Zscore Quiz

Nov 8

Z-score Quiz A

The mean height of a Brampton mouse is 15 cm with a standard deviation of 2 cm. What is the probability that a randomly selected mouse is between 12.75 cm and 15.5 cm in height?

Z-score Quiz B

The mean length of a Brampton maple leaf is 12 cm with a standard deviation of 3 cm. What is the probability that a randomly selected leaf is between 10.5 cm and 16.5 cm in length?

Z-score Quiz A

Nov 8

The mean height of a Brampton mouse is 15 cm with a standard deviation of 2 cm. What is the probability that a randomly selected mouse is between 12.75 cm and 15.5 cm in height?

for $x = 10.5$

$$z = \frac{x - \bar{x}}{\sigma}$$

$$= \frac{10.5 - 12}{3}$$

$$= -0.5$$

$P(x < 10.5) = 0.3085$

for $x = 16.5$

$$z = \frac{x - \bar{x}}{\sigma}$$

$$= \frac{16.5 - 12}{3}$$

$$= 1.5$$

$P(x < 16.5) = 0.9332$

In Between:

$P(10.5 < x < 16.5) = 0.9332 - 0.3085$

$= 0.6247$

∴ There is a 62.47% chance the leaf is between 10.5 and 16.5 cm in length.

Nov 8

Z-score Quiz B

The mean length of a Brampton maple leaf is 12 cm with a standard deviation of 3 cm. What is the probability that a randomly selected leaf is between 10.5 cm and 16.5 cm in length?

for $x = 12.75$

$$z = \frac{x - \bar{x}}{\sigma}$$

$$= \frac{12.75 - 15}{2}$$

$$= -1.125$$

$P(x < 12.75) = 0.1292$

for $x = 15.5$

$$z = \frac{x - \bar{x}}{\sigma}$$

$$= \frac{15.5 - 15}{2}$$

$$= 0.25$$

$P(x < 15.5) = 0.5987$

In Between:

$$P(12.75 < x < 15.5) = 0.5987 - 0.1292$$

$$= 0.4695$$

∴ There is a 46.95 % the mouse will be between 12.75 and 15.5 cm in height

Another question:

The weights of bars of chocolate produced by a machine are normally distributed with a mean of 232g and a standard deviation of 3.6g. Find the proportion of the bars that could be expected to weight less than 233.91g?

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$x = 233.91$

$$z = \frac{x - \bar{x}}{\sigma}$$

$$= \frac{233.91 - 232}{3.6}$$

$$= 0.53$$

$P(x < 233.91) = 0.7019$

70.19% of the bars should weigh less than 233.91 g.

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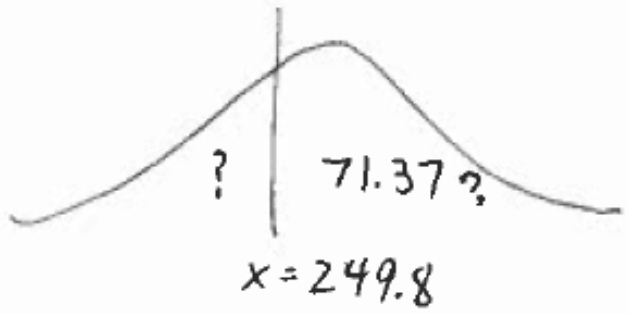
$P(x > 249.8) = 71.37$

$\therefore P(x < 249.8) = 28.63$

→ from z score table

z score of 0.2863 is −0.56



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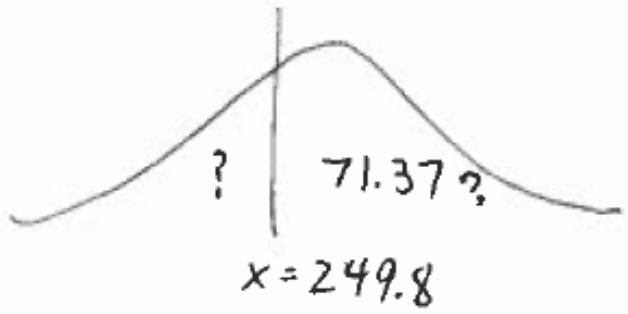

→ sub given information into formula

$$z = \frac{x - \bar{x}}{\sigma}$$

$$-0.56 = \frac{249.8 - \bar{x}}{3.9}$$

$$-2.184 = 249.8 - \bar{x}$$

$$251.984 = \bar{x}$$

→ The mean of x is 252.