

Lesson 16: Describing Categorical Data; Proportions; Sampling Distribution of a Sample Proportion

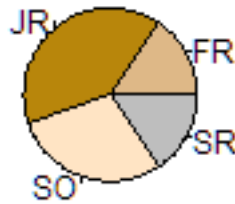
Homework

Solutions

Please note that the steps show rounded numbers, but that the final answers to the problems are calculated without rounding.

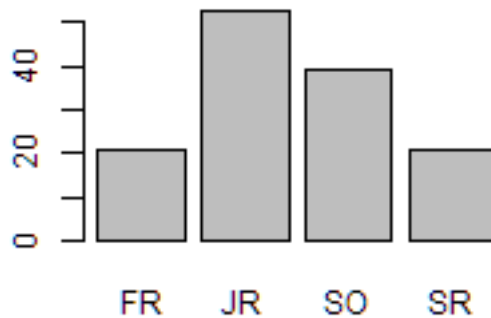
Problem	Part	Solution
1	-	A pie chart is used for categorical data. Each slice represents a part of a whole. A histogram, on the other hand, is used for quantitative data. It is a visual representation of the spread of a set of data.

Class Ranks

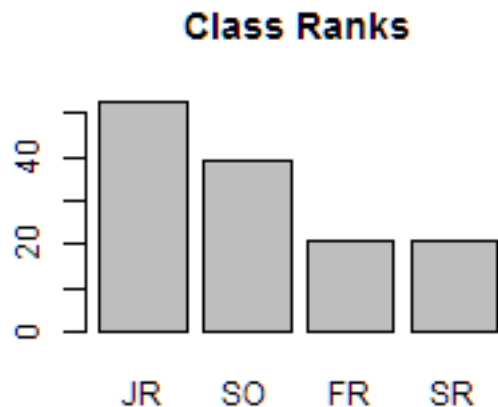


2 -

Class Ranks



3 -



- 4 -
- 5 - The sample proportion \hat{p} will be approximately normal when n is large. How do we know if n is large? We will conclude that n is large when $np \geq 10$ and $n(1 - p) \geq 10$
- 6 - $n = 100$
- 7 - The sample proportion \hat{p} will be approximately normal when:
 $np \geq 10$ and $n(1 - p) \geq 10$
 $1000(0.528) = 528 \geq 10$ and $1000(1 - 0.528) = 472 \geq 10$
 Since both conditions are true, we conclude that n is sufficiently large so that \hat{p} will be approximately distributed.
- 8 - The sampling distribution of \hat{p} is approximately normal with mean $p = 0.528$ and standard deviation of 0.016.
- 9 - $z = -1.774$
- 10 - $P(Z = -1.774) = 0.038$
- 11 - The sample proportion \hat{p} will be approximately normal when:
 $np \geq 10$ and $n(1 - p) \geq 10$
 $4040(0.5) = 2020 \geq 10$ and $4040(1 - 0.5) = 2020 \geq 10$
 Since both conditions are true, we conclude that n is sufficiently large so that \hat{p} will be approximately distributed.
- 12 - The sampling distribution of \hat{p} is approximately normal with mean $p = 0.5$ and standard deviation of 0.008.
- 13 - $P(Z = 0.881 \text{ or } Z = -0.881) = 0.378$
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