

Answer on Question#39859, Math, Statistics

The bulbs manufactured by a company gave a mean life of 3000 hours with standard deviation of 400 hours. If a bulb is selected at random, what is the probability it will have a mean life less than 2000 hours?

**Solution**

We have:

X = lifetime of bulb, Mean ( $\mu$ ) = 3000 hours, standard deviation ( $\sigma$ ) = 400 hours.

The probability it will have a mean life less than 2000 hours is  $P(x < 2000)$ .

$$Z(X) = \frac{X - \mu}{\sigma}.$$

$$Z(2000) = \frac{2000 - 3000}{400} = -\frac{1000}{400} = -2.5.$$

$$P(x < 2000) = P(Z < -2.5) = 0.0062.$$

**Answer: 0.0062.**