Lecture 8:
Chapter 6 Mastery

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UAB Mathematics

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§6 Mastery

The amount of time required to checkout a single customer at a local grocery is uniformly distributed between 0.5 and 12 minutes. What's the probability that it will take between 1 and 4.5 minutes to checkout a customer? What's the probability that it will take exactly 3 minutes?

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The amount of time required to checkout a single customer at a local grocery is uniformly distributed between 0.5 and 12 minutes. What's the probability that it will take between 1 and 4.5 minutes to checkout a customer? What's the probability that it will take exactly 3 minutes? $P(0.5 < x < 12) = \frac{4.5-1}{12-0.5} \approx 0.3043$ and $P(3 < x < 3) = \frac{3-3}{12-0.5} \approx 0$. Notice: The probability that the time it will take to checkout a customer is exactly and given amount of time is always zero.

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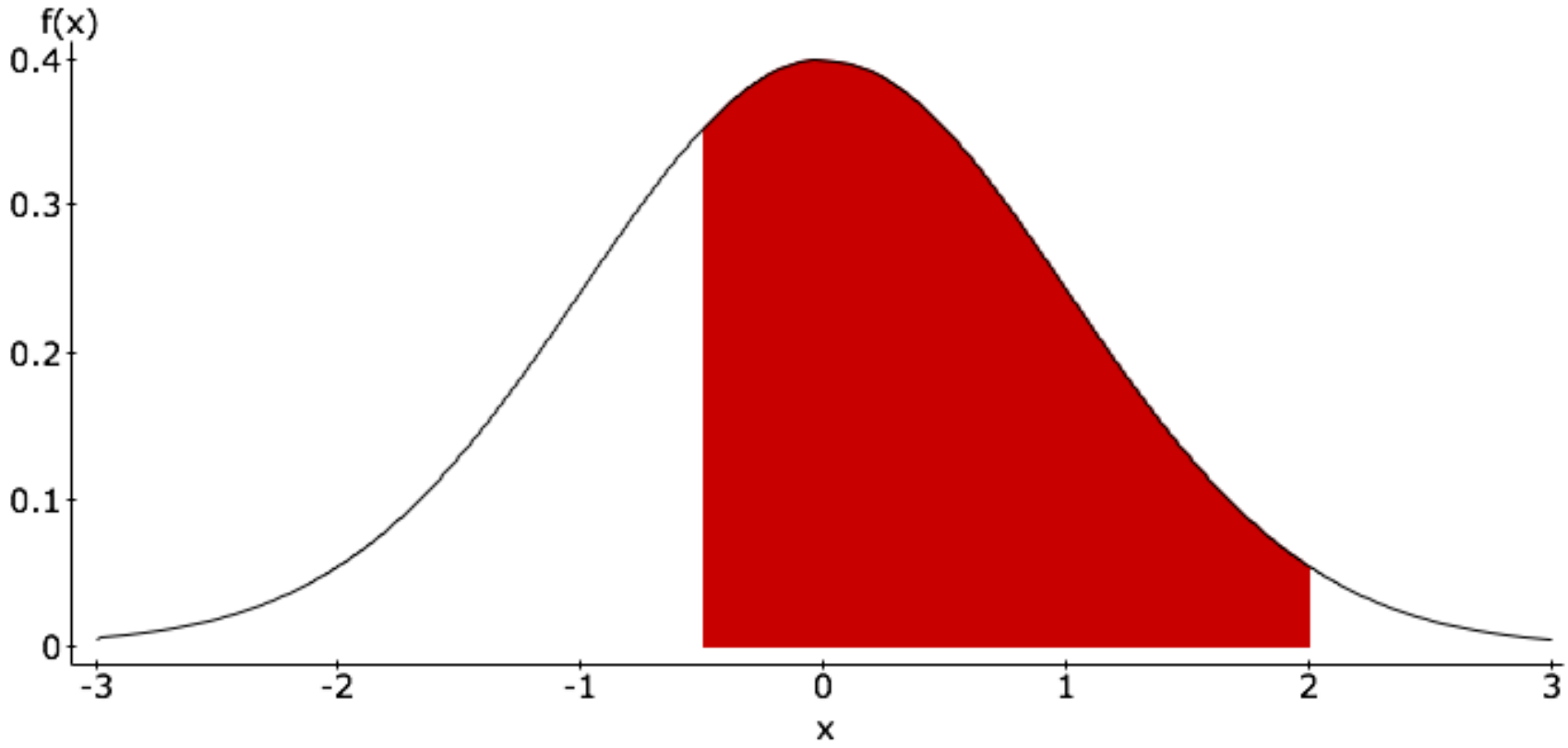

Find the area of the shaded region. What does this area represent?

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The table below is the number of TVs in a population of five households.

Number of TVs
0
3
3
6
3

Create a sampling distribution for the mean and the standard deviation for this population with sample size 3.

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Here's the sampling distribution for the mean with sample size 3.

$\overline{x}$	$P(\overline{x})$
2	0.3
3	0.4
4	0.3

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$\overline{x}$	$P(\overline{x})$
2	0.3
3	0.4
4	0.3

Here's the sampling distribution for the standard deviation with sample size 3.

s	$P(s)$
0	0.1
$\sqrt{3}$	0.6
3	0.3

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When converting a value of a normal random variable to a standard normal z-score, what is the unit of the resulting z-score?

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When converting a value of a normal random variable to a standard normal z-score, what is the unit of the resulting z-score? It's unitless!

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Suppose the volume of balloons inflated in a certain factory is normally distributed with mean 1.5L and standard deviation 0.25L. What is the probability that the average volume of twenty-five randomly selected balloons is between 1.4L and 1.6L? What is the probability that a single randomly selected balloon has a volume between 1.4L and 1.6L?

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The Rare Events Rule for Inferential Statistics says which of the following:

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The Rare Events Rule for Inferential Statistics says which of the following:

- any single data whose z-score corresponds to an unusually high or unusually low value indicated that the underlying assumption is bad.
- the value of a sample mean is roughly normally distributed when the sample is large, and the mean of this distribution is the population mean.
- if under a given assumption, a particular observed event has very small probability, then the underlying assumption is bad.