

12.2 Tree Diagrams + the Multiplication Rule

Probability Trees: way to organize information + possibilities

Ex Create a tree to show the number of possibilities (combinations) of 5 types of ice cream, 2 cone options, + 3 toppings

Equally possible options



5 ice creams
2 cones
3 toppings

30 possible combinations
(Count pink (last) branches)

Multiplication Rule: Probabilities that depend on each other
Multiply the individual chances

↓
→ ADD ie) Probability of rolling a 6 (on 1 die)
→ = getting a red card (from a standard deck)

$$\frac{26}{52} \cdot \frac{1}{6} = \boxed{\frac{26}{312}} \approx 8.3\%$$

Addition Rule: Probabilities don't depend on each other → Add the individual chances

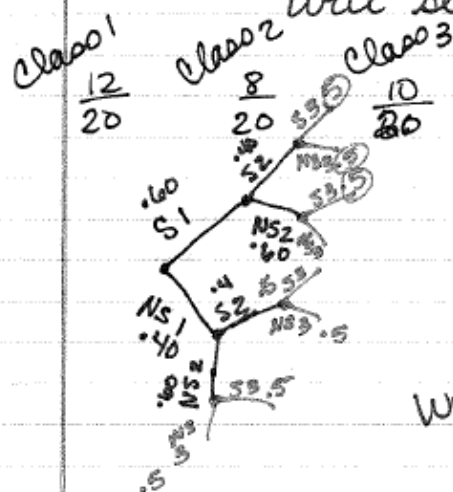
ie.) The Probability of getting a Red card OR rolling a 6

$$\frac{26}{52} + \frac{1}{6} = \boxed{\frac{16}{6}}$$

12.2 Cont.

Using a tree to multiply problems with various probability

Ex.] Mr. Roark has 3 classes with 20 students each. His first class has 12 sophomores, his second class has 8 sophomores, and his third class has 10 sophomores. If he chooses 1 student from each class, what is the probability he will select 3 sophomores?



Look at all sophomore path
 $(.6)(.4)(.5) = .12$
 So 12% chances
 of picking all
 sophomores

What is the chance he will
 pick NO sophomores?
 $.4(.6)(.5)$

try some pg 73
 1-7, 12, 15 and 17

.12