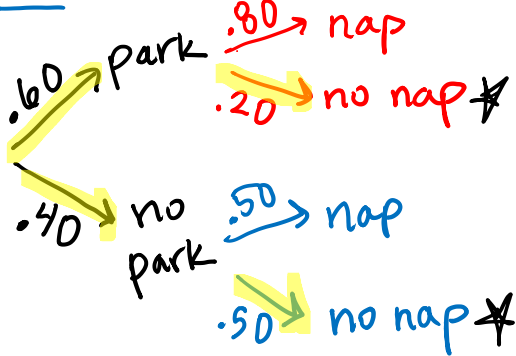


Unit 11 Day 9 Notes on Tree Diagrams



Definition: A tree diagram is a way to display and organize dependent events

Example #1: Teddy goes to the park with his nanny 60% of the time. If Teddy goes to the park, there is a 80% chance he'll take an afternoon nap. If Teddy does not go to the park, there is a 50% chance he'll take a nap. What is the probability that Teddy does not take a nap?



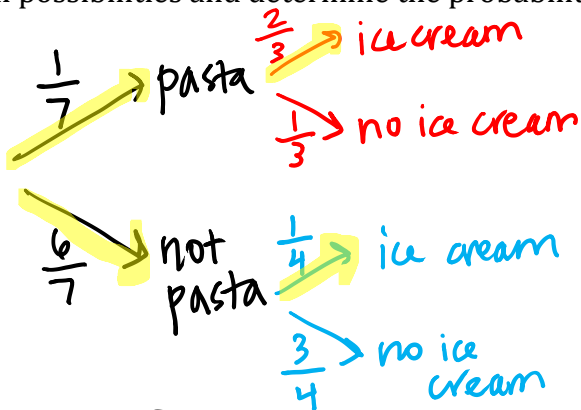
$$\text{park and no nap} \quad \text{OR} \quad \text{no park and no nap}$$

$$(.60) \cdot (.20) + (.40) \cdot (.50)$$

$$.12 + .2$$

$$\boxed{.32} \quad \text{OR} \quad \boxed{32\%}$$

Example #2: Tina's favorite meal is pasta, followed by ice cream for dessert. Tina's mom cooks pasta once a week. If she cooks pasta, the probability that Tina gets ice cream for dessert is $\frac{2}{3}$. If Tina's mom doesn't cook pasta, the probability that she gets ice cream for dessert is $\frac{1}{4}$. Create a tree diagram showing all possibilities and determine the probability that Tina gets ice cream for dessert.



$$\text{pasta and I.C.} \quad \text{OR} \quad \text{no pasta and I.C.}$$

$$\left(\frac{1}{7}\right)\left(\frac{2}{3}\right) + \left(\frac{6}{7}\right)\left(\frac{1}{4}\right)$$

$$\frac{2}{21} + \frac{6}{28} \quad * \text{use calculator}$$

$$\boxed{.31} \quad \text{OR} \quad \boxed{31\%}$$

Example #3: Coach Sam coaches 60% of the time. If Coach Sam is the coach, then you have a 50% chance of being the goalkeeper. If Coach Alex coaches, you only have a 30% chance of being the goalkeeper. What is the probability that you will be goalkeeper today?



$$\text{Sam and gk} \quad \text{OR} \quad \text{Alex and gk}$$

$$(.60)(.50) + (.40)(.30)$$

$$.30 + .12$$

$$\boxed{.42} \quad \text{OR} \quad \boxed{42\%}$$