

AMDM - Fall 2016

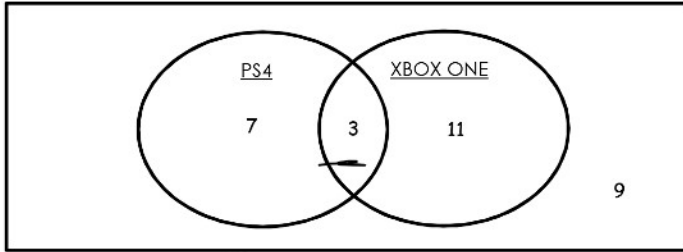
Name: _____

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Unit 2 - SAS 1 Notes: Using Venn Diagrams

Definition: A Venn diagram is a diagram representing mathematical or logical sets visually as circles or closed curves within an enclosing rectangle.

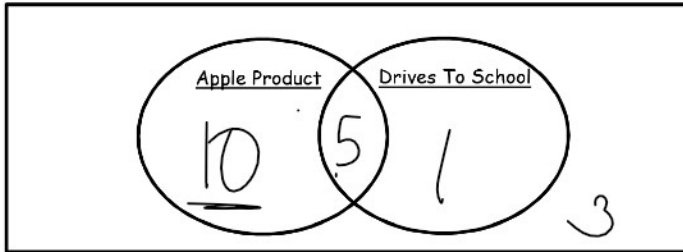
Example: The following is a Venn diagram representing the number of students in a class of 30 that have a PS4 and/or an XBOX ONE.



10 PS4
 30 students
 14 XBox1
 9 neither
 3 both

How many students own a PS4? 10
 How many students own an XBOX ONE only? 11
 What does the 3 represent? own both
 What does the 9 represent? don't have either

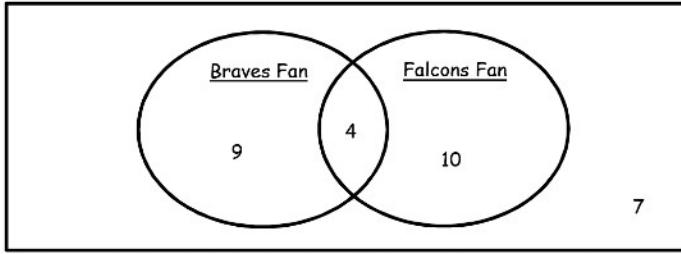
Directions: Take a survey of your class on who owns an apple product (iPhone, iPod, Macbook, etc.) and who drives to school every day. Make a Venn diagram displaying this data.



19 students
 15 - Apples
 6 - drive to school
 5 - both

How many students own an apple product? 15
 How many drive to school? 6
 How many own an Apple product or Drive to school?
 16

Part 1 Students in Mrs. Deliciousham's Homeroom
(Leave answers as simplified fraction or a percent)



1. Analyze the data in the Venn diagram and list five facts about Mrs. Deliciousham's homeroom.

13 ♂ 7 neither

30 in class

10 only Falcons

14 ♀ 4 both

9 Braves

2. If a student is selected at random from Mrs. Deliciousham's homeroom, what is the probability that the student is a Braves fan AND a Falcons fan? Explain your reasoning.

$$P(B \cap F) = \frac{4}{30} = \frac{2}{15}$$

$$\frac{4}{30} \quad \frac{2}{15}$$

3. If a student is selected at random from Mrs. Deliciousham's homeroom, what is the probability that the student is NOT a Braves fan or a Falcons fan? Explain your reasoning.

$$P(\text{not Braves or Falcons}) = \frac{7}{30}$$

4. Find the probability that someone is Braves fan or a Falcons fan. (Hint: remember that someone who likes both would still count) Explain your reasoning.

$$P(B \cup F) = \frac{23}{30}$$

5. Find the probability that someone is a Braves fan GIVEN they are NOT a Falcons fan. Explain your reasoning.

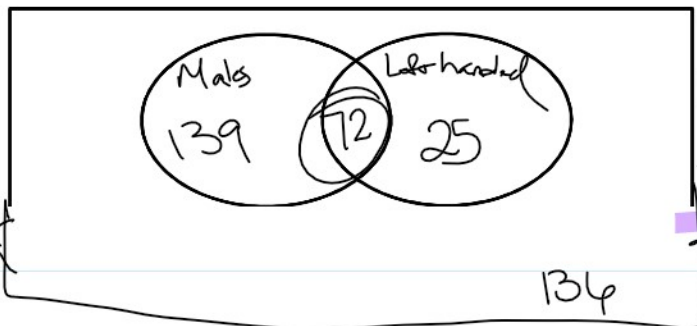
$$\frac{9}{16}$$

Part 2

372 professional golfers (male and female) were surveyed. The survey results indicated the following:

- 211 are male, 97 golfers swing the club left-handed, and 25 of the left-handed golfers are female.

