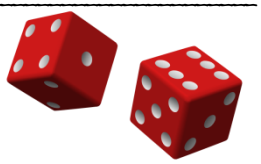
Name Key Date_____ Hour_____

# PROBABILITY REVIEW



Alg 2 Trig

*LEAVE ALL ANSWERS AS A SIMPLIFIED FRACTION*

1. You are getting a new car for graduation. You can choose black, white, silver, red, or blue. You can get leather or fabric interior. You can have either two doors or four doors. How many different cars do you have to choose from?

$5 \cdot 2 \cdot 2 = \boxed{20}$

2. How many different 7-digit phone numbers can be formed if the first 3 digits cannot be repeated and the rest of the digits can be any number?

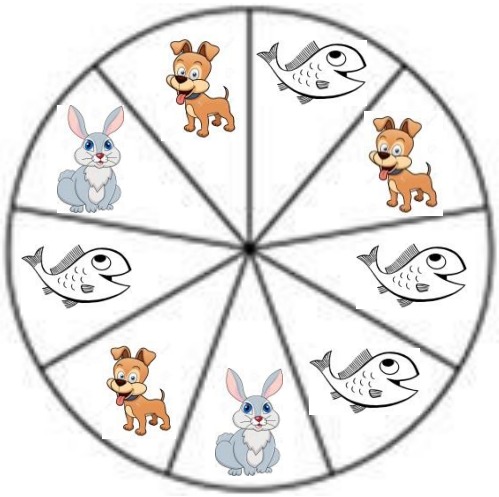
$10 \cdot 9 \cdot 8 \cdot 10 \cdot 10 \cdot 10 \cdot 10 = \boxed{7{,}200{,}000}$

3. How many 5-character passwords can be formed if the first 2 characters are non-repeating digits and the last 3 characters are non-repeating letters?

$10 \cdot 9 \cdot 26 \cdot 25 \cdot 24 = \boxed{1{,}404{,}000}$

4. The spinner to the right is spun 54 times. The following table shows the animal distribution.

| RABBIT | DOG | FISH |
|---|---|---|
| 8 | 20 | 26 |



What is the ***theoretical*** probability that:

a) you land on a rabbit? $\boxed{\frac{2}{9}}$

b) you land on a dog? $\frac{3}{9} = \boxed{\frac{1}{3}}$

What is the ***experimental*** probability that:

c) you land on a fish? $\frac{26}{54} = \boxed{\frac{13}{27}}$

d) you land on a rabbit? $\frac{8}{54} = \boxed{\frac{4}{27}}$

5. When three dice are rolled, what is the probability that one die shows an even number, one die shows an odd number, and one die shows a 4?

$\frac{3}{6} \cdot \frac{3}{6} \quad \frac{1}{6} = \frac{9}{216} = \boxed{\frac{1}{24}}$

6. Using the letters in the word "SPRING", how many five-letter "words" can be made if letters cannot be repeated?

$6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 = \boxed{720}$

7. If replacement occurs, what is the probability of drawing a Queen and then a King from a standard deck of cards?

$$\frac{4}{52} \cdot \frac{4}{52} = \frac{16}{2704} = \boxed{\frac{1}{169}}$$

8. What is the probability of drawing, without replacement, a 5, then another 5, and then an ace from a standard deck of cards?

$$\frac{4}{52} \cdot \frac{3}{51} \cdot \frac{4}{50} = \frac{48}{132600} = \boxed{\frac{2}{5525}}$$

9. Billy has a stack of playing cards consisting of 5 clubs, 7 spades, and 8 hearts. If he selects a card at random from this stack, what is the probability that it is a spade or a club?

$$\frac{7}{20} + \frac{5}{20} = \frac{12}{20} = \boxed{\frac{3}{5}}$$

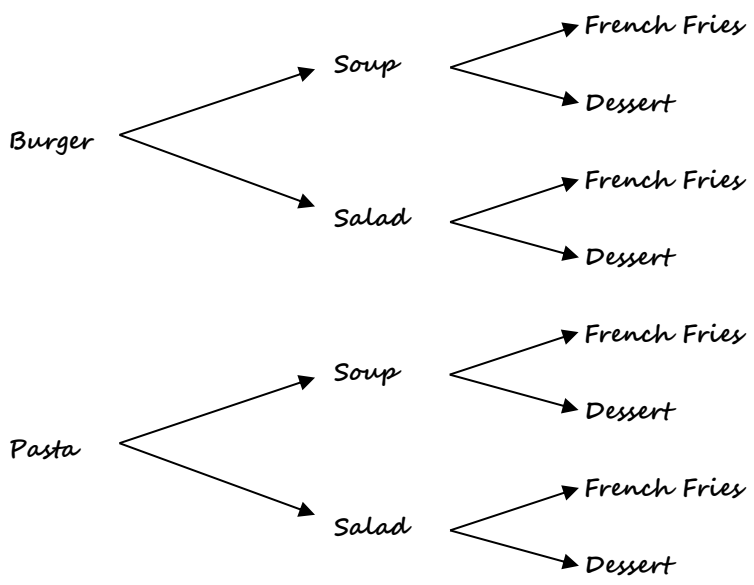
10. Tommy has a standard deck of playing cards. He picks one card out of the deck. What is the probability that it is an Ace or a red card?

