

Name _____

Date _____

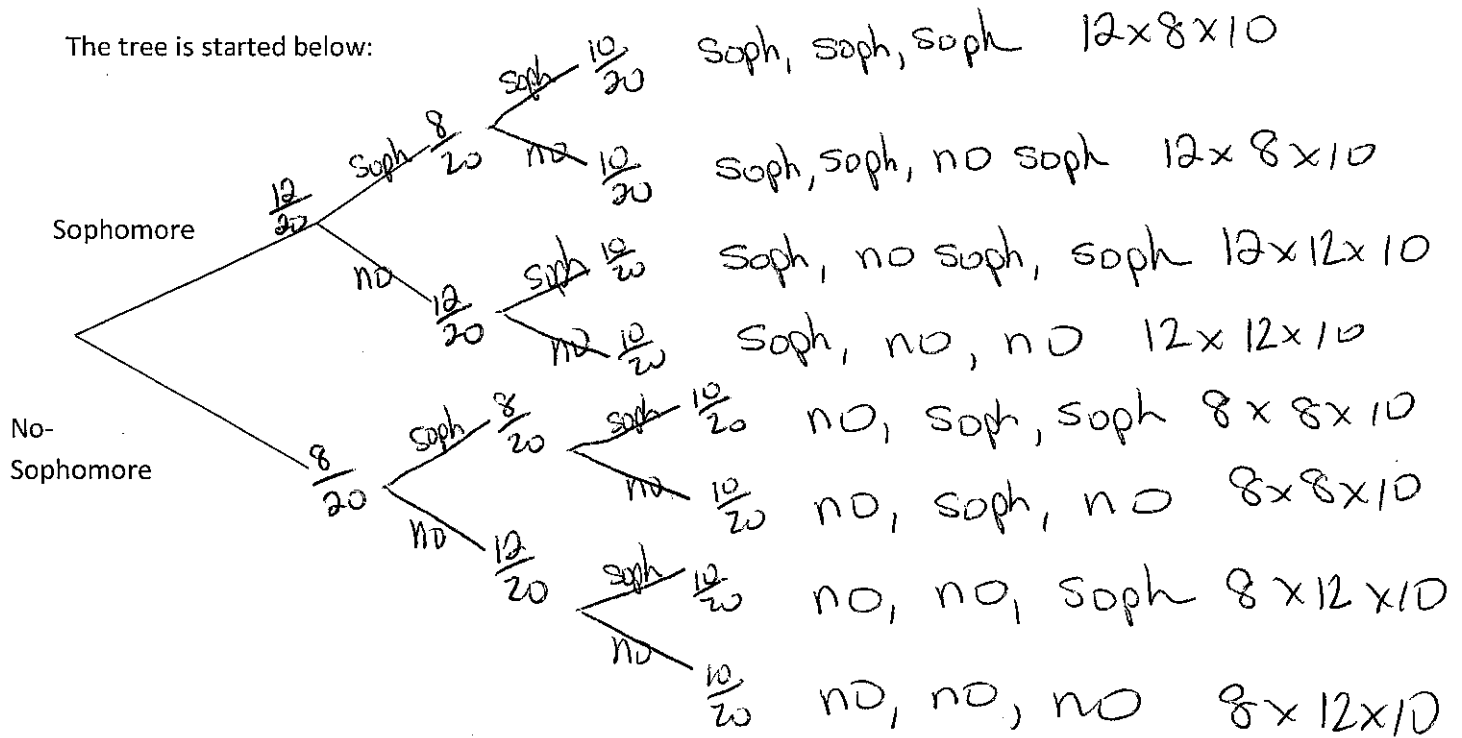
Advanced Algebra

Unit 7: Probability Assignment #6

1) Mr. Roark teaches three classes. Each class has 20 students. His first class has 12 sophomores, his second class has 8 sophomores, and his third class has 10 sophomores. If he randomly chooses one student from each class to participate in a competition, what is the probability that

- he will select three sophomores.
- He will select exactly three sophomores
- He will select at least three sophomores

The tree is started below:



1) What is the probability that he selects exactly 2 sophomores?

$$\frac{12 \times 8 \times 10}{20^3} + \frac{12 \times 12 \times 10}{20^3} + \frac{8 \times 8 \times 10}{20^3}$$

2) What is the probability that he will select no sophomores?

$$\frac{8 \times 12 \times 10}{20^3}$$

3) What is the probability he will select at least 1 sophomore?

