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Using Z-Scores



SPEAKER: MICHAEL J.
MAHOMETA, Ph.D.

When we've been
looking at distributions,
we've noticed that
shape plays a pretty
major role in some of
our decision
making.

If the shape is skewed -
in other words, it's not

▶ 0:00 / 6:57

▶ 1.0x



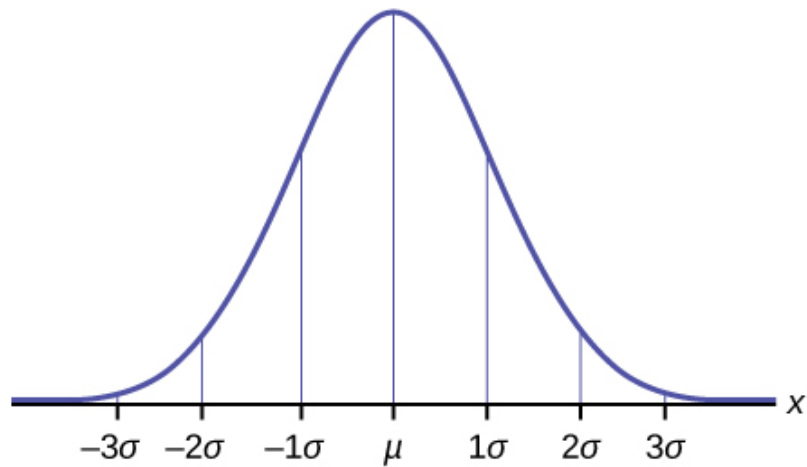
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Comprehension Check

A full-term baby in the US weighs, on average, 7.5 pounds. Birth weights are normally distributed, with a standard deviation of 1.1 pounds. Sketch this distribution and use your sketch to help you answer the following questions.

► Week 3:
Bivariate
Distributions

► Week 4:
Bivariate
Distributions
(Categorical
Data)



Using the EMPIRICAL RULE, we can say that:

(3/3 points)

68% of all full-term babies weigh

☐ between 6.4 and 8.1 pounds.

☒ between 6.4 and 8.6 pounds. ✓

☐ between 5.9 and 8.6 pounds.

☐ between 5.9 and 8.1 pounds.

95% of all full-term babies weigh

☒ between 5.3 and 9.7 pounds. ✓

☐ between 6.2 and 10.1 pounds.

☐ between 6.2 and 9.7 pounds.

☐ between 5.3 and 10.1 pounds.

99.7% of all full-term babies weigh

☐ between 3.7 and 10.5 pounds.

☐ between 3.7 and 10.8 pounds.

☐ between 4.2 and 10.5 pounds.

☒ between 4.2 and 10.8 pounds. ✓

A distribution has a $\sigma = 4$. Find the z-score for a score that is:

(4/4 points)

4 points **above** the mean: $z =$ ____

1



1

12 points **above** the mean: $z =$ ____

3



3

2 points **below** the mean: $z =$ ____

-0.5



-0.5

8 points **below** the mean: $z =$ ____

-2



-2

With a height of 75 in., Lyndon Johnson was the tallest president in the 20th century. Presidents of the past century have heights with a mean of 71.5 in. and a standard deviation of 2.1 in.

With a height of 85 in., Shaquille O'Neal was the tallest player on the Miami Heat basketball team. Basketball players for the Miami Heat during 2004 to 2008 had heights with a mean of 80.0 in. and a standard deviation of 3.3 in.

(3/3 points)

What is the z-score for Lyndon Johnson? *(Round to 2 decimal places.)*

1.67

✓ Answer: 1.67

1.67

What is the z-score for Shaquille O'Neal? *(Round to 2 decimal places.)*

1.52

✓ Answer: 1.52

1.52

Who is relatively taller among their respective groups: Lyndon Johnson or Shaquille O'Neal?

Lyndon Johnson

✓ Answer: Lyndon Johnson

(1/1 point)

Which of the following is NOT a characteristic of a Normal Distribution?

☒ Half the data values are positive, and half the data values are negative. ✓

☐ The center value of the distribution is the mean, median and mode.

☐ The distribution is bell-shaped and unimodal.

☐ The scores are symmetrical around the mean.



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