Answer on Question #70063-Physics-Other

The construction of a building may be delayed by a strike. Suppose that the probability that there will be a strike is 0.70, the probability that the construction will be completed on time if there is no strike is 0.90 and the probability that the building will be completed on time if there is a strike is 0.40, what is the probability that the construction will be completed on time.

Solution

Let the event that there will be a strike be A, the event that the construction will be completed on time is B.

$$P(A) = 0.7.$$

$$P(B|A^c) = 0.9.$$

$$P(B|A) = 0.4.$$

The probability that the construction will be completed on time is

$$P(B) = P(B|A)P(A) + P(B|A^c)P(A^c) = P(B|A)P(A) + P(B|A^c)(1 - P(A))$$

$$P(B) = (0.4)(0.7) + (0.9)(1 - 0.7) = 0.55.$$

Answer: $\mathbf{0.55}$.