51/ $(3u + v^2)^6$ — Find 5th term.

$${}_6C_4 (3u)^2 (v^2)^4$$

$${}_6C_4 \cdot 3^2 = 135$$

$$135\,u^2 v^8$$

More Binomial Probability

Prob (ticket when pulled over in Nemdo County) $= \frac{2}{3}$

What is the prob a teen getting at ticket will at least 3 of the next 5 times he/she is pulled over?

Write out all options

${}_5C_2 T^3 N^2$ or ${}_5C_1 T^4 N^1$ or ~~${}_5C_0 T^5 N^0$~~

${}_5C_2 \left(\frac{2}{3}\right)^3 \left(\frac{1}{3}\right)^2 + {}_5C_1 \left(\frac{2}{3}\right)^4 \left(\frac{1}{3}\right)^1 + \left(\frac{2}{3}\right)^5$

$\approx \boxed{0.790}$

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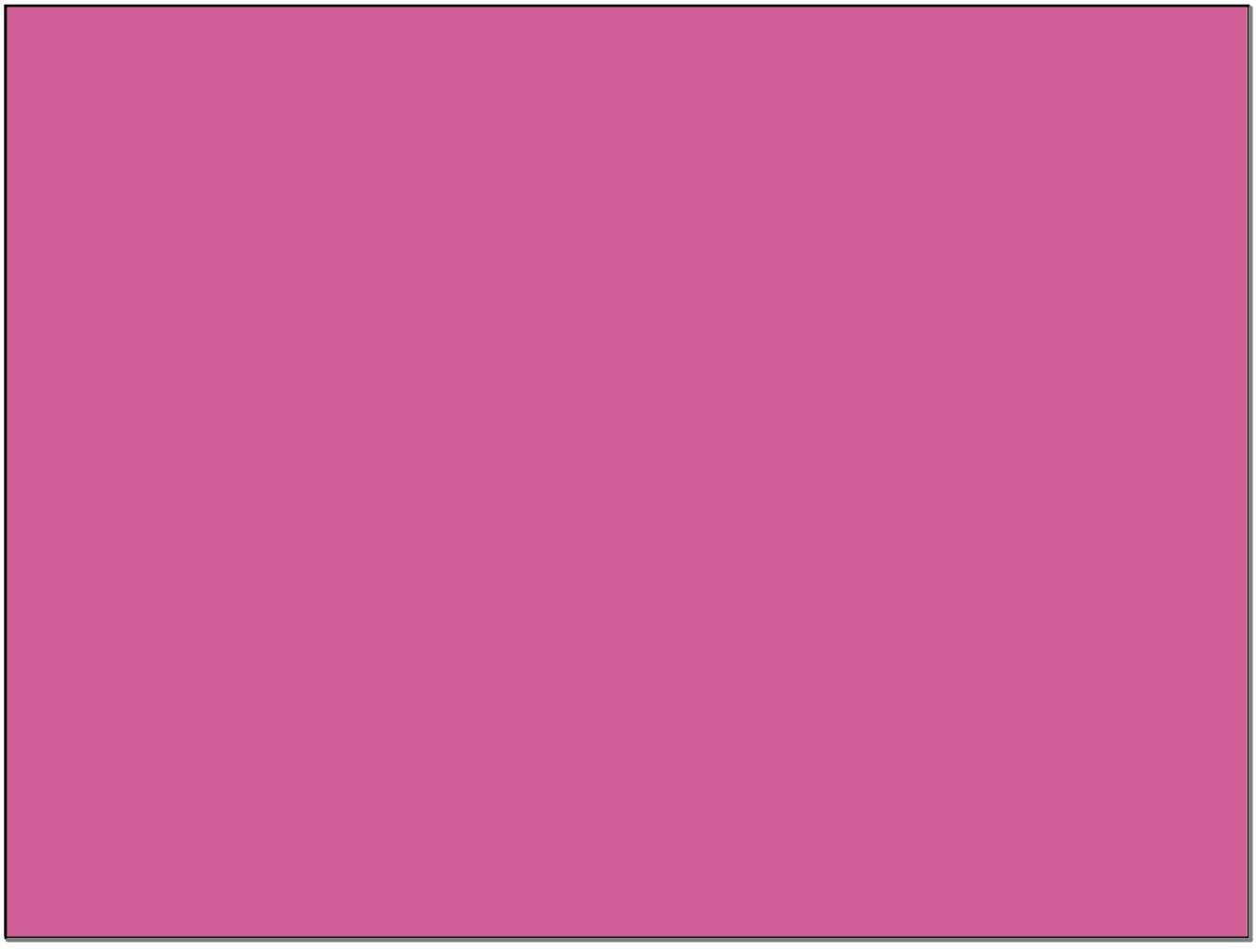
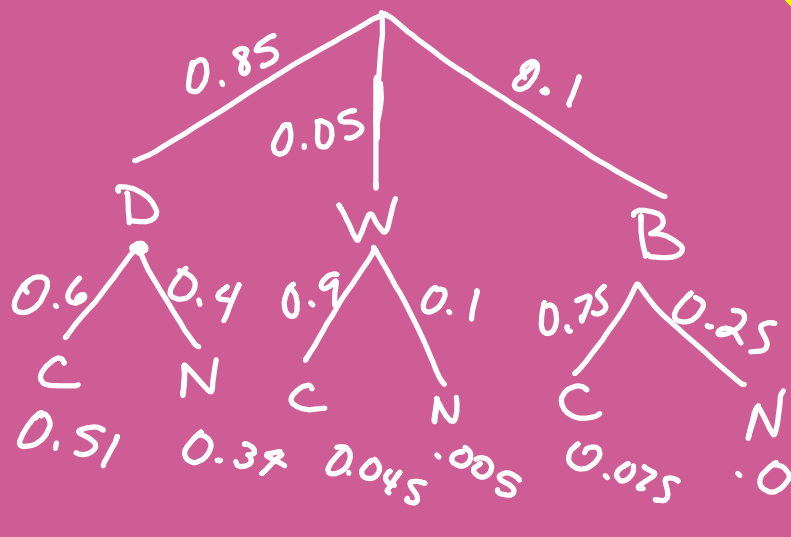


