

**2019 STAAR Alternate 2  
Score Distributions and  
Statistics by Content Area  
and Grade**

## Glossary

This glossary provides definitions for the statistical terms that appear in the tables and graphs in Appendix C ("2019 STAAR Alternate 2 Score Distributions and Statistics by Content Area and Grade"). Definitions of statistical terms and concepts in the other sections are given in [Chapter 3](#) or [Chapter 4](#).

### Descriptive Statistics

**Mean.** The mean is a measure of central tendency. It is the average score for the assessment. It is computed by summing the scores of all students and dividing it by the total number of students (N).

**Median.** The median is another measure of central tendency. It is the score at the middle of the frequency distribution for the assessment. It is computed by finding the score at which there is the same number of scores above as there is below.

**Mode.** The mode is another measure of central tendency. It is the most frequently obtained score for the assessment. It is determined by computing the frequency distribution and finding the score point with the highest frequency (n-count).

**Range.** The range is a measure of statistical dispersion (variability or spread). It is the difference between the lowest and highest scores obtained by students on the assessment. It is computed by subtracting the lowest score from the highest score.

**Interquartile Range.** The interquartile range is another measure of statistical dispersion (variability or spread). It is the difference between the 1<sup>st</sup> and 3<sup>rd</sup> quartiles (or 25<sup>th</sup> and 75<sup>th</sup> percentiles) of the score distribution for the assessment. It is computed by subtracting the score at the 1<sup>st</sup> quartile (the point that splits the lowest 25% of the scores) from the score at the 3<sup>rd</sup> quartile (the point that splits the highest 25% of the scores).

**Standard Deviation (SD).** The standard deviation is another measure of statistical dispersion (variability or spread). It is an indicator of the degree of score variation around the mean. It is computed using the following formula.

$$SD = \sqrt{\frac{\sum_{i=1}^N (X_i - \bar{X})^2}{N-1}}$$

where  $X_i$  is the score for student  $i$ ,  $\bar{X}$  is the mean score and  $N$  is the total number of students who took the assessment.

**Variance.** The variance is another measure of statistical dispersion (variability or spread) around the mean. It is computed as the square of the standard deviation (SD).

**Skewness.** The skewness is an indicator of the shape of the score distribution. It measures the extent to which the score distribution "leans" to one side of the mean. A positive skewness indicates that the score distribution leans below the mean. A negative skewness indicates that the score distribution leans above the mean. A skewness of zero indicates that the score distribution is symmetric around the mean. It is computed using the following formula.

$$Skewness = \frac{N}{(N-1)(N-2)} \sum_{i=1}^N \left( \frac{X_i - \bar{X}}{S_X} \right)^3$$

where  $X_i$  is the score for student  $i$ ,  $\bar{X}$  is the mean score,  $S_X$  is the standard deviation (SD) and  $N$  is the total number of students who took the assessment.

**Kurtosis.** The kurtosis is another indicator of the shape of the score distribution. It measures the "peakedness" of the score distribution. A positive kurtosis is referred to as *leptokurtic*, meaning that the distribution has a more acute peak around the mean and fatter tails. A negative kurtosis is called *platykurtic*, meaning the distribution has a lower, wider peak around the mean and thinner tails. It is computed using the following formula.

$$Kurtosis = \frac{N(N+1)}{(N-1)(N-2)(N-3)} \sum_{i=1}^N \left( \frac{X_i - \bar{X}}{S_X} \right)^4 - \frac{3(N-1)^2}{(N-2)(N-3)}$$

where  $X_i$  is the score for student  $i$ ,  $\bar{X}$  is the mean score,  $S_X$  is the standard deviation (SD) and  $N$  is the total number of students who took the assessment.

## Frequency Distributions

**Frequency (FREQ).** This is the number of students who obtained the particular score point on the assessment.

**Cumulative Frequency (CUM FREQ).** This is the number of students who obtained a score that is less than or equal to the particular score point on the assessment.

**Percentage (PCT).** This is the percentage of students who obtained the particular score point on the assessment. It is computed as:  $PCT = FREQ \div N \times 100$ .

**Cumulative Percentage (CUM PCT).** This is the percentage of students who obtained a score that is less than or equal to the particular score point on the assessment. It is computed as:  $CUM PCT = CUM FREQ \div N \times 100$ .

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**Table B.6.1. 2019 STAAR Alternate 2 Grades 3–8 Assessments  
Scale Score Descriptive Statistics**

