Probability & Venn Diagrams

**CORE STANDARDS**

HSS.CP.A.1

HSS.CP.B.6

HSS.CP.B.7

LESSON

**7-1**

OBJECTIVE **1. SWBAT use Venn Diagrams with probability and sets.**

Venn Diagrams

Suppose a student conducted a dental The student used Venn

hygiene survey among 8 of her friends. Diagrams to organize the

Each friend filled out a survey card. results of her survey.

An example response is shown.

Discuss the differences in the three versions of Venn Diagrams.

*Floss*

*Dentist*

2

3

2

1

*Floss*

*Dentist*

Ann

Roy

Rob

Julie

Paul

Floyd

Helen

Drew

*Floss*

*Dentist*

0.25

0.375

0.25

0.125

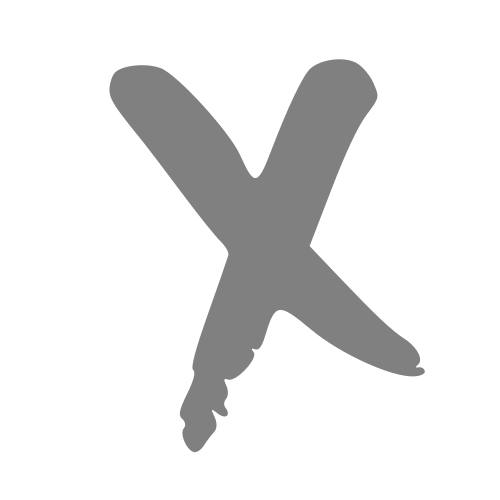
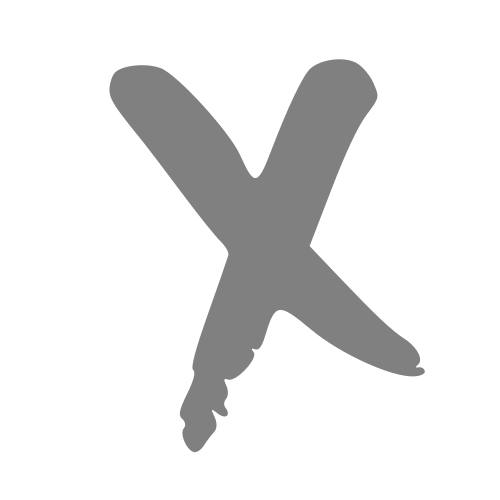
*Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*Do you floss every day? Y N*

*Do you visit the dentist*

*at least once a year? Y N*

*Rob*



NOTES

Definitions

 probability that events *A* or *B* (or both) occur.

 probability that events *A* and *B* both occur (together or simultaneously).

 probability that event *A* occurs, given that event *B* has already occurred.

 probability that event *A* does not occur. (the complement of *A*)

Formulas







EXAMPLES

**1.** Use the dental hygiene survey above to answer the following.

A) Name the friends who don't floss every day.

B) How many friends floss every day and visit the dentist at least once a year?

C) What proportion of friends visit the dentist at least once a year?

**2.** A local police department collected data on what types of vehicles and people

received speeding tickets. 42% of tickets were given to females, 32% were issued to

red cars, and 21% were given to females in red cars. Create a Venn Diagram to

model this data.

**3.** Use the Venn Diagram at the right to find each probability.

A)  E) 

*A*

*B*

0.06

0.15

0.71

0.08

B)  F) 

C)  G) 

D)  H) 

PRACTICE **7-1** NAME\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*C*

*D*

1. Given: 0.24, 0.64, 0.16
   1. Correctly label the Venn Diagram. C) 
   2.  D) 
2. A researcher took a random sample of 40 cars from a used car lot. He categorized them based on whether or not they fit in three categories: Convertible, 4-Wheel Drive, or Stick-shift Transmission. The Venn Diagram at the right shows the results of his analysis.

*4WD*

*Convertible*

*Stick*

10

4

5

1

3

8

2

7

* 1. How many cars were Convertibles?
  2. What proportion of cars were 4WD and Stick?
  3. What is the probability of randomly choosing one of these cars that is Convertible or 4WD?
  4. How many cars were Stick and Convertible?
  5. What proportion of cars were Convertible and 4WD, but not Stick?
  6. How many cars were not 4WD?
  7. Find 

*E*

*F*

0.55

0.25

1. Given:  and the partial Venn Diagram at the right.
   1. Fill in the rest of the Venn Diagram. C) 
   2.  D) 
2. The following is a list of registered voters from a certain precinct. Use it to complete a 'count' Venn Diagram.

**Name Party Gender**

*Dem*

*M*

Steve Anderson Rep M

Sharon Baker Dem F

Doris Decker NA F

Lance Fletcher Dem M

Justin Meyers Rep M

Oscar Norris Dem M

Hannah Schmidt Dem F

1. Given: , , and 

Find 