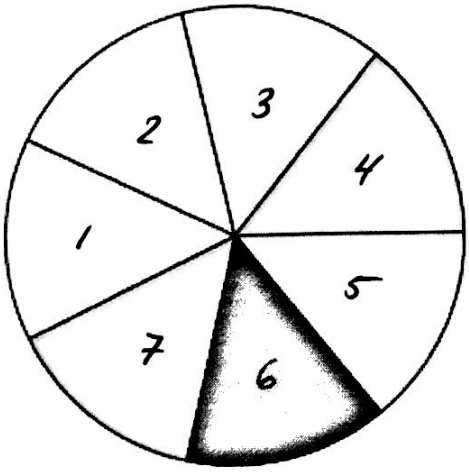
Algebra 2
Chapter 11 – Probability
11.1 – 11.2 All Probability Practice

Name: KEY

Date: _____ Per: _____

Use the image on the right to answer the following questions:



1.) If you spin the spinner 1 time, what is the probability that it would land on a grey piece?

$\frac{2}{7} = .286 = 28.6\%$

2.) If you spin the spinner 1 time, what is the probability that it would land on a black piece?

$\frac{1}{7} = .143 = 14.3\%$

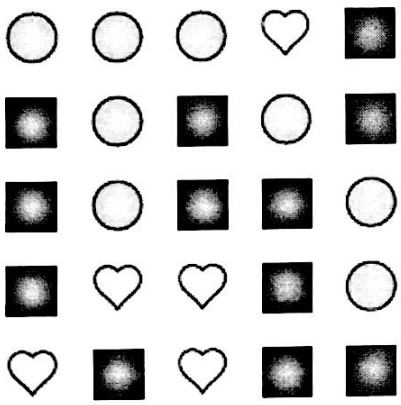
3.) If you spin the spinner 2 times, what is the probability that it would land on a white piece and then a black piece?

$\frac{4}{7} \cdot \frac{1}{7} = \frac{4}{49} = .082 = 8.2\%$

4.) If you spin the spinner 2 times, what is the probability that it would land on a black piece and then a grey piece?

$\frac{1}{7} \cdot \frac{2}{7} = \frac{2}{49} = .041 = 4.1\%$

Use the diagram of shapes on the left to answer the following questions:



5.) If you were to select one shape at random from the array, what is the probability that it will be a circle?

$\frac{8}{25} = .32 = 32\%$

6.) If you were to select 1 shape at random from the array, what shape do you have the greatest probability of selecting

$\frac{12}{25} = .48 = 48\%$ → SQUARE

7.) Which shape has a probability of 8/25 of being selected?

CIRCLE

Decide whether to use permutations or combinations & then find the number of possibilities.

8.) A team of 8 basketball players needs to choose a captain and co-captain

PERMUTATION $_8P_2 = 56$

9.) The student body of 60 students wants to elect four representatives.

COMBINATION $_{60}C_4 = 487{,}635$

10.) There are 20 applicants for three jobs: computer programmer, software tester, and manager.

PERMUTATION $_{20}P_3 = 6840$

11.)The batting order for eight players on a 15 person team

PERMUTATION $_{15}P_8 = 259{,}459{,}200$

12.) A team of 16 field hockey players needs to choose a captain and co-captain.

PERMUTATION $_{16}P_2 = 240$

13.) There are 180 people at a meeting. They each give a Valentine's Day card to everyone else. How many cards were given?

PERMUTATION $_{180}P_2 = 32{,}220$

Find the number of possible outcomes for each scenario.

14.) A coffee shop offers small, medium, and large sizes. Customers can choose between French roast, Italian roast, and American roast.

$3 \cdot 3 = 9$

15.) A new car is available in a sedan model and a hatchback model. It is available in red, white, green, or black.

$2 \cdot 4 = 8$

Find the probability.

16.) There are 4 girls and 5 boys in the class. The teacher needs to pick two students to present at the board. Find the probability that the teacher picks a boy for the first student and a girl for the second student.

$$\frac{{}_4C_1 \cdot {}_5C_1}{{}_9C_2} = .555\overline{5} = 55.5\%$$

17.)A bag contains four red marbles, four blue marbles, eight green marbles, eight yellow marbles, and 6 black marbles. Find the following probabilities:

TOTAL: 30 MARBLES

a.) P(Green then Blue) *With Replacement*

$$\frac{8}{30} \cdot \frac{4}{30} = \frac{32}{900} = \frac{8}{225} = .0356 = 3.56\%$$

b.) P(Red then Blue then Green)

$$\frac{4}{30} \cdot \frac{4}{29} \cdot \frac{8}{28} = \frac{128}{24360} = \frac{16}{3045} = .0053 = .53\%$$

c.) P(Yellow and Yellow)

$$\frac{8}{30} \cdot \frac{7}{29} = \frac{56}{870} = \frac{28}{435} = .0644 = 6.44\% \quad \text{or} \quad \frac{{}_8C_2}{{}_{30}C_2}$$

d.) P(Black then Green) *With Replacement*

$$\frac{6}{30} \cdot \frac{8}{30} = \frac{48}{900} = \frac{4}{75} = .0533 = 5.33\%$$

e.) P(Red then Blue then Green then Yellow then Black)

$$\frac{4}{30} \cdot \frac{4}{29} \cdot \frac{8}{28} \cdot \frac{8}{27} \cdot \frac{6}{26} = \frac{6144}{17100720} = .000360 = .036\%$$