<b>Subject</b>	<b>N</b>	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>Range</b>	<b>Interquartile Range</b>	<b>SD</b>	<b>Variance</b>	<b>Skewness</b>	<b>Kurtosis</b>
Grade 3 Mathematics	5880	350.99	352	375	380	48	45.85	2101.99	-0.2890	3.5681
Grade 4 Mathematics	6311	365.13	358	410	371	62	50.59	2559.47	0.0228	1.7063
Grade 5 Mathematics	6131	363.29	357	402	372	58	53.62	2875.47	0.2195	0.8015
Grade 6 Mathematics	6036	362.28	362	379	408	52	50.63	2563.67	-0.1096	3.4287
Grade 7 Mathematics	5616	363.86	358	375	404	55	47.62	2267.26	0.1868	3.4997
Grade 8 Mathematics	5254	360.76	354	389	408	59	50.43	2542.69	0.0765	3.0833
Grade 3 Reading	5881	338.61	340	340	377	42	43.36	1880.21	-0.4624	4.1195
Grade 4 Reading	6312	350.08	347	375	391	53	47.38	2244.83	-0.0459	2.7593
Grade 5 Reading	6133	351.51	347	363	408	66	50.73	2573.48	0.1682	2.0330
Grade 6 Reading	6038	347.85	346	346	395	49	45.97	2112.80	-0.0885	3.6883
Grade 7 Reading	5615	356.70	354	371	391	61	51.57	2659.46	0.2357	1.7178
Grade 8 Reading	5252	356.53	352	366	394	45	44.85	2011.31	-0.1423	3.3831
Grade 4 Writing	6310	339.58	338	344	405	49	48.65	2366.73	-0.0683	3.4627
Grade 7 Writing	5613	349.76	343	381	383	62	49.52	2452.33	0.1874	2.0332
Grade 5 Science	6133	366.89	365	387	378	62	49.75	2475.47	-0.0031	1.9076
Grade 8 Science	5250	373.29	369	390	351	63	49.82	2482.43	-0.0573	1.6191
Grade 8 Social Studies	5249	358.10	356	372	390	50	44.70	1997.68	0.0665	3.3013

**Table B.6.2. 2019 STAAR Alternate 2 EOC Assessments  
Scale Score Descriptive Statistics**

<b>Subject</b>	<b>N</b>	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>Range</b>	<b>Interquartile Range</b>	<b>SD</b>	<b>Variance</b>	<b>Skewness</b>	<b>Kurtosis</b>
Algebra I	5122	349.25	348	354	400	46	46.21	2135.68	-0.0935	4.5238
English I	5148	355.07	353	347	405	46	46.00	2116.00	0.0518	4.4203
English II	4680	360.05	352	366	408	59	53.79	2893.65	0.0553	2.9303
Biology	4954	361.64	361	368	348	45	43.50	1892.53	0.0515	3.2186
U.S. History	4271	357.41	354	378	384	47	48.17	2320.37	-0.1207	3.3134

Figure C.6.1 2019 STAAR Alternate 2 Grade 3 Mathematics  
 Frequency Distribution of Scale Scores  
 All Students

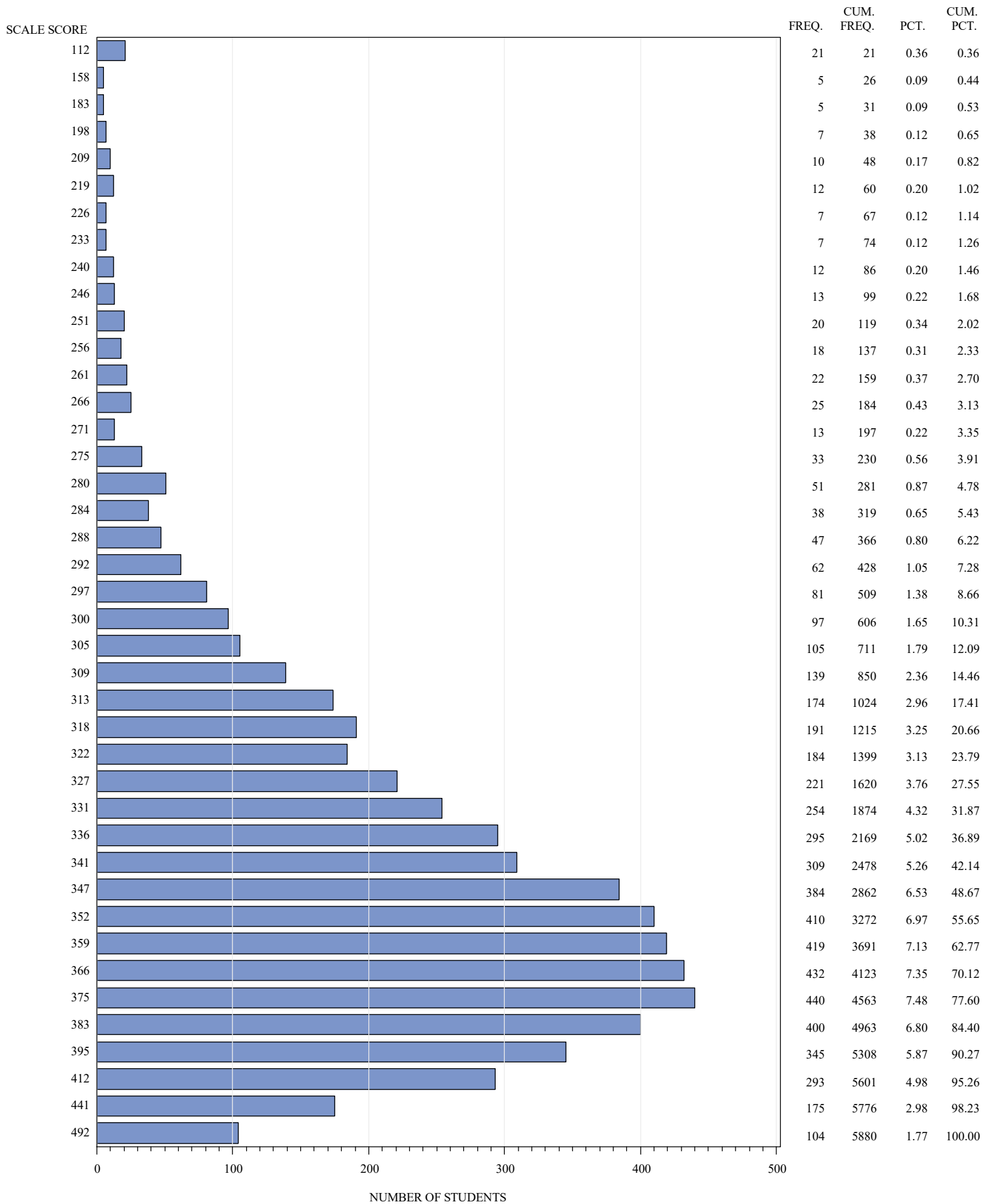




Figure C.6.2 2019 STAAR Alternate 2 Grade 4 Mathematics  
 Frequency Distribution of Scale Scores  
 All Students