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

11. Lizzy has a standard deck of playing cards. She picks one card out of the deck. What is the probability that it is a 3 or a diamond?

$$\frac{4}{52} + \frac{13}{52} - \frac{1}{52} = \frac{16}{52} = \boxed{\frac{4}{13}}$$

12. A restaurant has meals available with the combinations seen in the tree diagram.




LIST THE OUTCOMES

B SO FF
B SO D
B SA FF
B SA D
P SO FF
P SO D
P SA FF
P SA D

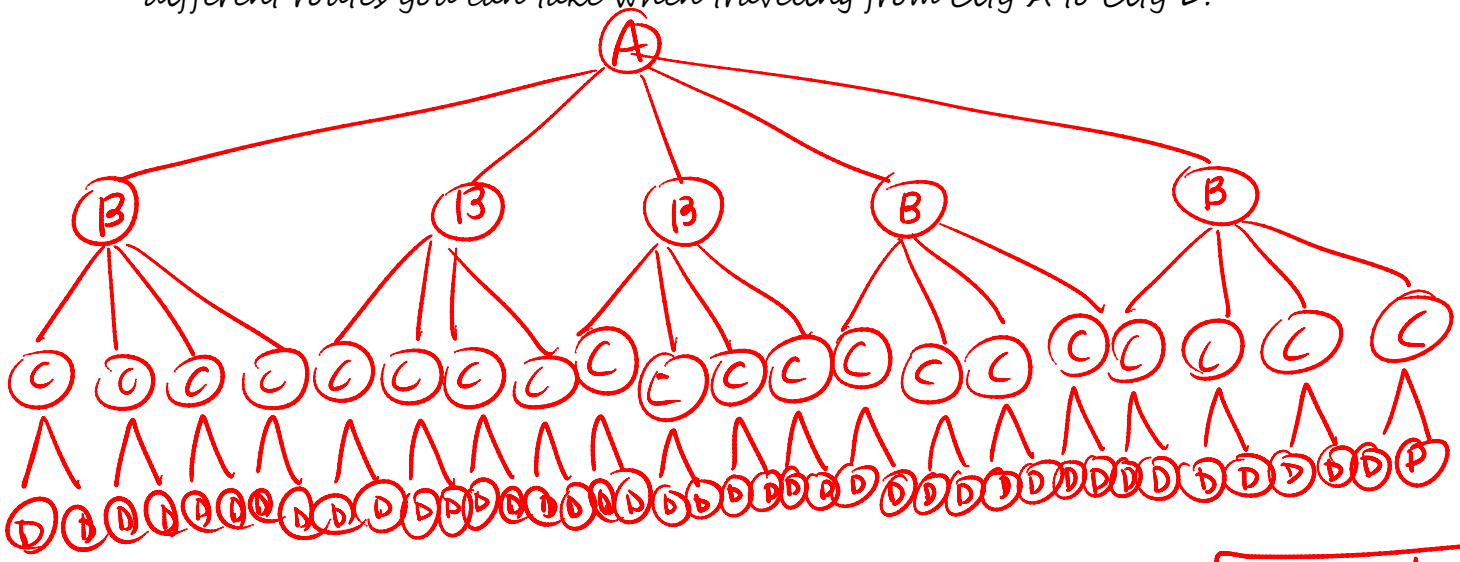
**A selection is made at random.**

a) What is the probability of selecting a meal with a burger and a salad? $\frac{2}{8} = \boxed{\frac{1}{4}}$

b) What is the probability of selecting a meal with pasta, soup, and dessert? $\boxed{\frac{1}{8}}$

c) What is the probability of selecting a meal with French fries? $\frac{4}{8} = \boxed{\frac{1}{2}}$

13. There are 5 roads from City A to City B, there are 4 roads from City B to City C and there are 2 Roads from City C to City D. Please draw a tree diagram to show all the different routes you can take when traveling from City A to City D.



$\boxed{40 \text{ outcomes}}$

14. The table below holds information about Hinsdale Central Students' shoe preference for school during the spring months

| | Sandals/Flip Flops | Tennis Shoes | Top Siders | Other | |
|---|---|---|---|---|---|
| Girls | 449 | 125 | 82 | 133 | 789 |
| Boys | 98 | 518 | 132 | 36 | 784 |
| | 547 | 643 | 214 | 169 | 1573 |

**A student is chosen at random. Find each probability.**

a. P(girl) $\boxed{\frac{789}{1573}}$

b. P(student likes tennis shoes) $\boxed{\frac{643}{1573}}$

c. P(boy, given that they like top siders) $\frac{132}{214} = \boxed{\frac{66}{107}}$

d. P(likes sandals/flip flops | they are a girl) $\boxed{\frac{449}{789}}$

e. P(girl | they like other types of shoes) $\boxed{\frac{133}{169}}$

f. P(top siders, given that they are a girl) $\boxed{\frac{82}{789}}$

| SUIT | Ace | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Jack | Queen | King |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Spades |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Hearts |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Diamonds |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Clubs |  |  |  |  |  |  |  |  |  |  |  |  |  |