

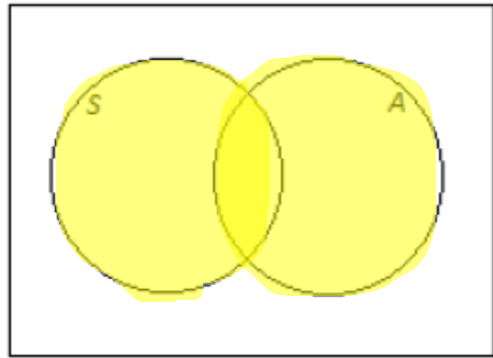
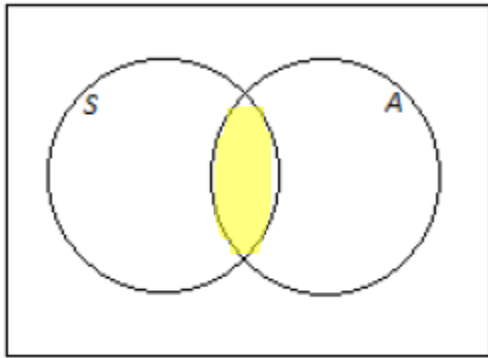
Functions & Trig.
Venn Diagrams

Name _____

1.) At a high school, some students take Spanish and some do not. Also, some students take an arts subject, and some do not. Let S be the set of the students who take Spanish. Let A be the set of students who take Art. On the Venn diagrams given, shade the region representing the students who:

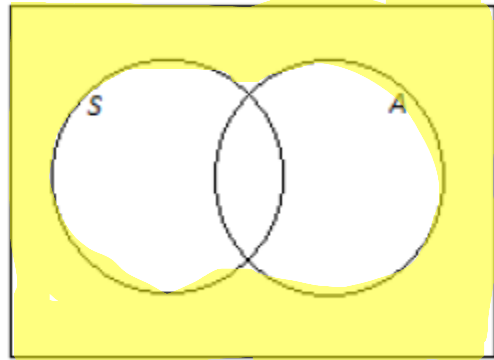
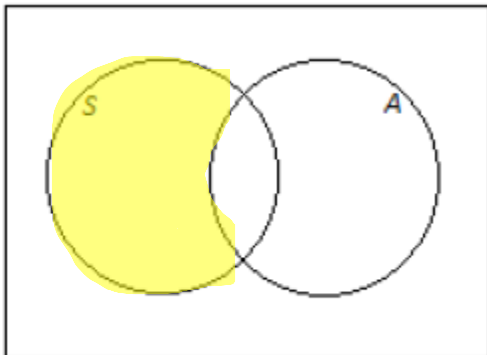
a. take Spanish and Art

b. take Spanish or Art *Spanish or Art or both*



c. take Spanish but do not take Art
Spanish only

d. do **not** take Spanish or Art



2.) A real estate ad in a metropolitan area features the following Venn diagram, showing the probability that a home in this metropolitan area has a garage and/or pool.

a. P(a pool) **.12**

b. P(a garage) **.89**

c. P(a garage and a pool) **.05**

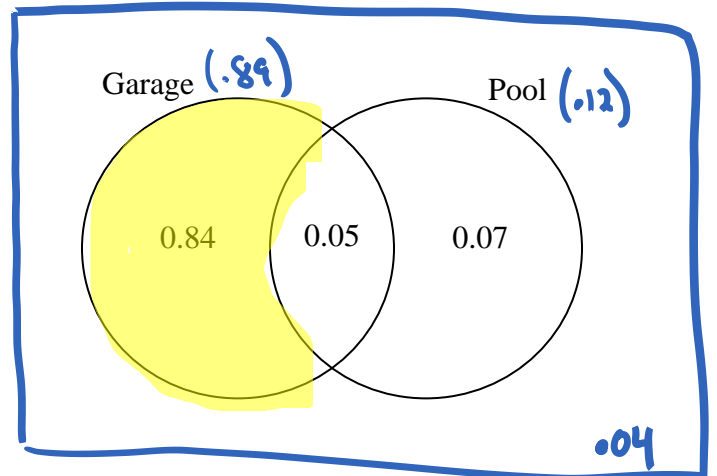
d. P(a garage or a pool) **.96**

e. P(a garage but not a pool) **.84**

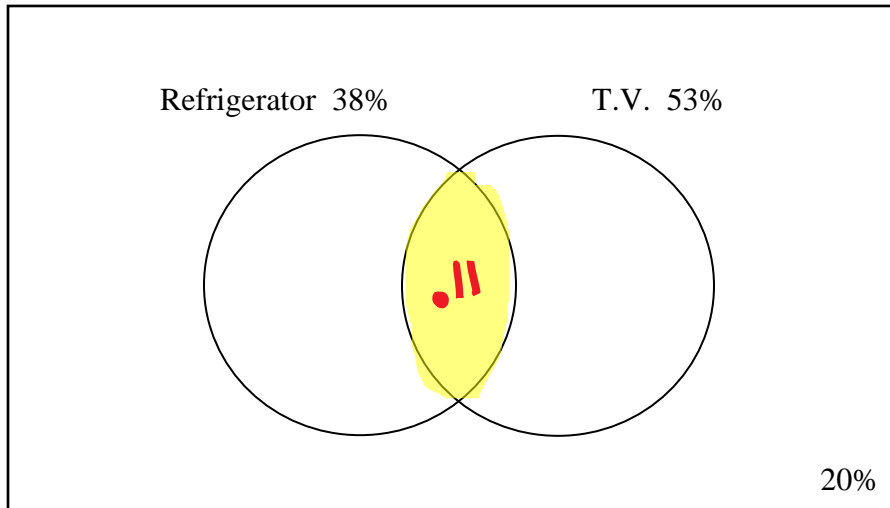
f. P(a pool but not a garage) **.07**

g. P(neither a pool nor a garage nor both)

outer box → **.04**



3.) You discover a college newsletter from 1976, featuring the following Venn diagram shown below. It shows the percentage of dorm rooms on a college campus that have refrigerators and/or T.V's.



a. Find the probability that a college dorm room in 1976, has a refrigerator and a T.V.

$$P(F \cup T.V.) = P(F) + P(T.V.) - P(F \cap T.V.)$$

$$.80 = .38 + .53 - P(F \cap T.V.)$$

$$.80 = .91 - P(F \cap T.V.)$$

$$\begin{array}{r} .91 \\ - .91 \\ \hline \end{array}$$

$$-.11 = -P(F \cap T.V.)$$

$$P(F \cap T.V.) = .11$$

b. Find the probability that a college dorm room in 1976, has a T.V. given that it has a refrigerator.

$$P(T.V. | F) = \frac{P(T.V. \cap F)}{P(F)}$$

$$= \frac{.11}{.38}$$

$$P(T.V. | F) = .2895$$

4.) a. List the sample space of the outcomes of rolling a standard 6-sided die.

b. List the sample space of the “even numbers”.

c. List the sample space of the “odd numbers”.

d. List the sample space of all “numbers larger than 3” on a die.

e. Are “even numbers” and “odd numbers” mutually exclusive?

f. Are “even numbers” and “numbers larger than 3” mutually exclusive?

What is mutually exclusive?