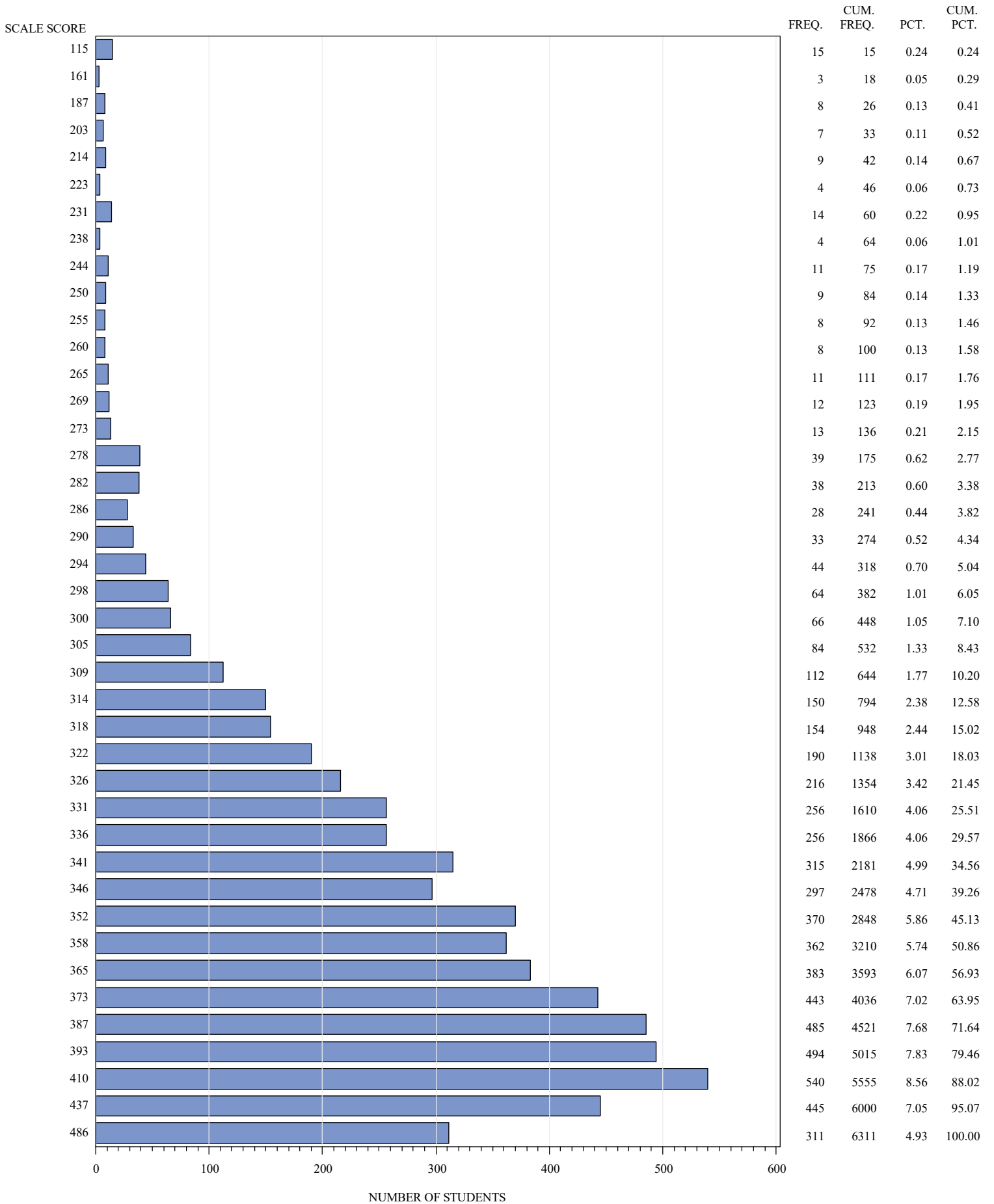


Figure C.6.3 2019 STAAR Alternate 2 Grade 5 Mathematics  
 Frequency Distribution of Scale Scores  
 All Students

