

## Answer on Question #85716 – Math – Statistics and Probability

### Question

Suppose you just received a shipment of ten televisions. Two of the televisions are defective. If two televisions are randomly selected, compute the probability that both televisions work. What is the probability at least one of the two televisions does not work?

### Solution

The probability that the first randomly selected television will be good is  $p_1 = \frac{8}{10} = \frac{4}{5}$ . After we have taken a good TV, in the shipment of 9 televisions there will be 7 good ones. Therefore, the probability that the second randomly selected TV will be in good condition is  $p_2 = \frac{7}{9}$ . So, the probability of event A = “both televisions work” is equal to  $p(A) = p_1 * p_2 = \frac{4}{5} * \frac{7}{9} = \frac{28}{45}$ .

Let event B = “at least one of the two televisions does not work”. Then event A and event B are collectively exhaustive and mutually exclusive events. Therefore  $p(A) + p(B) = 1$ . So  $p(B) = 1 - p(A)$ .

$$p(B) = 1 - \frac{28}{45} = \frac{17}{45}$$

### Answer:

The probability that both televisions work is equal to  $\frac{28}{45}$ .

The probability at least one of the two televisions does not work is equal to  $\frac{17}{45}$ .