Answer on Question #50185 - Math - Statistics and Probability

An archer shoots an arrow at a target.

The probability that he will hit the target is 3/4

After the first shot, the target is moved further away from the archer.

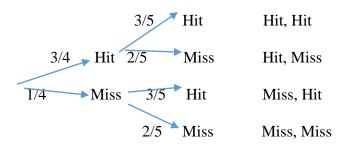
The archer shoots a second arrow at the target and the probability that he will hit the target is now 3/5.

- (a) Draw a tree diagram for the situation.
- (b) Calculate the probability that the archer will hit the target with his first shot but miss the target with his second shot
- (c) Calculate the probability that the archer will hit the target at least once if he takes both shots.

Solution

P1 = 3/4, P2 = 3/5. The events of the first and the second shots are assumed to be independent.

(a) Draw a tree diagram for the situation.



(b) Using the rule of multiplication, the probability that the archer will hit the target with his first shot but miss the target with his second shot is

$$P = P(1="Hit" and 2="Miss") = P(1="Hit")*P(2="Miss") = 3/4*2/5 = 3/10= 0.3$$

(c)

Using rule of multiplication, the probability that the archer will hit the target at least once if he takes both shots is

$$=3/4*2/5+1/4*3/5+3/4*3/5=(6+3+9)/20=18/20=9/10=0.9$$