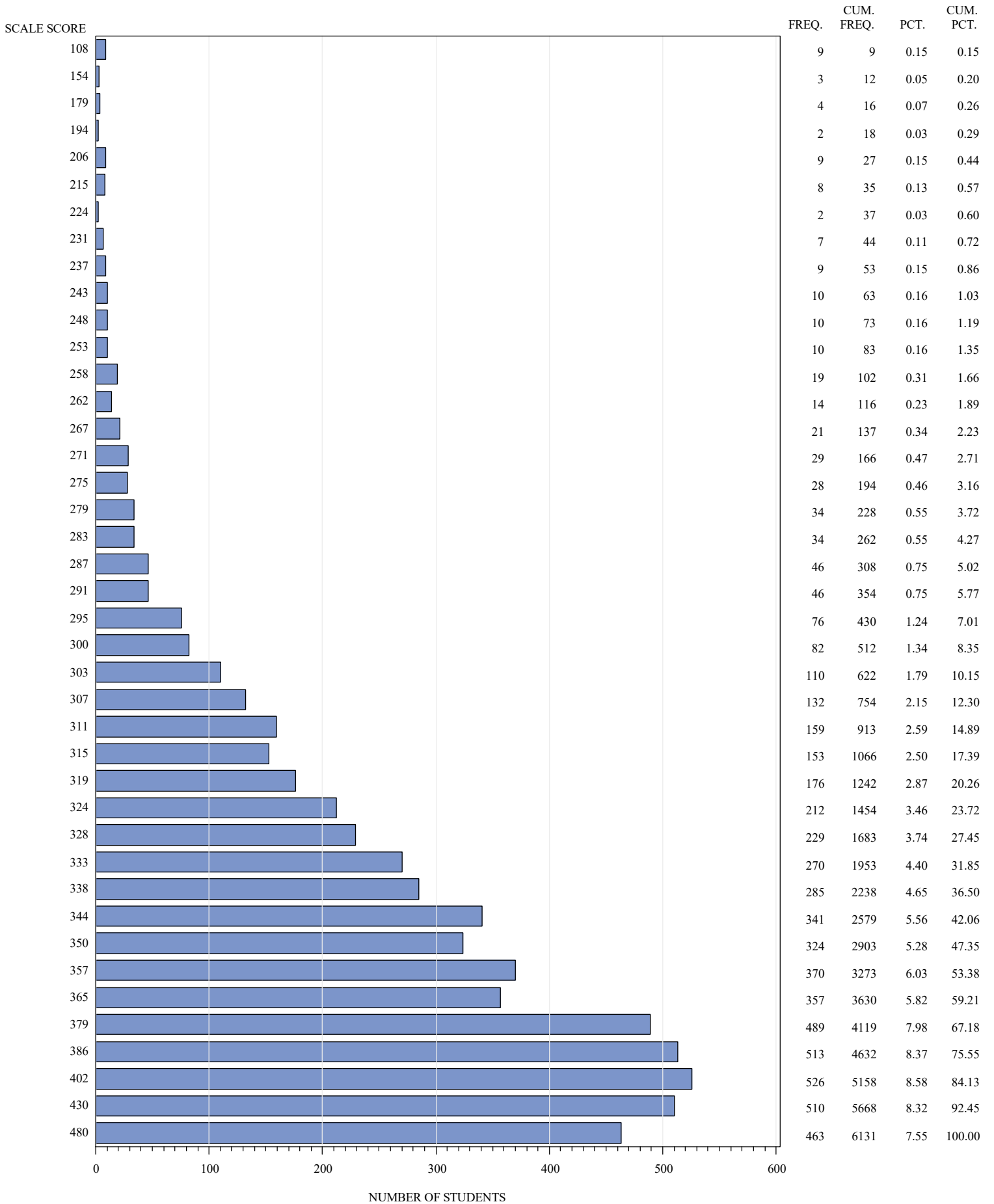


Figure C.6.4 2019 STAAR Alternate 2 Grade 6 Mathematics  
 Frequency Distribution of Scale Scores  
 All Students

