AMDM

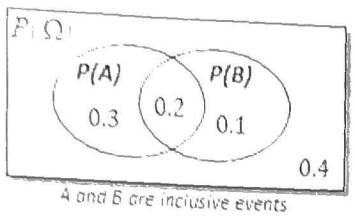
Unit 2 Quiz 1 Review

Name:

1. Consider the VENN diagrams at the right to help you answer the following.

A. P(A)

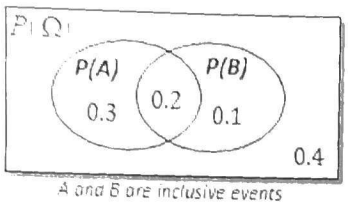
Decimal:



0.5

B. P(A and B) =

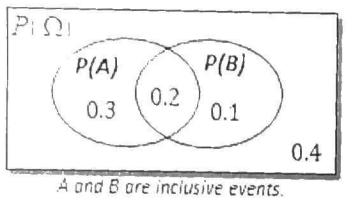
Decimal:



0.2

C. P(A or B) =

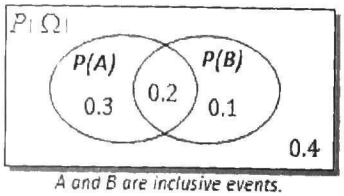
Decimal:



0.6

D. P(A^c) = P(A') =

Decimal:

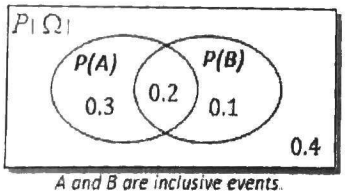


Not A

0.5

E. P(A and B^c) = $P(A \cap B')$ =

Decimal:

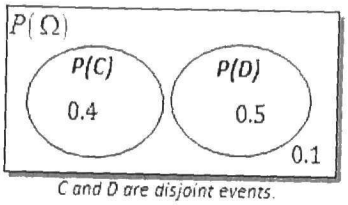


A and Not B

0.3

F. P(C) =

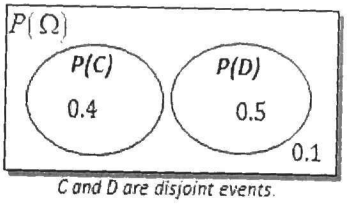
Decimal



0.4

G. P(C and D) =

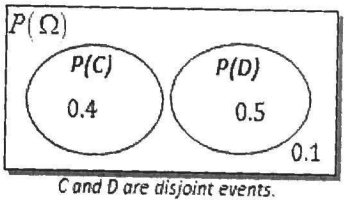
Decimal:



0.0

H. P(C or D) =

Decimal:

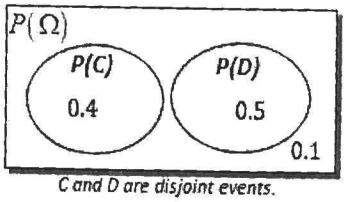


0.9

I. P(C^c) = P(C') =

Not C

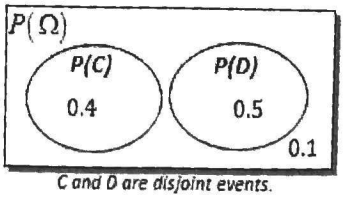
Decimal:



0.6

J. P(C^c and D^c) = $P(C' \cap D')$ =

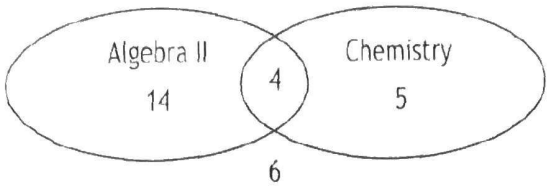
Decimal:



Not C and Not D

0.1

2. Ms. Snow conducted a survey of her homeroom. She asked students what math course and what science course they were taking this semester. Below are the results.



Total
29

a. If a student is selected at random from Ms. Snow's homeroom, what is the probability that the student is taking Algebra II and Chemistry?

