Day 2: Two-Way Tables Date _____

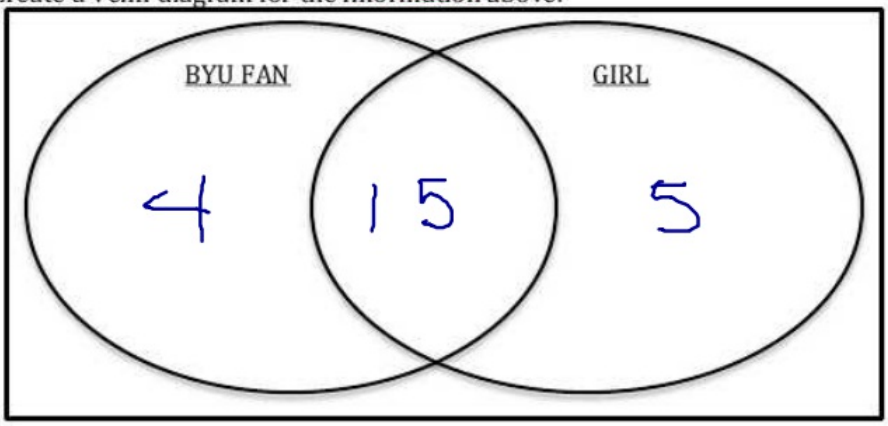
A two-way table records _____ data sets _____ into its frequency (or counts) and the category title. In a two-way table you can only be in **one** of the horizontal categories and **one** of the vertical categories.

We will fill out the table below with data from our class and find the totals.

	Team: BYU	Team: U of U	**Total**
Boy	4	5	9
Girl	15	5	20
Total	19	10	29

marginal

Create a Venn diagram for the information above:



Find the following probabilities.

1. $P(boy) = \frac{9}{29}$
2. $P(BYU\ Fan)$ $\frac{19}{29}$
3. $P(boy \cap UofU\ Fan) = \frac{5}{29}$
4. $P(girl \cap UofU\ Fan) = \frac{5}{29}$
5. $P(boy \cup BYU\ Fan) = \frac{23}{29}$
6. $P(girl \cup BYU\ Fan) = \frac{24}{29}$
7. $P(BYU)^c = \frac{10}{29}$

Conditional

$P(boy \mid UofU) = \frac{5}{10}$

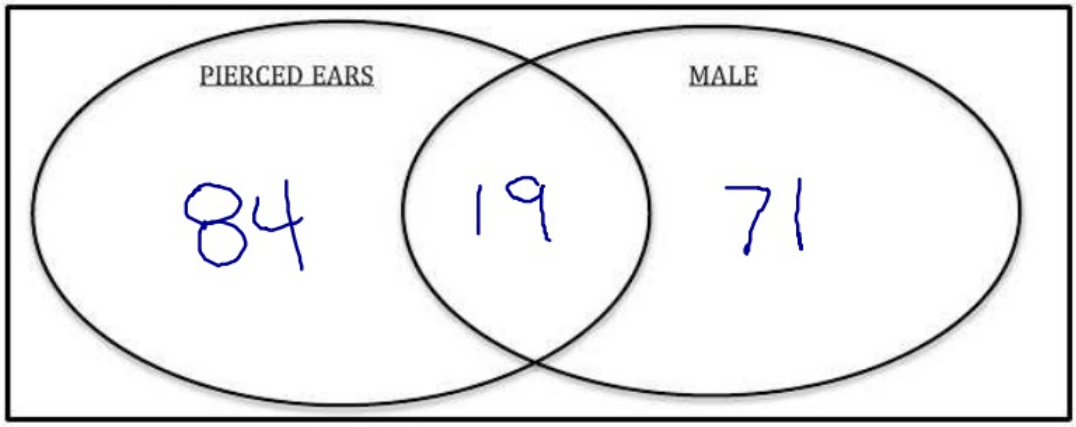
A {1, 3, 5, 6}

B {2, 4, 6}

A ∪ B {1, 3, 5, 6, 2, 4}

	Pierced Ears?		
Gender	Yes	No	**Total**
Male	19	71	90
Female	84	4	88
Total	103	75	178

Create a Venn diagram for the information above:



8. $P(pierced\ ears) = \frac{103}{178}$

9. $P(female) =$

10. $P(male \cap pierced\ ears) = \frac{19}{178}$

11. $P(female \cap pierced\ ears^c) = \frac{4}{178}$ (not pierced)

12. $P(male \cup pierced\ ears) = \frac{90+103-19}{178} = \frac{174}{178}$

13. $P(pierced\ ears \cup male) = \frac{174}{178}$

Marginal probabilities are Subtotals

Examples:

Where are marginal probabilities always located in a two-way relative frequency table?

Totals

Joint probabilities: these are the probabilities in a two-way table of events things

joint sets, such as boys and piercedears

Which of the probabilities above is a joint probability? WHY? _____

_____

Where are joint probabilities always located in a two-way relative frequency table?

_____

A deck of cards is commonly used in probability questions. To ensure everyone is familiar with a deck of cards, answer the following:

How many cards are in a standard deck of cards? 52

How many suits are in a deck? 4 How many cards are in each suit? 13

Name the suits: Hearts, Diamonds, Spades, Clubs

What are the cards in each suit? _____

Which cards are face cards? Jack, Queen, King

You have a standard deck of cards. You will pull out one card at random. Find the following probabilities.

14. $P(club) =$ $\frac{13}{52}$

15. $P(queen) =$ $\frac{4}{52}$

16. $P(heart \cap face\ card) =$ $\frac{3}{52}$

17. $P(diamond \cup king) =$ 13 diamonds + 4 kings - King diamonds = $\frac{16}{52}$

18. $P(heart)^c =$ $P(heart)\ \frac{13}{52}$, $P(heart)^c = \frac{39}{52}$