Name_____

Date_____

Advanced Algebra

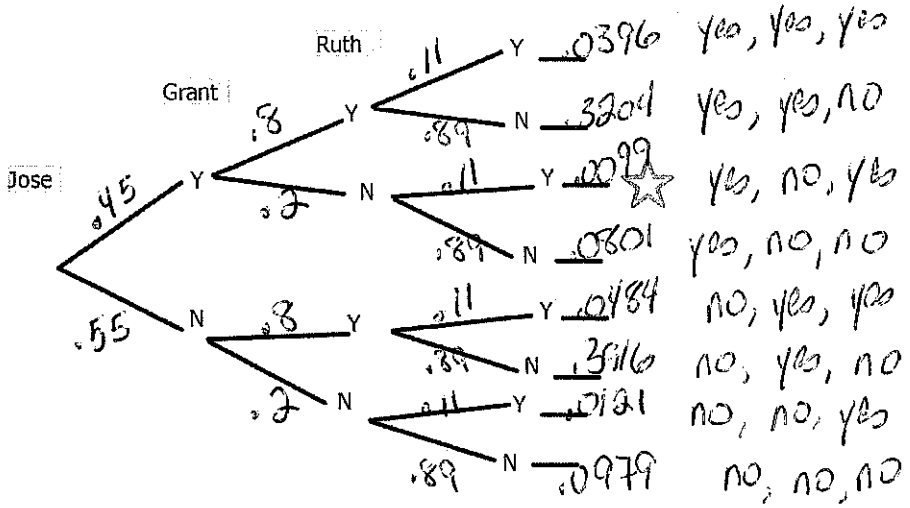
Unit 7: Probability Assignment #20

The Chinchilla Dilemma

ONE: Mark has to leave town for a school trip, and he needs someone to feed Steve, his pet chinchilla. Mark has three friends who he believes might help him out: Jose, Grant, and Ruth. He sent them each an email asking for help, and expects that all three will reply to him soon. Probabilities are provided in the table below. **Fill in the missing values in the table.**

	P(says yes to helping)	P(says no to helping)
Jose	45%	
Grant		20%
Ruth	11%	

TWO: Complete the tree diagram below.



THREE: Write a sentence explaining the meaning of the number in your tree diagram that's next to the star.

Yes, No, yes Jose said yes Grant said no, Ruth yes

FOUR: Write a sentence explaining why number in your tree diagram that's next to the star is *NOT* the answer to this question: *What is the probability that exactly 2 of his friends will say yes?*

There Are 3 combinations of 2 friends saying yes

FIVE: Find the probabilities below:

a. P(All friends say yes). .0396
b. P(exactly 1 friend says yes). .4838
c. P(2 or more friends say yes). .4183
d. P(Ruth says no). .89
e. CHALLENGE: P(Grant said yes) if it is *known* that exactly 1 person said yes. $\frac{.3916}{.4838} = .81$

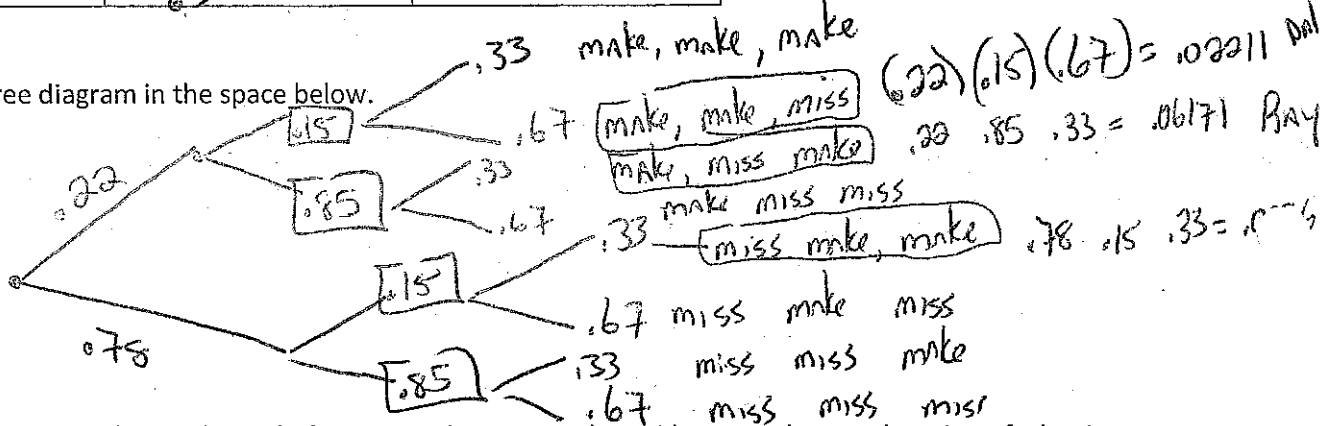
SIX: Which problems in number FIVE? Put an "M" next to those problems in number FIVE that could have reasonably been solved *without* a tree diagram, a "T" next to the problems that *required* a tree diagram. We don't need to use a tree diagram if...

Crunch Time

ONE: Coach Keaton is the basketball coach of State College University Lions, and his basketball season is not going well. He has two decent players that he'd like to keep in the starting lineup, but there are three spots that are up for grabs. He decided that he would allow his worst three players, JJ, Ray, and Dale, an opportunity to earn their way into the starting lineup because, in his words, "there's no way they make it any worse." Here's what he proposed: each player will get one three point shot, and if he makes it, he's in. JJ shoots first, then Ray, then Dale. Here are their probabilities:

	P(makes shot)	P(misses shot)
JJ	22%	.78
Ray	15%	.85
Dale	.33	67%

TWO: Make a tree diagram in the space below.



THREE: Choose one number at the end of your tree diagram, and provide a complete explanation of what it represents.

FOUR: Explain why you *don't* need a tree diagram to find the probability that every player misses.

(.78)(.85)(.67)

FIVE: Explain why a tree diagram *is* helpful if you want to find the probability that exactly one player makes his shot.

SIX: Find the probabilities below:

a. P(All players make the shot). (.22)(.15)(.33) = .01089
b. P(exactly 2 players make). SAME .12243
c. P(exactly 1 player misses). .06171
d. P(Ray is the only one who misses).
e. CHALLENGE: P(Dale missed) if it is *known* that exactly 1 person missed. $\frac{.02211}{.12243} = .181$