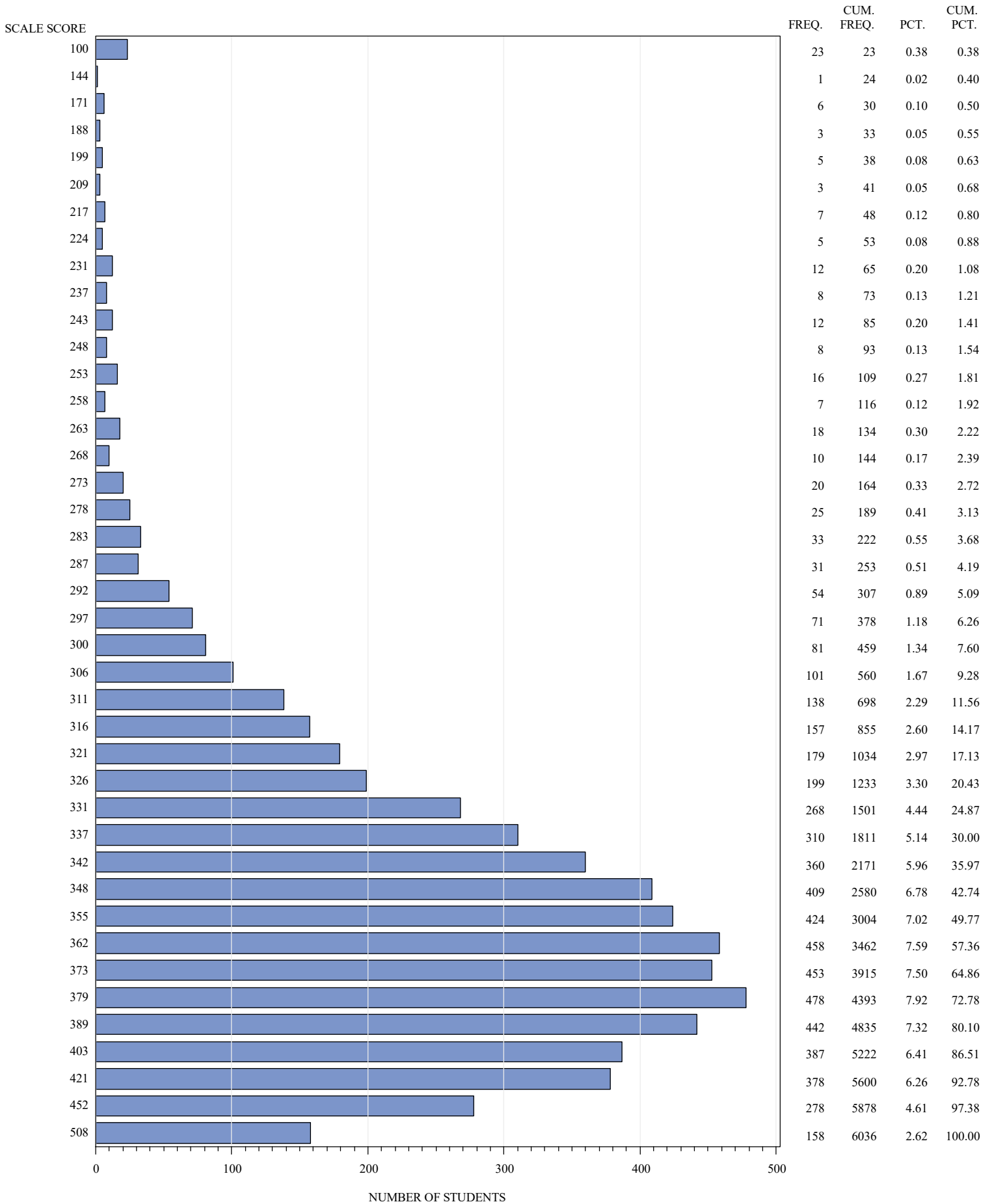


Figure C.6.5 2019 STAAR Alternate 2 Grade 7 Mathematics  
 Frequency Distribution of Scale Scores  
 All Students

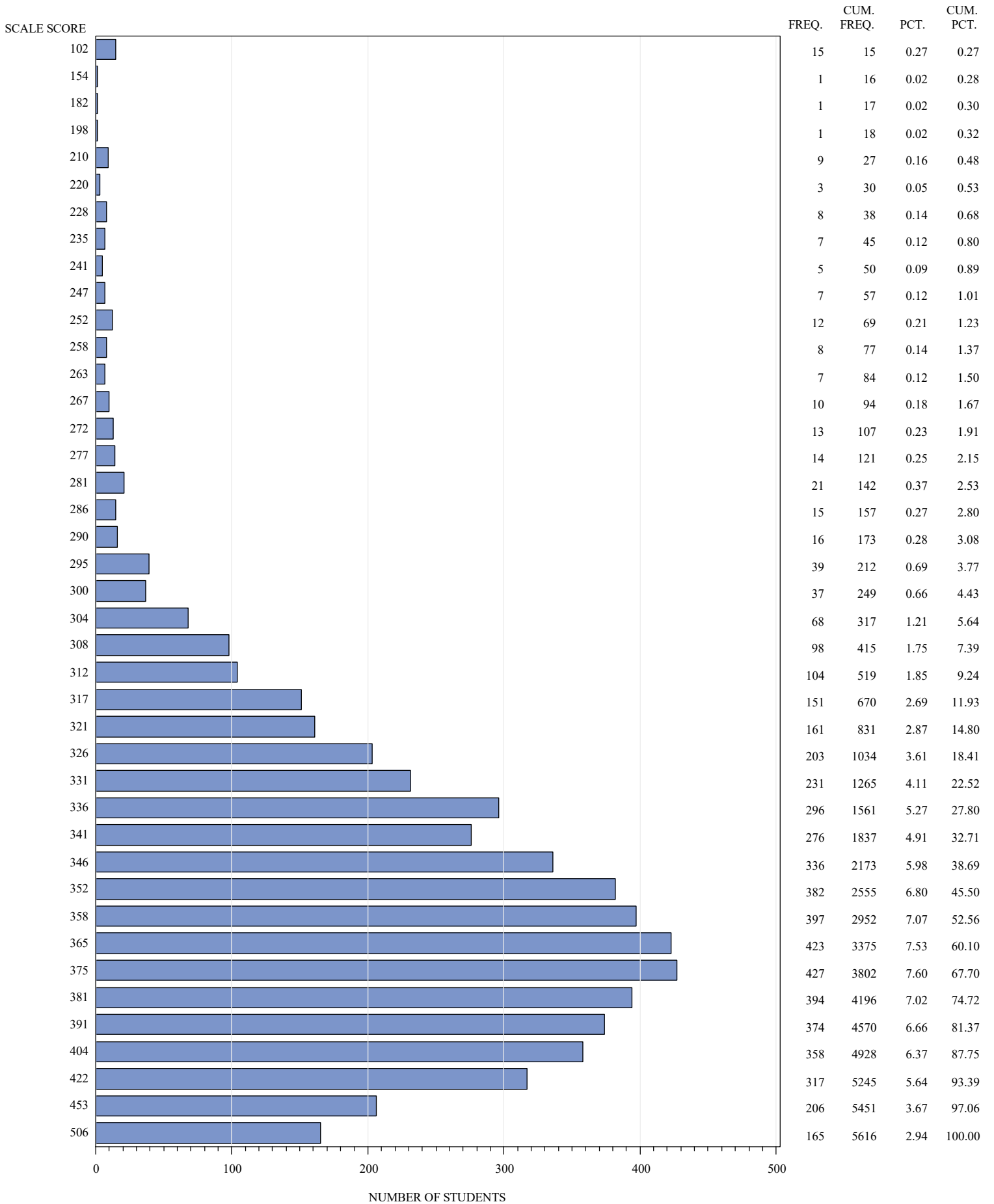


Figure C.6.6 2019 STAAR Alternate 2 Grade 8 Mathematics  
 Frequency Distribution of Scale Scores  
 All Students