Draw a Venn diagram and label the data.



372 total

211 male

97 left-h

25 - left handed females

6. What is the probability that a golfer selected at random is male? Female? Explain your reasoning.

$$P(M) = \frac{211}{372} = .57 \text{ OR } 57\% \quad P(F) = .43 \text{ OR } 43\%$$

7. What is the probability that a golfer is right handed? Explain your reasoning.

$$P(R) = \frac{215}{272} = .74 \text{ OR } 74\%$$

BOP

8. Find the probability P(Female or Left-Handed). Explain your reasoning.

$$P(F) + P(LH) = 43\% + 19\% = 62\%$$

m. 5. B. 3

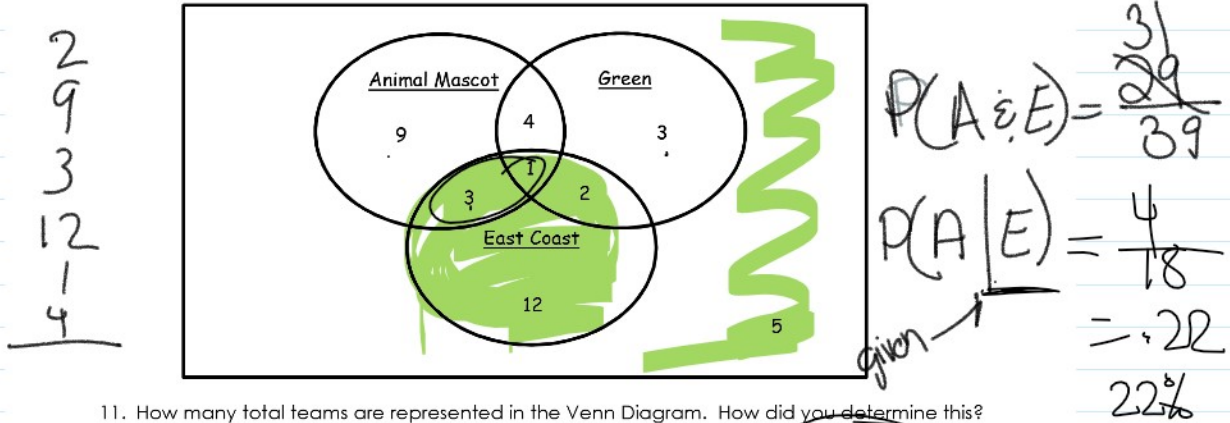
9. What is the probability that a golfer is a male GIVEN they are right handed? Explain your reasoning.

10. Write your own probability question about the above venn diagram and answer it.

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Triple Venn Diagrams

Example: The following is a Venn diagram representing the American Whiffle Ball League (AWBL) teams that have an animal mascot, green in their team colors, and location on the east coast.



11. How many total teams are represented in the Venn Diagram. How did you determine this?

$$9 + 4 + 1 + 3 + 2 + 3 + 12 + 5 = 39$$

12. How many AWBL teams have an animal mascot, the color green, and are located on the east coast? Explain your reasoning. What would be a good name for this team?

$$34 = 39 - 5 =$$

13. How many AWBL teams have the color green in their team colors and are located on the east coast? Explain your reasoning.

$$10 + 15 = 25 \quad 4 + 3 + 1 + 2 + 3 + 2 = 25$$

14. From the above Venn diagram, what is the probability of randomly selecting a team with no animal mascot, no color green, and not located on the east coast? Explain your reasoning.

$$\frac{5}{39} = .128 \approx 12.8\%$$

15. From the above Venn diagram, what is the probability of randomly selecting a team with green colors and an animal mascot, but not located on the east coast? Explain your reasoning.

$$\frac{16}{39} = .41 \approx 41\%$$

16. From the above Venn Diagram, what is the probability that a randomly selected team is from the East Coast but does not have the color green?

$$\frac{15}{39} = 38\%$$

17. Write your own probability question about the above venn diagram and answer it.

EXTENSION: Survey the class about 3 things and create a triple venn digram. Be creative when choosing the things to ask, remember they do not necessarily have to be directly related to each other. Collect your data and show me, then you will draw a final version of your venn digram on a piece of colored paper.

You are in Mr. Clayton's class and your current grades are as follows:

Tests {77, 85, 62, 74, 82}

Classwork 89

Projects 82

You study hard for the final and end up with an 80 in the class. What was your grade on the final?