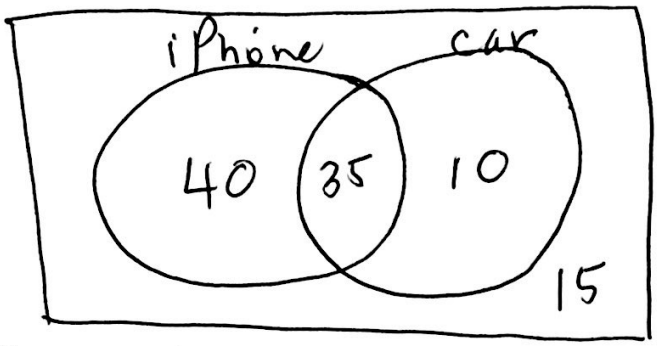
Name KEY Date_____ Period_____

AMDM Unit 2A Quiz Review: Venn Diagrams, Tree Diagrams, Area Models

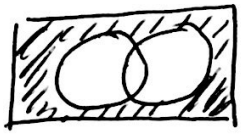
For each problem, show your work or explain how you got your answer.

1. From a survey of 100 college students, a marketing research company found that 75 students owned an iPhone, 45 owned a car, and 35 owned an iPhone and a car. Draw a Venn diagram to represent the situation.



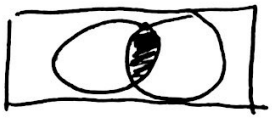
a. How many students do not own a car or an iPhone?

$P(\text{not (car or iPhone)}) = 15$



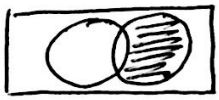
b. What is the probability that a student owns an iPhone and a car?

$P(\text{iPhone and car}) = \frac{35}{100}$



c. What is the probability that a student owns a car but does not own an iPhone?

$P(\text{car and not iPhone}) = \frac{10}{100}$

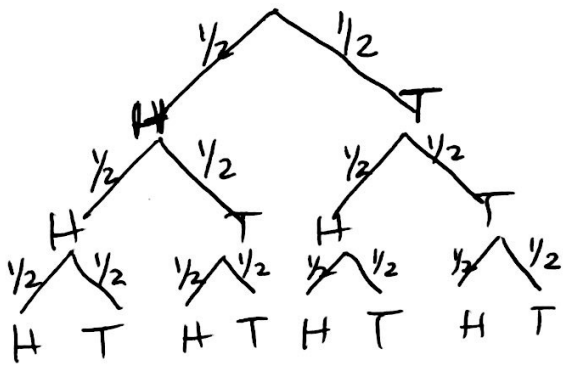


d. What is the probability that a student owns an iPhone, given that they own a car?

$P(\text{iPhone} \mid \text{car}) = \frac{35}{45}$

right circle only

2. A coin is tossed three times. To the right, draw a tree diagram representing this situation.



a. What is the probability of tossing three tails?

$P(TTT) = \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{8}$

b. What is the probability of tossing at least two heads?

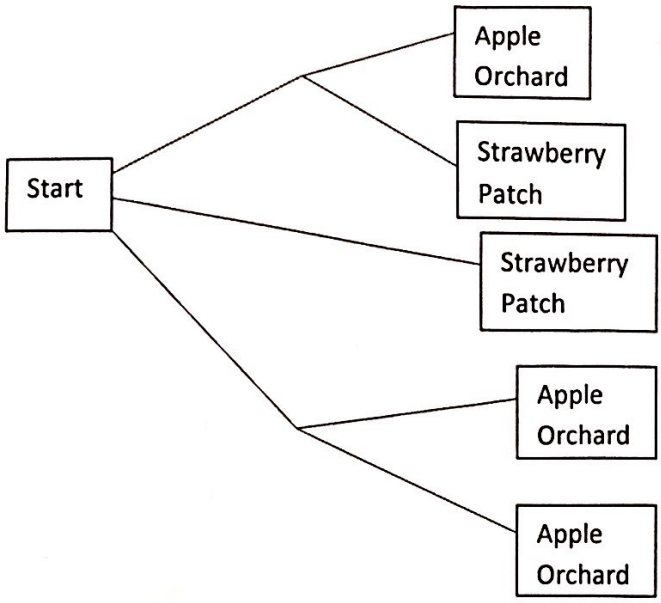
$P(HHH \text{ or } HHT \text{ or } HTH \text{ or } THH) = \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} = \frac{1}{2}$