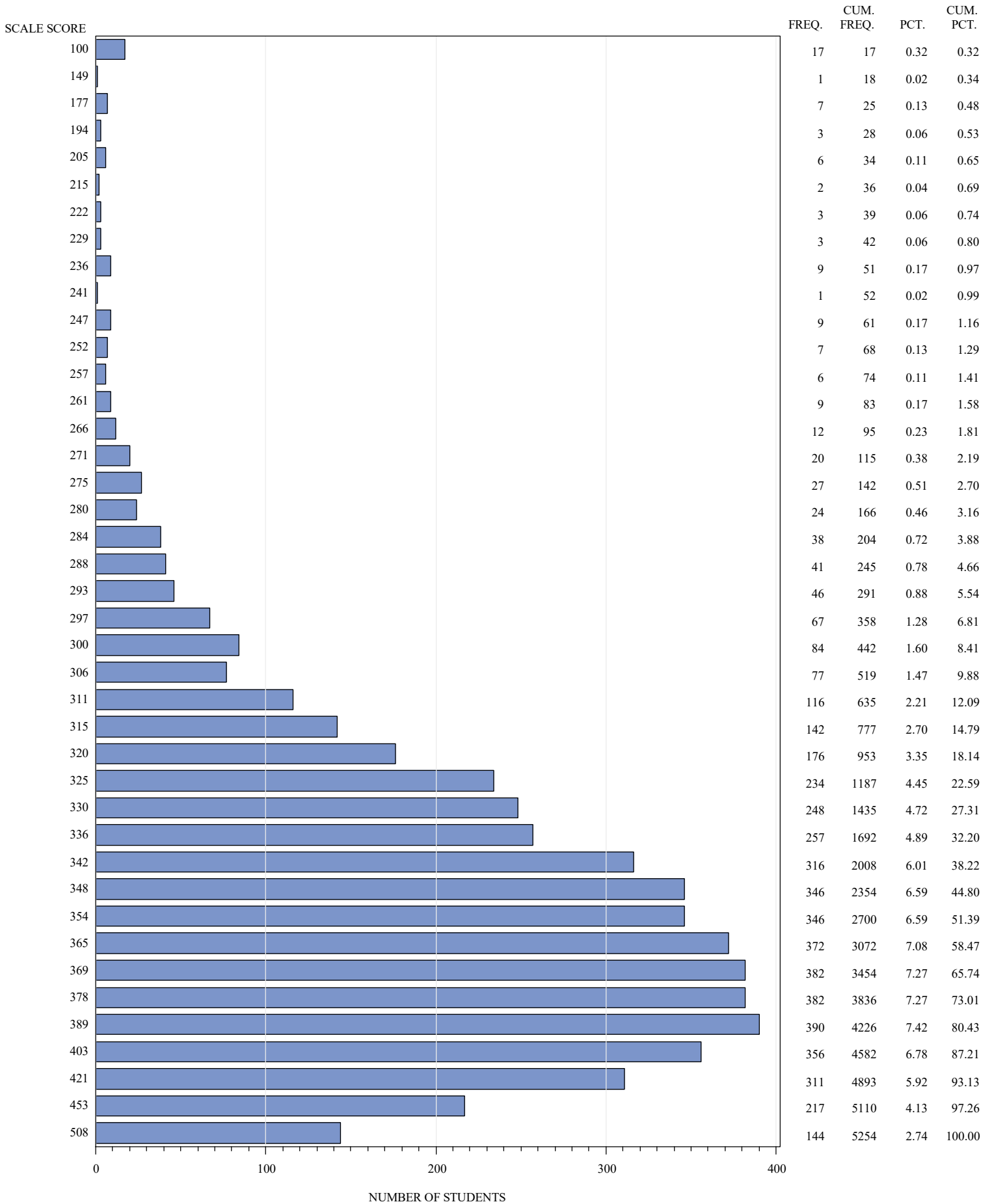


Figure C.6.7 2019 STAAR Alternate 2 Grade 3 Reading  
 Frequency Distribution of Scale Scores  
 All Students

