2. Anthropologists have discovered a prehistoric cave dwelling that contains a large number of adult human footprints. To study the size of the adults who used the cave dwelling, they randomly selected 20 of the footprints from the population of all footprints in the cave and measured the length of those footprints. Some statistics resulting from this random sample are as follows.

Sample size	20	Minimum	15.2 cm
Mean	24.8 cm	First quartile	18.7 cm
Standard deviation	7.5 cm	Median	21.5 cm
		Third quartile	30.0 cm
		Maximum	37.0 cm

The anthropologists would like to construct a 95 percent confidence interval for the mean foot length of the adults who used the cave dwelling.

(a) What assumptions are necessary in order for this confidence interval to be appropriate?

(b) Discuss whether each of the assumptions listed in your response to (a) appears to be satisfied in this situation.

GO ON TO THE NEXT PAGE.

3. Five hundred randomly selected middle-aged men and five hundred randomly selected young adult men were rated on a scale from 1 to 10 on their physical flexibility, with 10 being the most flexible. Their ratings appear in the frequency table below. For example, 17 middle-aged men had a flexibility rating of 1.

Physical Flexibility Rating	Frequency of Middle-Aged Men	Frequency of Young Adult Men
1	17	4
2	31	17
3	49	29
4	71	39
5	70	54
6	87	69
7	78	83
8	54	93
9	34	73
10	9	39

GO ON TO THE NEXT PAGE.

Question 2 continued

4   Complete Response

States both assumptions correctly in part (a). Justifies that the random sample assumption is not met and justifies whether or not the normality assumption is met.

3   Substantial Response

States both assumptions correctly and provides a correct discussion of only one of the assumptions.

2   Developing Response

States only one of the assumptions correctly in part (a) <u>and</u> provides a correct discussion regarding whether or not it is met in part (b).

1   Minimal Response

States one or both of the assumptions correctly in part (a) but does not provide an adequate discussion of either assumption in part (b)

0   No credit

NOTES:

•   Stating only "random sample" or "SRS" is insufficient.

•   Assumption 2 is normality, not "no outliers." Stating only that "there are no outliers" is insufficient for establishing normality.

•   Extraneous comments in either parts (a) or (b) should be ignored, as long as they are not contradictory to the given answer.

•   If part (b) is addressed in the student's answer to (a) and not contradicted in what is written in (b), credit can be given for (b).

•   If part (a) is addressed in the student's answer to (b) and not contradicted in what is written in (a), credit can be given for (a).

•   A student can only be penalized once for failing to correctly identify the target population of interest: adults who use the cave.