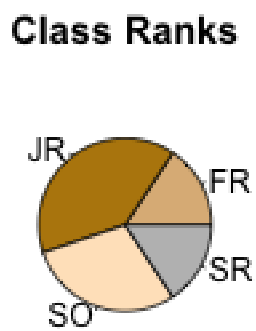
Lesson 16: Describing Categorical Data; Proportions; Sampling Distribtion of a Sample Proportion

Homework

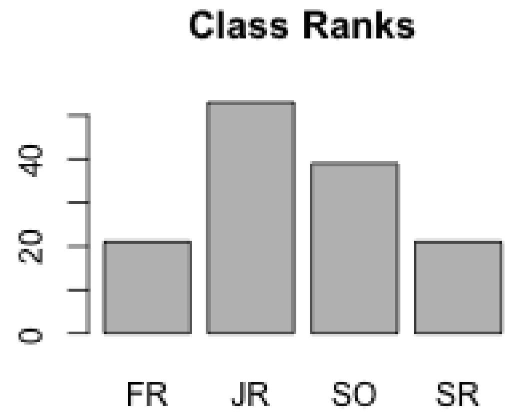
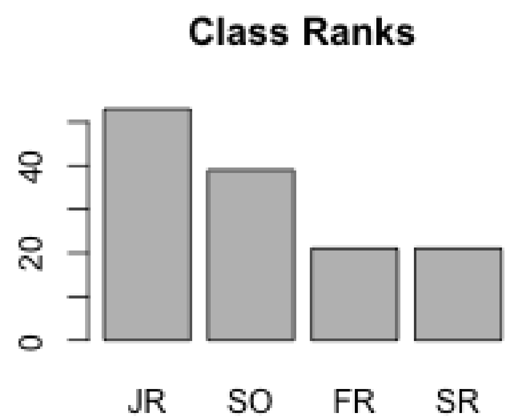
Solutions

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.



2	-	

Problem	Part	Solution
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	-	$P(Z = -1.774) = 0.038$

Problem	Part	Solution
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	-	$P(Z = 0.881 \text{ or } Z = -0.881) = 0.378$