18.) You select two cards from a standard shuffled deck of 52 cards. Find the probability of the following:

a.) P(Red card then Black card)

$$\frac{26}{52} \cdot \frac{26}{51} = \frac{676}{2652} = \frac{13}{51} = .2549 = 25.49\%$$

~~b.) P(King then Queen then Jack)~~

c.) P(even number card THEN red 5)

$$\frac{20}{52} \cdot \frac{2}{51} = \frac{40}{2652} = \frac{10}{663} = .0151 = 1.51\%$$

d.) P(face card then another face card)

$$\frac{12}{52} \cdot \frac{11}{51} = \frac{132}{2652} = \frac{11}{221} = .050 = 5\%$$

e.) P(Red 3 then Black Ace or 7)

$$\frac{2}{52} \cdot \frac{6}{51} = \frac{12}{2652} = \frac{1}{221} = .0045 = .45\%$$

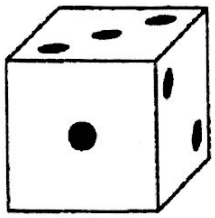
~~f.) P(odd number card or Jack AND 3 of Hearts)~~

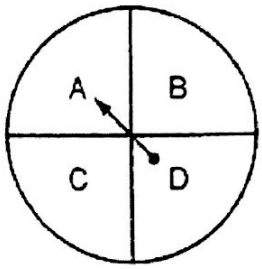
2, 3, 5, 7

g.) P(two prime number cards)

$$\frac{16}{52} \cdot \frac{15}{51} = \frac{240}{2652} = \frac{20}{221} = .0905 = 9.05\% \quad \text{or} \quad \frac{{}_{16}C_2}{{}_{52}C_2}$$

19.) A die is rolled and the spinner is spun. Find the probability of each:





a.) P(1 and A)

$\frac{1}{6} \cdot \frac{1}{4} = \frac{1}{24}$

b.) P(odd and B)

$\frac{3}{6} \cdot \frac{1}{4} = \frac{3}{24} = \frac{1}{8}$

c.) P(composite and C)

$\frac{3}{6} \cdot \frac{1}{4} = \frac{3}{24} = \frac{1}{8}$

d.) P(prime and B)

$\frac{2}{6} \cdot \frac{1}{4} = \frac{2}{24} = \frac{1}{12}$

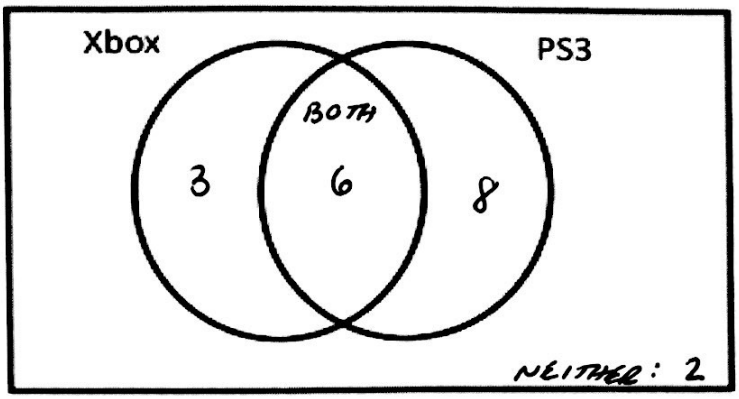
20.) Out of 19 students surveyed, 2 students did not own an Xbox or PS3, 6 students owned a PS3 and an Xbox, and 14 students owned a PS3. Use the Venn diagram below to show your work.

How many students owned the following:

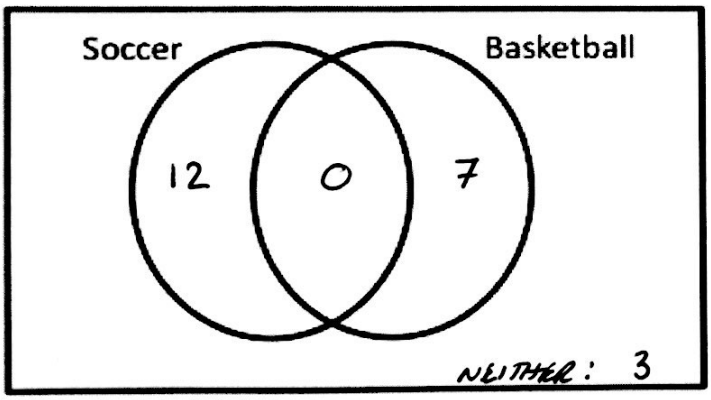
a.) An Xbox: 9

b.) Only a PS3: 8

c.) Both consoles: 6



21.) In a recent survey of 22 Dundee Crown students, 3 of them did not like soccer or basketball. 7 said they only like basketball. None said they like both. Use this situation to answer the following:



How many students liked:

a.) Only Soccer: 12

b.) Soccer or Basketball: 19

c.) Soccer and Basketball: 0

22.)Matthew was ordering pizza for his 47 friends. He took a survey to see who like pepperoni, cheese, and sausage. 3 people said they liked all three, 5 said cheese and sausage, 8 said pepperoni and cheese, and 3 said pepperoni and sausage. 5 people did not choose any of the three. 10 total like pepperoni and 14 liked sausage. How many liked:

a.) Cheese: 31

b.) Just Cheese: 21

c.) Just Sausage: 9