$\frac{4}{29}$ 0.138

b. Find the probability : **P(Algebra II or Chemistry).**

$\frac{23}{29}$ 0.793

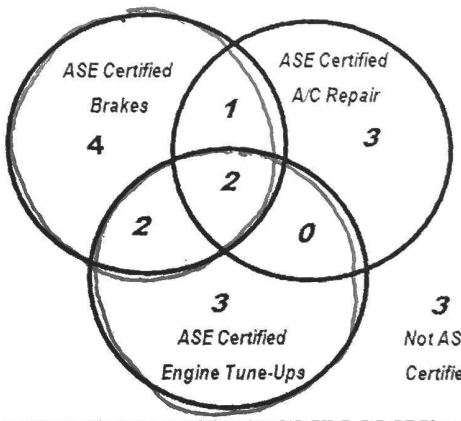
c. If a student is selected at random from Ms. Snow's homeroom, what is the probability that the student is not taking either Algebra II or Chemistry? **P((Algebra II or Chemistry)^c)**

$\frac{6}{29}$ 0.207

d. Find the probability of a student taking Chemistry, given that the student is not taking Algebra II, or **P(Chemistry | not taking Algebra II).**

$\frac{\text{Chemistry and Not Algebra}}{\text{Not Algebra}} = \frac{5}{11}$ 0.455

3. A manager that owns 3 local area Car Maintenance Garages was researching certifications of mechanics that worked for her company. Consider the following Venn diagram.



Total = 18

a. What is the probability that a randomly selected mechanic from her 3 garages is ASE certified to work on Brakes? **P(Brakes)**

$4+1+2+2$ $\frac{9}{18}$ 0.5

b. What is the probability that a randomly selected mechanic from her 3 garages is ASE certified to work on Brakes or A/C? **P(Brakes or A/C)**

or → combine

$4+1+2+2+3$ $\frac{12}{18}$ 0.67

c. What is the probability that a randomly selected mechanic from her 3 garages is ASE certified to work on Brakes and Engine Tune-Ups? **P(Brakes and Tune-Ups)**

and → overlap

$2+2$ $\frac{4}{18}$ 0.22

d. What is the probability that a randomly selected mechanic that is certified in Brakes given that the mechanic is certified to do Tune-Ups? **P(Brakes | Tune-Ups)**

$\frac{\text{Brakes and Tune-Ups}}{\text{Tune-Ups}} = \frac{4}{7}$ 0.57

At a car manufacturing plant each option is equally likely to be selected under each category to build a car.

Model: Toyonda Corvic

Trim Level	Exterior Color	Interior Color
DX	Black	Black
EX	Red	Gray
Si	Blue	
	White	

4. Create a tree diagram showing all possible versions of the car from the choices above if one of each category is used to create the car.

24 options

5. If each option under each category is equally likely to be selected, what is the probability that the first car being made on a given day has a Black Exterior and a Black Interior?

