle. There were only two types of soda cans, Coca-Cola, and Sprite. Some cans were on the table and some were in the garbage. You found a total of 72 cans. You found 42 total cans in the garbage and 50 total cans were Coca-Cola. You found 14 Sprite cans on the table. Complete the following charts:

Joint/Marginal Frequency Chart

	Coca-Cola	Sprite	Total
Table	16	14	30
Garbage	34	8	42
Total	50	22	72

Joint/Marginal Relative Frequency Chart

	Coca-Cola	Sprite	Total
Table	.22	.19	.41
Garbage	.47	.11	.58
Total	.69	.30	1

9. Find the probability that one of the 72 cans was found in the garbage can. [.69]

10. Find the probability that the can you picked up was a sprite can and was on the table. [.19]

11. Find the probability that the Can you picked up was a Coca-Cola can and was in the garbage. [.47]

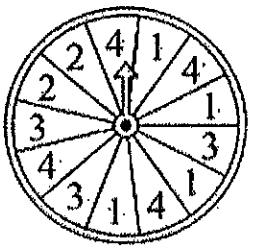
Given the spinner to the right, find the probabilities on 13-16.

13. $P(2)$ $\frac{2}{13} =$ [.15]

14. $P(\text{even number})$ $\frac{6}{13} =$ [.46]

15. $P(\text{number} < 3)$ $\frac{6}{13} =$ [.46]

16. $P(\text{number} > 5)$ [0]



Find the probability for each problem below.

17. You roll a single die numbered 1 to 6 twice. What is the probability of rolling a 6 the first time and an odd number the second?

$\frac{1}{6} \cdot \frac{3}{6} = \boxed{\frac{1}{12}} = \boxed{.08}$

18. In a deck of 52 playing cards, what is the probability of drawing a club and then a second club without replacement?

$\frac{13}{52} \cdot \frac{12}{51} = \boxed{\frac{1}{17}} = \boxed{.06}$

19. There are 45 men on the roster of the football team. 3 are quarterbacks, 10 are offensive lineman, 6 are defensive lineman, 4 are running backs, 6 are linebackers, 8 are defensive backs, 1 is a kicker and the rest are receivers. What is the probability that out of two players chosen at random they would be a quarterback and a receiver?

$\frac{3}{45} \cdot \frac{7}{45} = \boxed{\frac{7}{675}} = \boxed{.11}$

20. There are 7 red, 8 green, and 6 blue marbles in a bag. Kate is going to select one marble at random. What is the probability that she will select a green or blue marble?

$\frac{8}{21} + \frac{6}{21} = \frac{14}{21} = \boxed{\frac{2}{3}} = \boxed{.67}$

21. A card is randomly selected from a deck of 52 cards. What is the probability that the card is a "10" or a "black card"?

$\frac{4}{52} + \frac{26}{52} - \frac{2}{52} = \frac{28}{52} = \boxed{\frac{7}{13}} = \boxed{.54}$

22. In Ms Smith's Math class, 9 of the 14 girls said they "like math", and 7 of the 16 boys said they "like math". If Ms. Smith randomly selects a student, what is the probability that she chooses a girl or someone who likes math?

P(girl) + P(like math) - P(girl & likes math)

$\frac{14}{30} + \frac{16}{30} - \frac{9}{30} = \frac{21}{30} = \boxed{\frac{7}{10}} = \boxed{.7}$

23. A card is randomly selected from a deck of 52 cards. What is the probability that the card is a "face card" or a "red card"?

$\frac{12}{52} + \frac{26}{52} - \frac{6}{52} = \frac{32}{52} = \boxed{\frac{8}{13}} = \boxed{.62}$

24. Two cards are randomly selected from a deck of 52 cards. You pick a card, then you put it back before drawing another card. What is the probability the first card is "red" and the second card is a "face card"?

$\frac{26}{52} \cdot \frac{12}{52} = \frac{1}{2} \cdot \frac{3}{13} = \boxed{\frac{3}{26}} = \boxed{.12}$

Use the formulas for independent/dependent and compound probabilities to do problems 25-27.

25. In the Smith household, they eat dinner together 36% of the time. Some nights they also play board games. They play board games and eat together 19% of the time. What is the probability that they play board games on the nights that they eat together?

$P(A \text{ and } B) = P(A) \cdot P(B|A)$

A: eat dinner
B: play board game

$.19 = .36 \cdot P(B|A)$

$.53 = P(B|A)$

26. Out of 200 students in a senior class, 113 students are either varsity athletes or on the honor roll. There are 74 seniors who are varsity athletes and 51 seniors who are on the honor roll. What is the probability that a randomly selected senior is both a varsity athlete and on the honor roll?

A: varsity
B: honor roll

$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$

$.565 = .37 + .225 - P(A \cap B)$

$.06 = P(A \cap B)$

27. A spinner has 8 equal sections. The even numbers are colored red and the odd numbers are colored yellow. You spin the spinner twice. The probability of getting a yellow on the first spin and a 7 on the second spin is $\frac{3}{8}$. The probability of getting a yellow is $\frac{1}{2}$. What is the probability of spinning a "7"?

A: Yellow 1st
B: 7 on 2nd

$P(A \text{ and } B) = P(A) \cdot P(B)$

$\frac{3}{8} = \frac{1}{2} \cdot P(B)$

$3/4 = P(B)$ or $.75$

The table shows the number of species in the United States listed as endangered and threatened.

	Endangered	Threatened	
Mammals	70	16	86
Birds	80	16	96
Other	318	142	460
	468	174	642

28. Find the probability that a randomly selected endangered species is a bird.

$80/468 = .17$

29. Find the probability that a randomly selected mammal is endangered.

$70/86 = .81$

Use the table above number 28 and 29 to fill in the missing cells in the relative frequency table below. Then answer questions 30-35.

	Endangered	Threatened	Total
Mammals	0.11	.02	.13
Birds	.12	0.02	.14
Other	.5	0.22	.72
Total	.73	.26	1

30. $P(endangered \mid bird)$

$\frac{.12}{.14} = .86$

31. $P(mammal \mid threatened)$

$\frac{.02}{.26} = .08$

32. What is the probability that a threatened species is not a mammal or a bird?

$\frac{.22}{.26} = .85$

33. Determine if being a bird is independent of being endangered.

A: bird
B: endangered

$P(A \text{ and } B) = P(A) \cdot P(B)$

$.12 = (.14)(.73)$

$.12 \neq .1022$

Not independent