3. Use the area model below to find the probability of picking X?

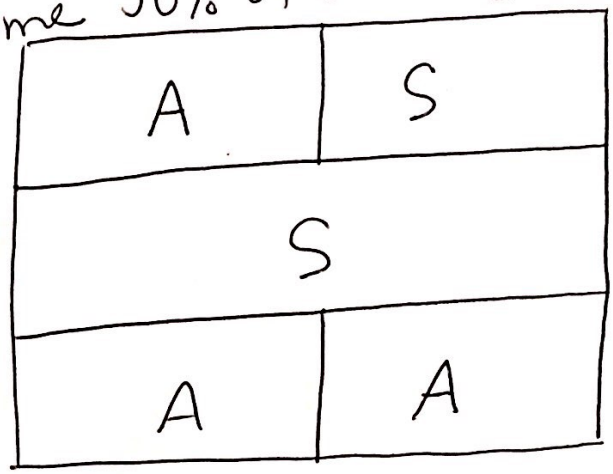
X	Y	
	Y	
X	X	Y

$P(X) = \frac{5}{12}$

4. To the right, draw an area model for the maze below.



assume 50% of choosing either option



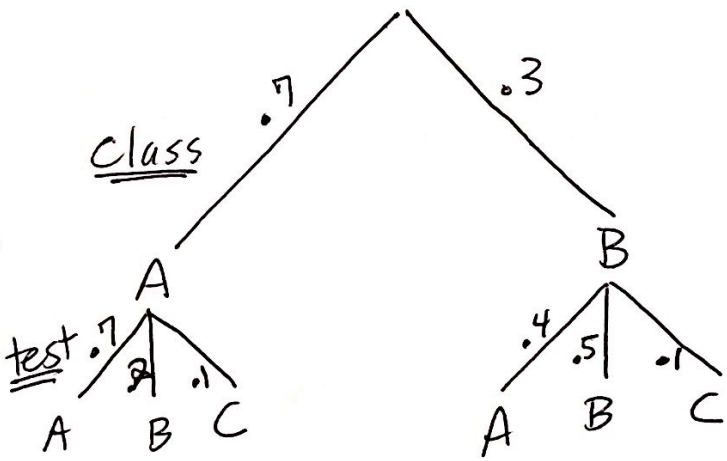
a. What is the probability of not going to the apple orchard?

$P(\text{not } A) = P(S)$
$= 3/6 = 1/2$

b. If 50 people go through the maze this Saturday, how many people will go to the strawberry patch?

$50(1/2) = 25$

5. In Ms. Smith's math class, 70% of the students have an A in the class, and 30% of the students have a B in the class. Of the 70% of student who have an A in the class, 70% made an A on the first test, 20% made a B on the first test, and 10% made a C on the first test. Of the 30% of students who have a B in the class, 40% made an A on the first test, 50% made a B on the first test, and 10% made a C on the first test. To the right, draw a tree diagram to represent this situation.



a. Find P(having an A in the class and getting an A on the test).

$P(A \text{ class and } A \text{ test}) = (.7)(.7) = .49 \text{ or } 49\%$

b. Find P(having a B in the class).

$P(B \text{ class}) = .3 \text{ or } 30\%$

c. What is the probability of picking a student who made a B on the first test?

$P(B \text{ test}) = P(A \text{ class and } B \text{ test OR } B \text{ class and } B \text{ test})$
$= (.7)(.2) + (.3)(.5) = .29 \text{ or } 29\%$