DX → Black → Black

EX → Black → Black

Si → Black → Black

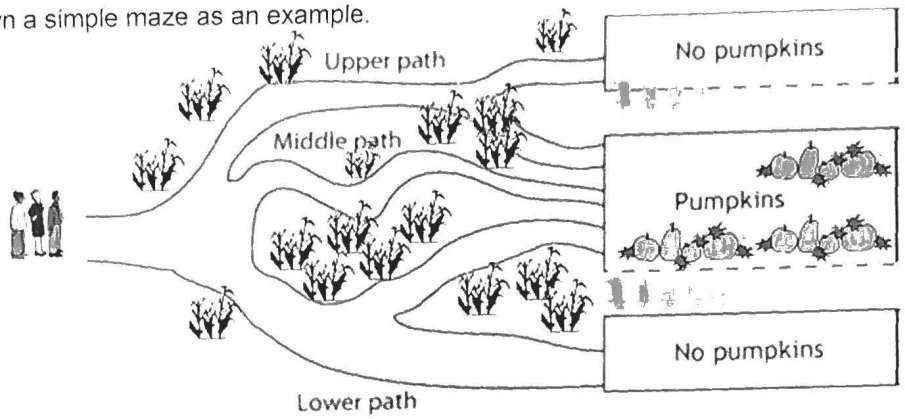
$\frac{3}{24}$

0.125

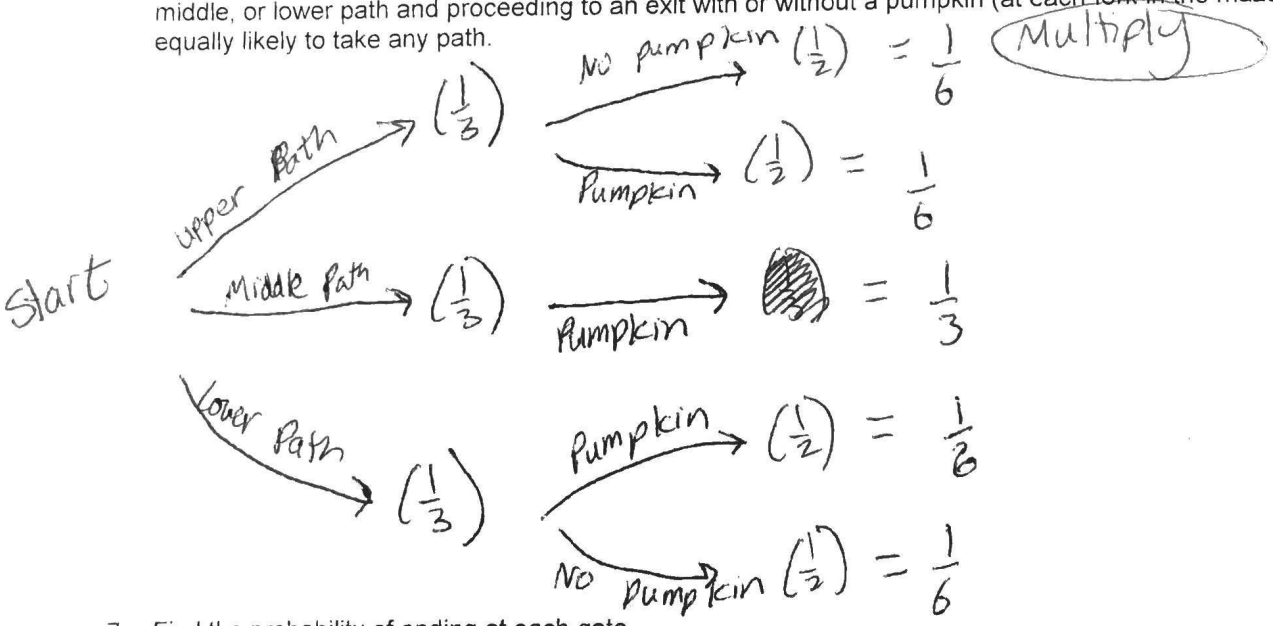
A church group in Washington state sells pumpkins every year to raise money for the children of their town. This year's crop, however, produced very small pumpkins. The group decided to construct a corn maze in a field and charge customers to walk through the maze.

Customers can only walk forward. If the customers end up at an exit with pumpkins, they win a pumpkin. The church group asked some students to advise it on various possibilities of a customer getting a pumpkin.

Students were shown a simple maze as an example.



6. Make a tree diagram to show the group the possible paths customers might take, entering the maze on the upper, middle, or lower path and proceeding to an exit with or without a pumpkin (at each fork in the maze a person is equally likely to take any path.



7. Find the probability of ending at each gate.

Top No Pumpkin $= \frac{1}{6} = 0.167 =$ 16.7%

Pumpkin $= \frac{1}{6} + \frac{1}{3} + \frac{1}{6} = \frac{4}{6} = 0.667 =$ 66.7%

Lower No Pumpkin $= \frac{1}{6} = 0.167 =$ 16.7%