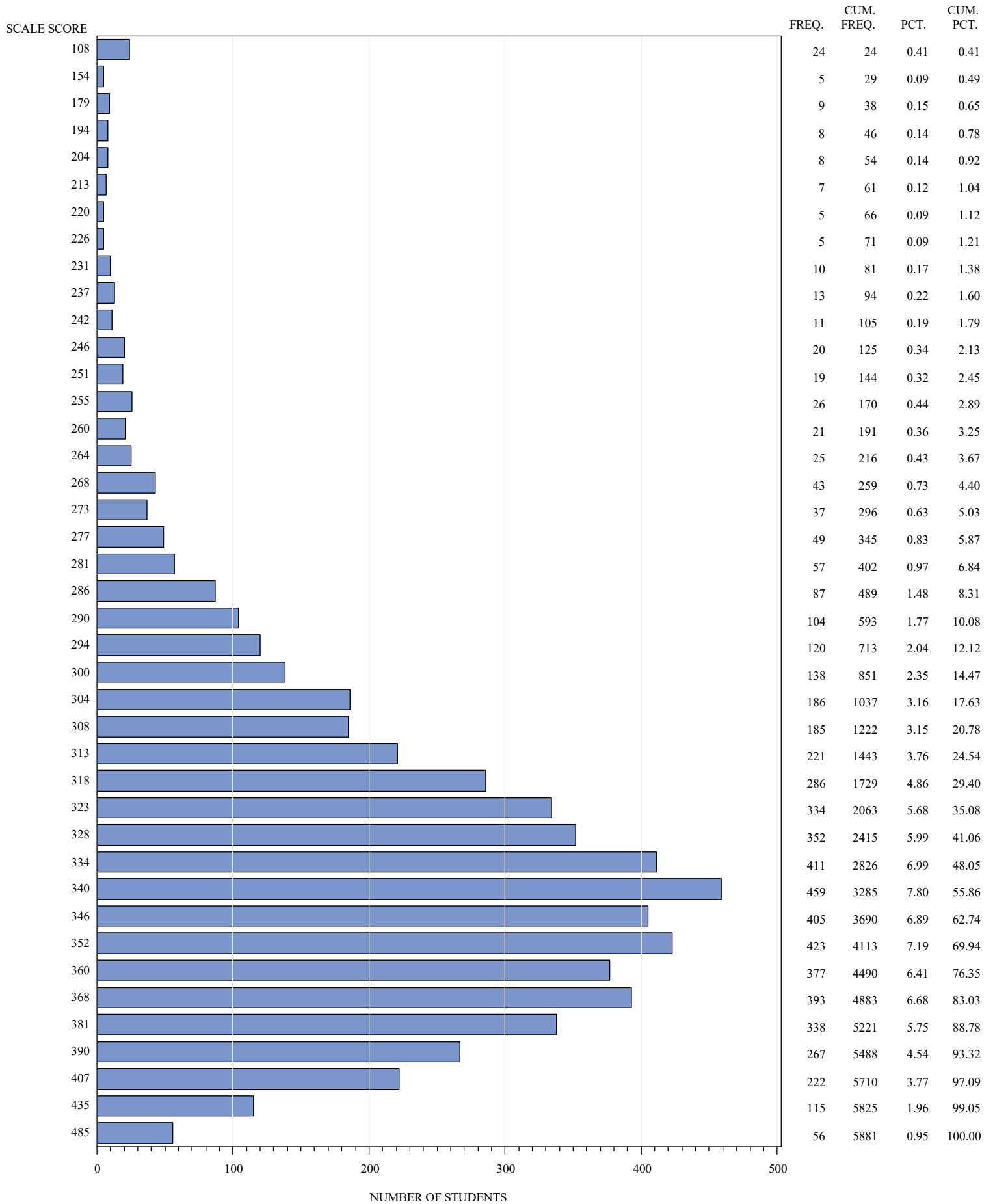


Figure C.6.8 2019 STAAR Alternate 2 Grade 4 Reading  
 Frequency Distribution of Scale Scores  
 All Students

