

### Answer on Question #49372 – Math – Statistics and Probability

A health care professional wishes to estimate the birth weights of infants. How large a sample she needs to select if she desires to be 95% confident that the true mean is within 3 (+/-3 gms) of the sample mean? The standard deviation of the birth weights is known to be 105 gms.

#### Solution

The sample size is given by the formula:

$$n = \left( \frac{z^* \sigma}{E} \right)^2,$$

where  $z^* = 1.96$  at 95% confidence level,  $\sigma = 105$  gms is the standard deviation of the birth weights,

$E = 3$  gms is the margin of error.

So,

$$n = \left( \frac{1.96 \cdot 105}{3} \right)^2 = 4706 \text{ when rounded up.}$$

**Answer: 4706.**