

Name: _____ Date: _____ Period: _____

Probability is always written as a fraction or decimal and is always less than or equal to 1.

$$P(\text{Event}) = \frac{\# \text{ in event}}{\text{total \# in set}}$$

- \cap - intersection in Venn diagrams

The word "and" and means multiply in regular probability problems

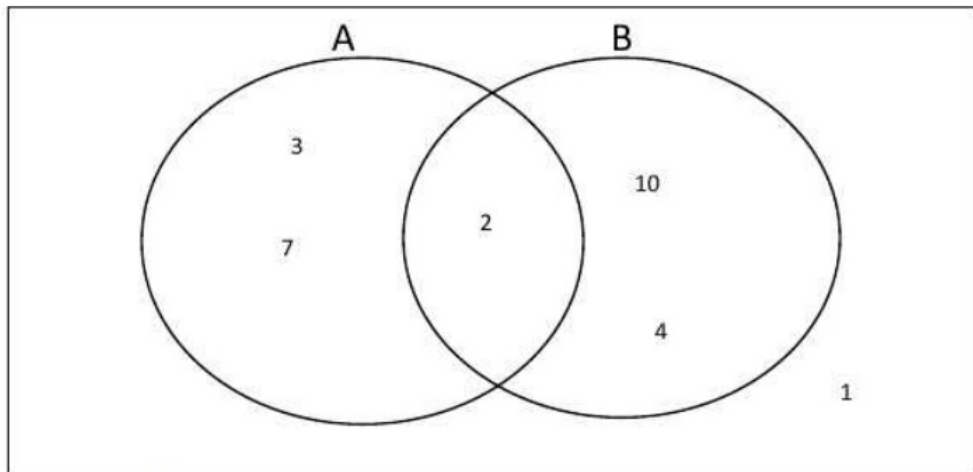
- \cup - union in Venn diagrams.

The word "or" and means add in regular probability problems

- $'$ - complement in Venn diagrams.

The word "NOT"

Examples:



What is the total? 27

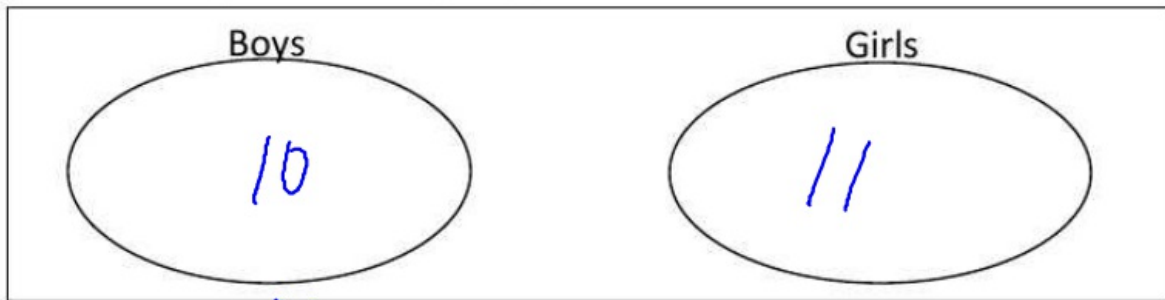
$$\text{EX1: } (A \cup B) = \frac{7+3+2+10+4}{27} = \frac{26}{27}$$

$$\text{EX2: } (A \cap B) = \frac{2}{27}$$

$$\text{EX3: } A' = \frac{10+4+1}{27} = \frac{15}{27} = \frac{5}{9}$$

More Examples:

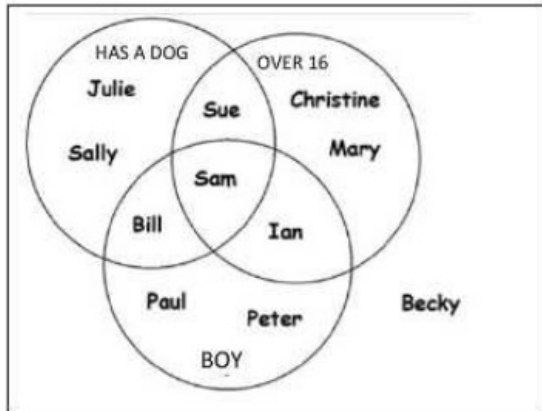
Let's take a tally of the amount of boys and girls in the classroom.



1. P(boy) : $\frac{10}{21}$

2. P(girl) : $\frac{11}{21}$

3. What do you get when you add those two probabilities? $\frac{10}{21} + \frac{11}{21} = \frac{21}{21} = \boxed{1}$



4. P(Has a Dog) $\frac{5}{11}$

5. P(Over 16) $\frac{5}{11}$

6. P(Has a Dog \cap Over 16) $\frac{2}{11}$

7. P(Boy \cup Over 16) $\frac{8}{11}$

8. P(Has a Dog \cap Boy) $\frac{1}{11}$

9. P(Has a Dog \cap Over 16 \cap Boy) $\frac{1}{11}$

We asked a group of 50 people whether they like Game of Thrones and Power. 18 people answered they like Game of Thrones and 25 like Power. 11 say they like both shows. Display this information in the Venn Diagram.

10. P(G of T) $\frac{18}{50} \div 2 = \frac{9}{25}$

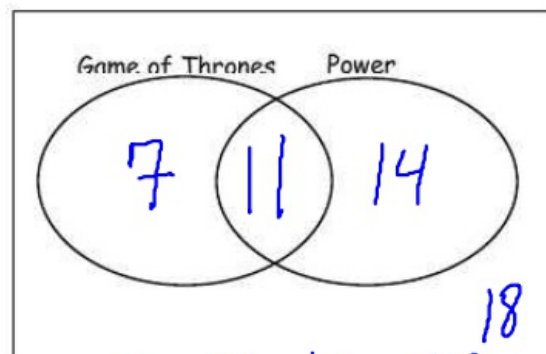
11. P(Power) $\frac{25}{50} = \frac{1}{2}$

12. P(G of T \cap Power) $\frac{11}{50}$

13. P(G of T \cup Power) $\frac{32}{50} \div 2 = \frac{16}{25}$

14. P(G of T \cap Power)^c $7 + 14 + 18 = \frac{39}{50}$

15. P(G of T \cup Power)^c $\frac{18}{50} = \frac{9}{25}$



$$\frac{18}{11} - \frac{11}{14} = \frac{14}{4} = \frac{32}{18}$$