


Warm Up

What's P(green)?

If I spun 1700 times, how many times would I expect to get green?




$P(G) = \frac{3}{7} = 43\%$ $E(x) = p \cdot n = .43(1700) = 731$

Given the path outcomes, find P(Y) and P(N). (Use area model)

1. Path 1: Yes, No, Yes $P(\text{YES}) =$
 Path 2: No, Yes, No $P(\text{NO}) =$
 Path 3: Yes, Yes

LCM $(3, 2) = 6$



$3 \times 6 = 18$

$P(Y) = \frac{12}{18} = 66.7\%$
 $P(N) = \frac{6}{18} = 33.3\%$

Sep 18-7:38 AM

Expected value (allowance) - unequal events

EQ:

Definition Unequal events: use weighted tree diagram

Formula $E(x) = n \cdot p$
 $n =$ number of trials
 $p =$ probability

Sep 16-3:42 PM

Expected value- unequal Events

EQ:

Steps:

1. Draw tree diagram and assign weights
2. Find probability for each outcome
3. Find n (\$\$) for each outcome
4. Find expected allowance

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Expected value

EQ:

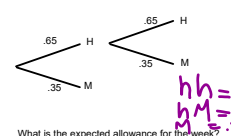
Example

Mike, the starting quarterback at his high school, get \$8 weekly for allowance but he wants an increase. He tries to convince his father to make a deal based off his completed pass percentage. The deal is as follows:

- if he misses the first pass, he only gets \$4 and no second attempt.
- if he completes the 1st pass, he gets \$10 and a chance to complete a second pass for an additional \$5.

He has a 65% completion rate.

Create the tree diagram and sample events:



What is the expected allowance for the week?

$E(x) = n \cdot p$ $n = \$\$$ $p =$ probability

$P(HH) = .4225$ $n = 10 + 5 = \$15$ $= 15 \cdot .4225 = \$6.33$
 $P(HM) = .2275$ $n = 10 + 0 = \$10$ $= 10 \cdot .2275 = 2.27$
 $P(M) = .35$ $n = \$4$ $= 4 \cdot .35 = 1.40$

Total expected allowance **\$10.00**

How much would you expect her to receive in a year?
 How much would you expect her to receive in 3 years?

Sep 16-3:42 PM

Expected value

Your turn!!!!


EQ:

Carolyn, the high school softball player, get \$7 weekly for allowance but she wants an increase. She tries to convince her father to make a deal based off his completed pass percentage. The deal is as follows:

- if she misses the first pitch, she only gets \$3 and no second attempt.
- if she hits the 1st pitch, she gets \$7 and a chance to hit the 2nd pitch for an additional \$8.

She has a 45% batting percentage.

Create the tree diagram and sample events:



What is the expected allowance for the week?

$E(x) = n \cdot p$ $n = \$\$$ $p =$ probability

$P(HH) = .2025$ $n = 7 + 8 = \$15$ $= 15 \cdot .2025 = \$3.03$
 $P(HM) = .2475$ $n = 7 + 0 = \$7$ $= 7 \cdot .2475 = 1.73$
 $P(M) = .55$ $n = \$3$ $= 3 \cdot .55 = 1.65$

Total expected allowance **\$6.41**

How much would you expect her to receive in a year?
 How much would you expect her to receive in 3 years?

Sep 16-3:42 PM

In a town, 12% of the families have three children, 50% of the families have two children, 20% of the families have one child, and 10% of the families have no children. What is the expected number of children to a family?

$E(x) = 3(.12) + 2(.50) + 1(.20) + 0(.10)$

$= .36 + 1.0 + .20 + 0$

$= 1.56$

In a town, the attendance at a football game depends on the weather. On a sunny day the attendance is 60,000, on a cold day the attendance is 40,000, and on a stormy day the attendance is 30,000. If for the next football season, the weather forecast has predicted that 30% of the days will be sunny, 50% of the days will be cold, and 20% days will be stormy, what is the expected attendance for a single game?

Sun 60,000 .30
 Cold 40,000 .50
 Stormy 30,000 .20

$$60,000(.3) + 40,000(.5) + 30,000(.2)$$

$$44,000$$


Remember -

Weighted trees must be connected and correctly labeled and weighted.

Expected weekly allowance is comprised of finding all the probabilities first

If you were asked how much you expect to make in a year....

Sep 15-8:18 AM

Closing: Time limit: 5 mins. 


What have we learned?

Enrique plays soccer on a regular basis and is hoping to make the varsity soccer team. He is currently looking over an allowance increase from his dad. Here's the proposal:

- \$7 for missing the first goal and no chances for a second
- \$11 for making the goal on the first try and \$6 for an additional goal
- Completion rate is 63%

What is the expected allowance for 8 weeks?

Sep 16-3:47 PM

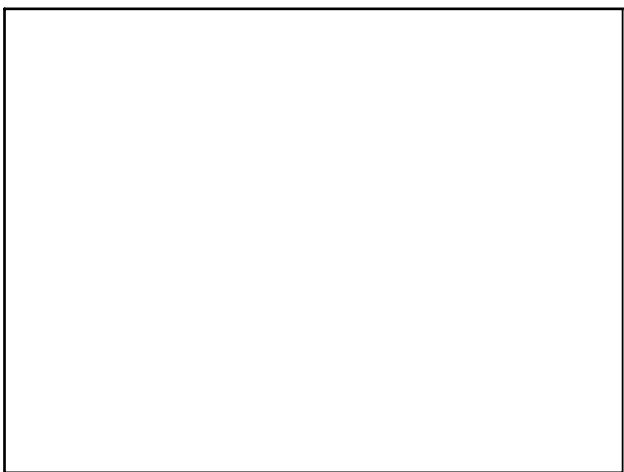
Time limit: 5-7 minutes 

Absent Student Report:
 In 5 - 6 complete sentences, explain how you to use the expected allowance method. Be sure to include "math" terms we discussed this week.

Sep 16-8:07 PM

Pricing				
Group	1st shot	2nd shot	Miss 1st	Weekly
1				
3				
4				
5				
6				
7				

Mar 7-9:13 AM



Sep 18-7:35 AM