

KEY

14.4 Conditional Probability Assignment– Grandma’s Birthday



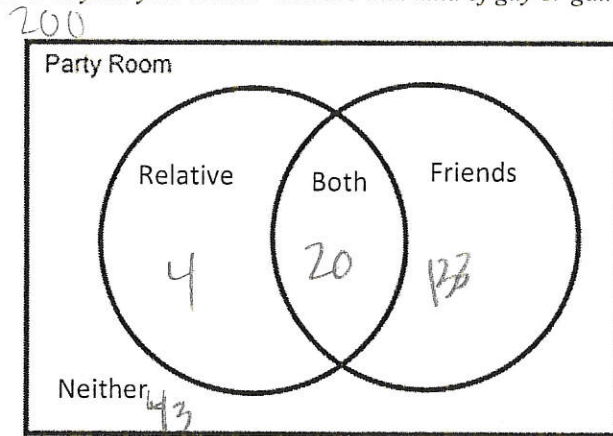
Name: _____

Hr: _____

You’ve been invited to Grandma Adam’s birthday party at the haunted mansion! All your crazy relatives and friends will be there. When you arrive, this is what you discover:

- 200 people are at the party
- 24 are relatives
- 43 are neither a friend or a relative
- 20 are both a friend and a relative

1. How many of your friends came to the party? Use the information above to complete the Venn diagram. *Note: a friend is anyone you’ve met. You are that kind of guy or gal.*



$$\begin{array}{r}
 200 \\
 - 4 \\
 - 20 \\
 - 43 \\
 \hline
 133
 \end{array}$$

2. Once you’ve completed the Venn diagram, create a two-way table that displays the same data.

	Friend	Not Friend	Total
Relative	20	4	24
Not Relative	133	43	176
Total	153	47	200

Ready:

Use the information from your table on number 2 to answer the following questions. Use F to represent "Friend" and R to represent "Relative."

3. Find P(F) $\frac{153}{200} = 76.5\%$

4. Find P(R) $\frac{24}{200} = 12\%$

5. Find P(R')

$$\frac{176}{200} = 88\%$$

6. Find P(F')

$$\frac{47}{200} = 23.5\%$$

7. Find P(R|F)

$$\frac{20}{153} = 13.07\%$$

8. Find P(F|R)

$$\frac{20}{24} = 83.3\%$$

9. Find P(F|R')

$$\frac{133}{176} = 75.6\%$$

10. Find P(R|F')

$$\frac{4}{47} = 8.5\%$$

11. Find P(R'|F')

$$\frac{43}{47} = 91.5\%$$

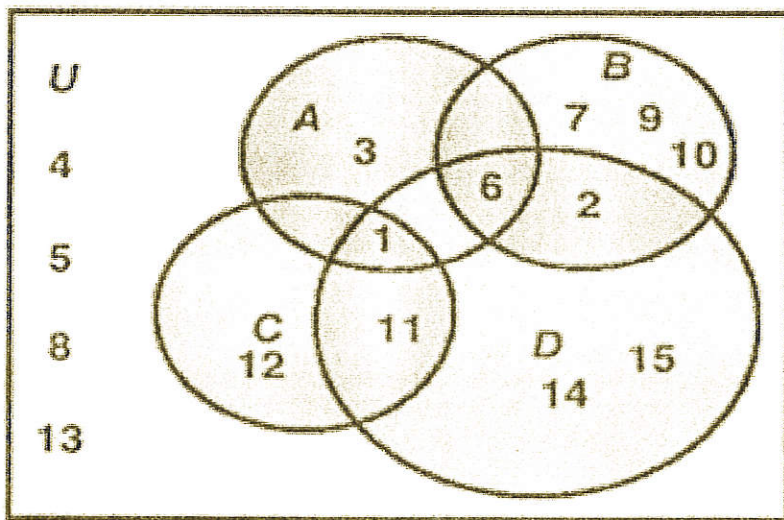
12. Find P(F ∪ R)

$$\frac{153}{200} + \frac{24}{200} - \frac{20}{200} = 78.5\%$$

13. Find P(F ∩ R)

$$\frac{24}{200} = 12\%$$

Use the Venn diagram to find each of the following. (Examples 2 and 3)



15 total

14. A ∪ B {1, 2, 3, 6, 7, 9, 10}

17. A ∩ D {1, 6}

20. Find P(C ∪ D) $\frac{7}{15} = .47 = 47\%$

15. C ∪ D {1, 2, 6, 11, 12, 14, 15}

18. A' {2, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15}

21. P(B|A) $\frac{1}{3} = .33 = 33\%$

16. A ∩ B ∩ D {6}

19. (A ∪ B) ∪ C {1, 2, 3, 6, 7, 9, 10, 11, 12}

22. Find P(A ∩ B) $\frac{1}{15} = .067$ or 6.7%