$$1 - \left(\frac{8 \times 12 \times 10}{20^3} \right)$$

What is the probability that he will select at least 2 sophomores?

$$\frac{12 \times 8 \times 10}{20^3} + \frac{12 \times 12 \times 10}{20^3} + \frac{8 \times 8 \times 10}{20^3} + \frac{12 \times 8 \times 10}{20^3}$$

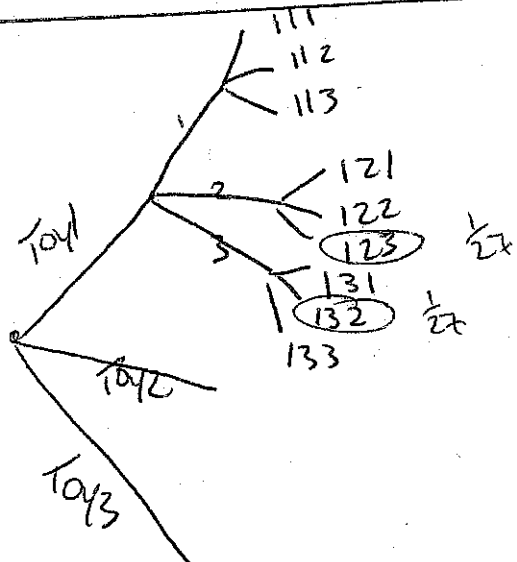
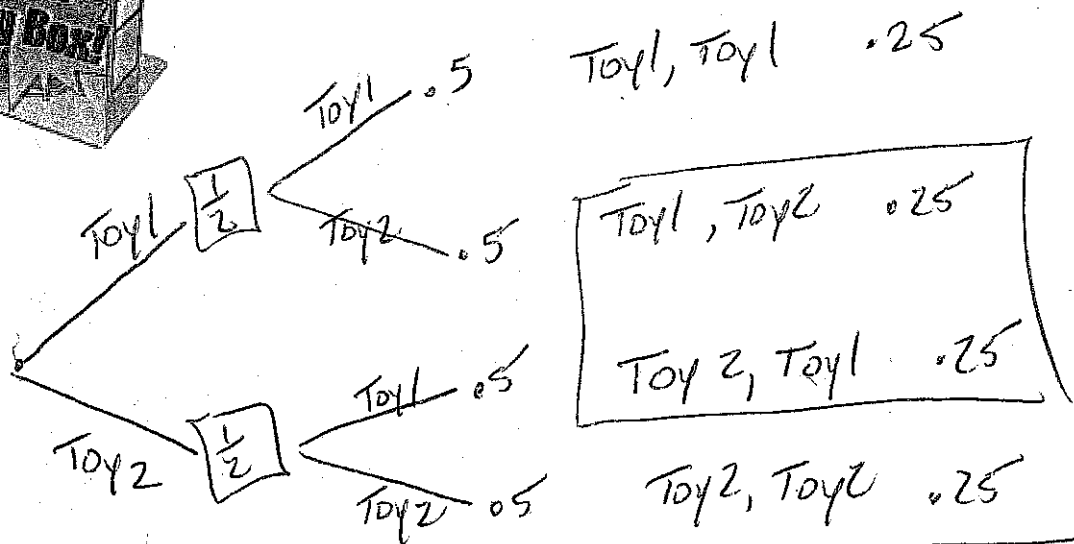
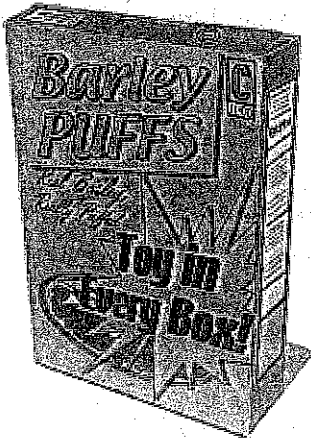
2) A notional advertisement says that every puffed-barley cereal contains a toy and that the toys are distributed equally. Gina wants to collect a complete set of the different toys from the cereal boxes.

a) If there are two different toys, what is the probability that she will find both of them in her first two boxes?

.50

b) If there are three different toys, what is the probability that she will have them all after buying her first three boxes?

$\frac{6}{27}$



$6 \left(\frac{1}{27} \right) = \frac{6}{27}$

- 1, 2, 3
- 1, 3, 2
- 2, 1, 3
- 2, 3, 1
- 3, 1, 2
- 3, 2, 1