Probability Trees + Conditional Probability



Temp under 50°

$P(BC) = 0.075$

$P(DN) = 0.34$

$P(WC) = 0.045$

* $P(C) =$ DC OR WC OR BC

$0.51 + 0.045 + 0.075 = 0.63$

Conditional Probability — prob. when there is a known fact about the situation

1) If a student wearing a coat is randomly selected, what is the prob he/she rode a bus?

$$P(B|C) = \frac{P(BC)}{P(C)} = \frac{0.075}{0.51 + 0.045 + 0.075}$$

$$= \frac{0.075}{0.63} \approx 0.119$$

B: prob to find (?) | C: given | Known fact

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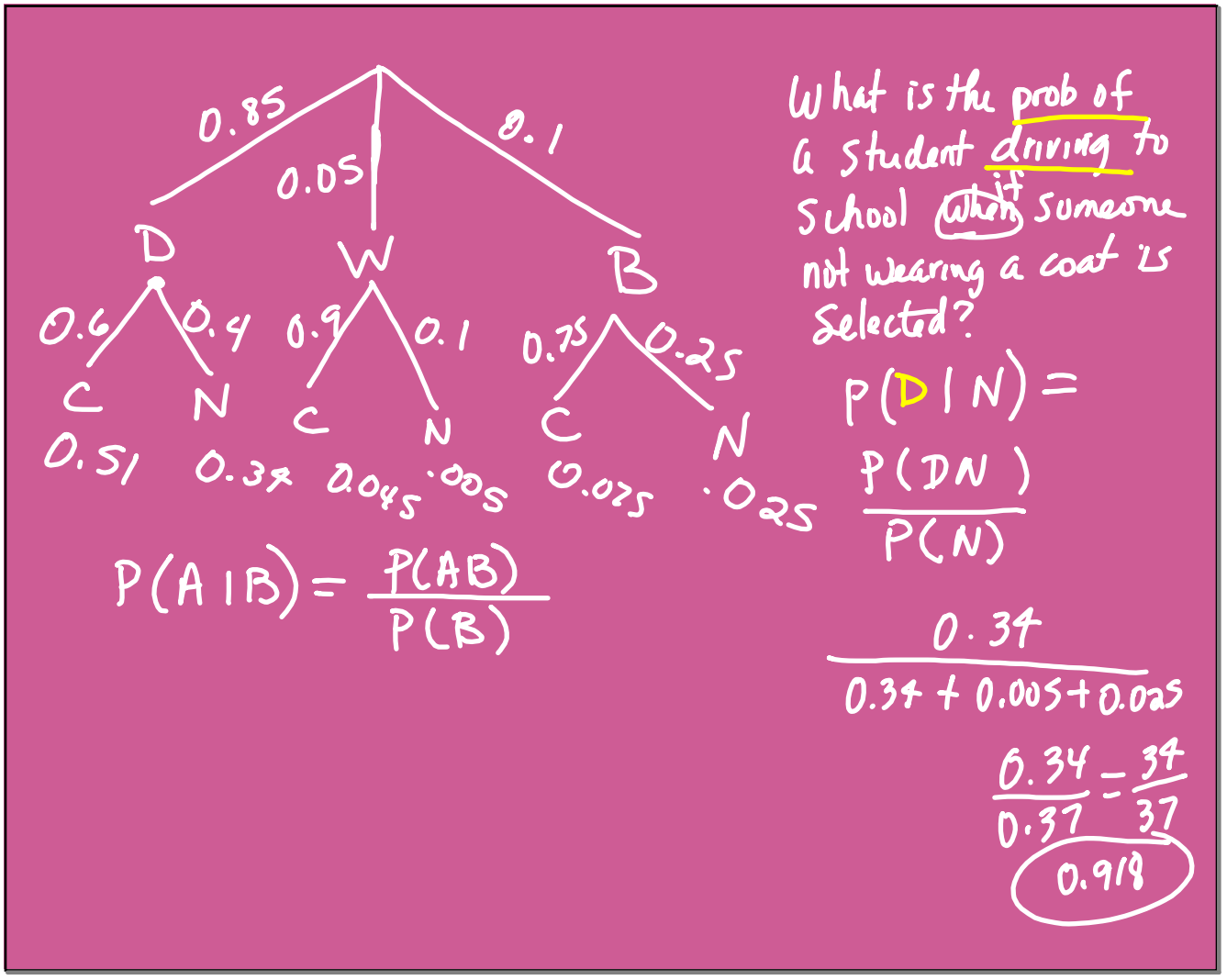

Expected Value – result from playing thousands of times – gives the gain/loss per play

Pay $1 to play

yellow Win $10

Blue Lose $20

Green Lose $15

White Win $50

Expected Value = (prob)(gain/loss)

	Yellow	Blue	Green	White
prob	$\frac{3}{8}$	$\frac{2}{8}=\frac{1}{4}$	$\frac{2}{8}=\frac{1}{4}$	$\frac{1}{8}$
gain/loss	$10-1=9$	$-20-1=-21$	$-15-1=-16$	$50-1=49$

$$E.V. = \left(\frac{3}{8}\right)(9) + \left(\frac{1}{4}\right)(-21) + \left(\frac{1}{4}\right)(-16) + \left(\frac{1}{8}\right)(49) = 0.25$$

gain