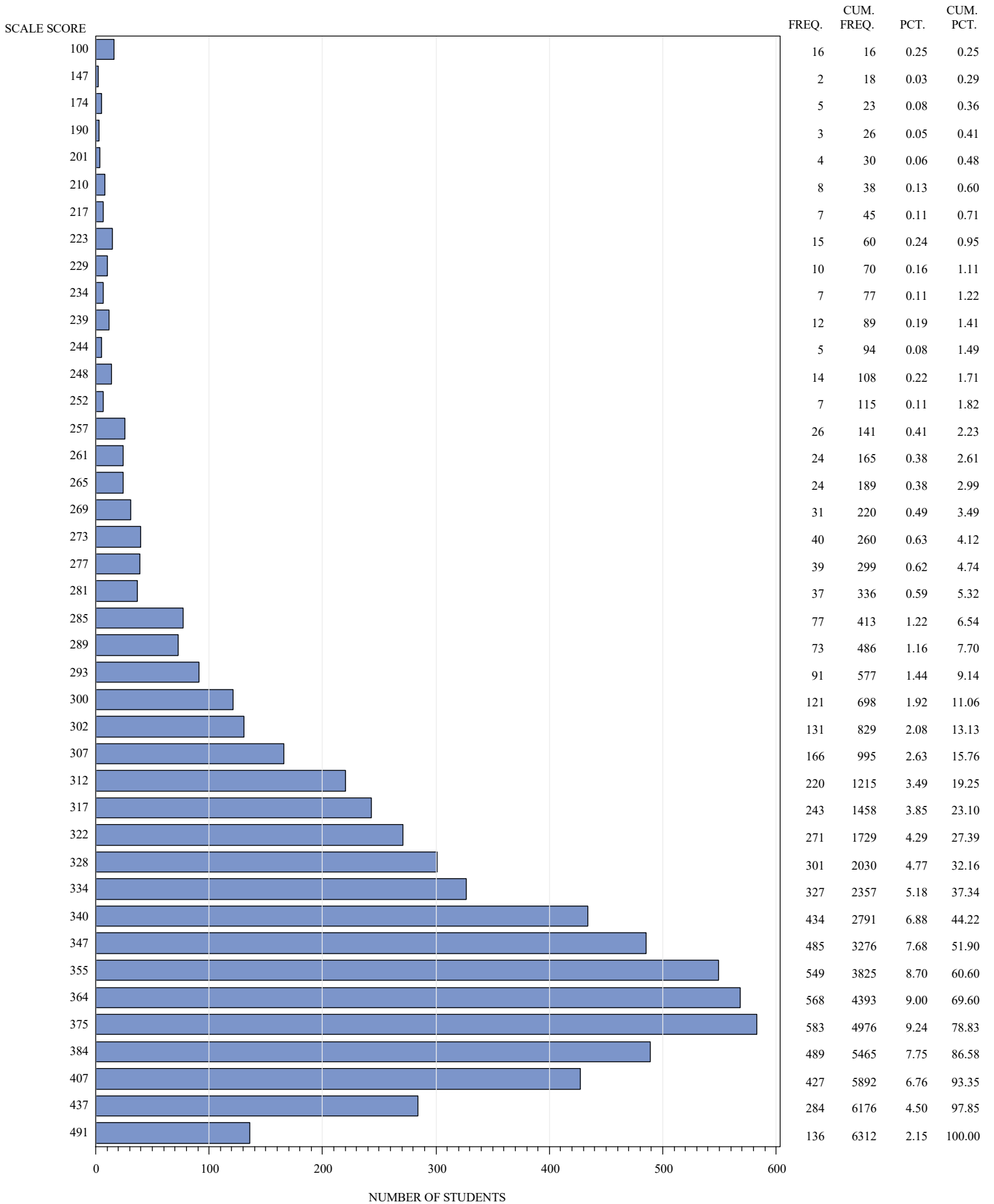


Figure C.6.9 2019 STAAR Alternate 2 Grade 5 Reading  
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 All Students

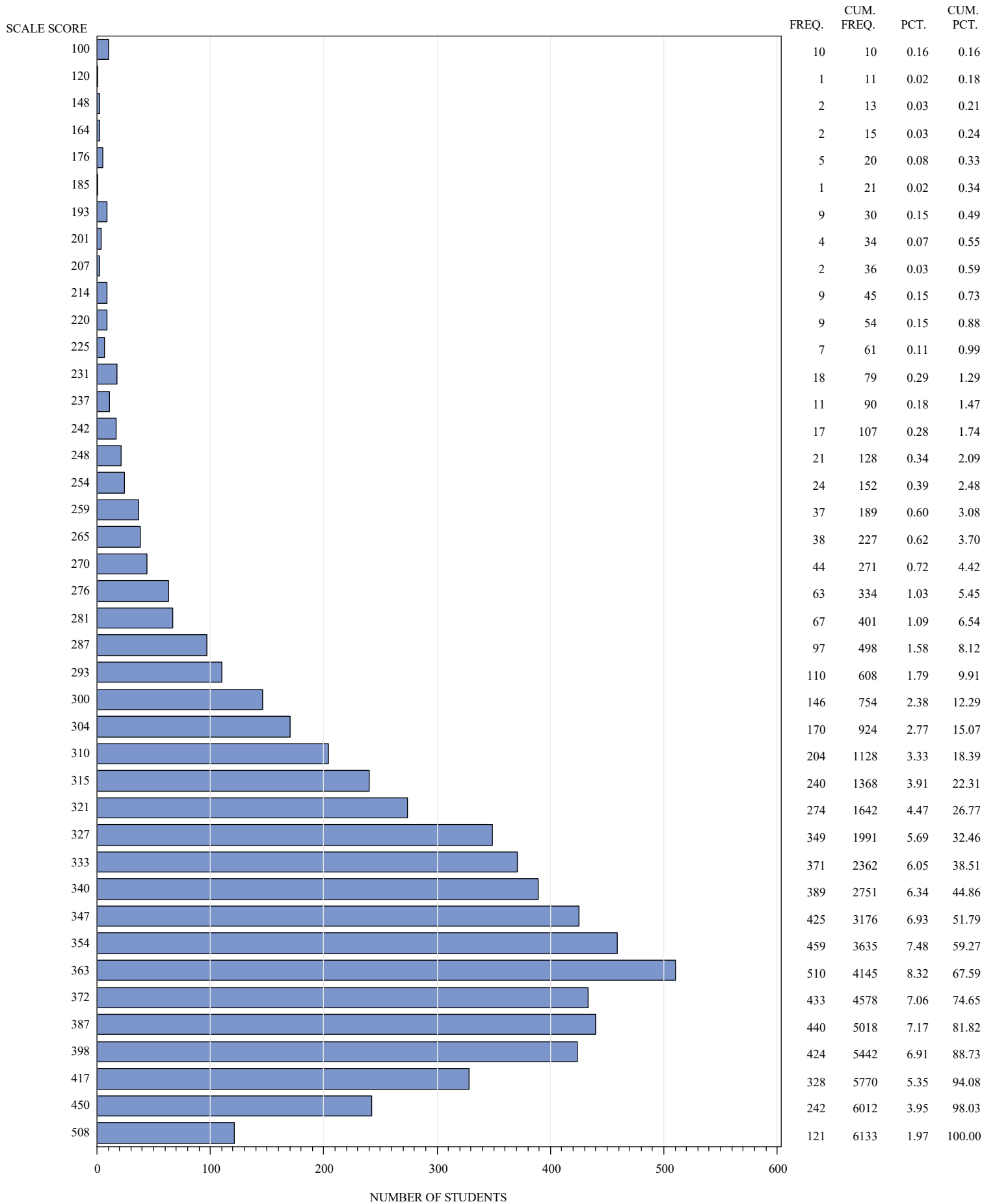




Figure C.6.10 2019 STAAR Alternate 2 Grade 6 Reading  
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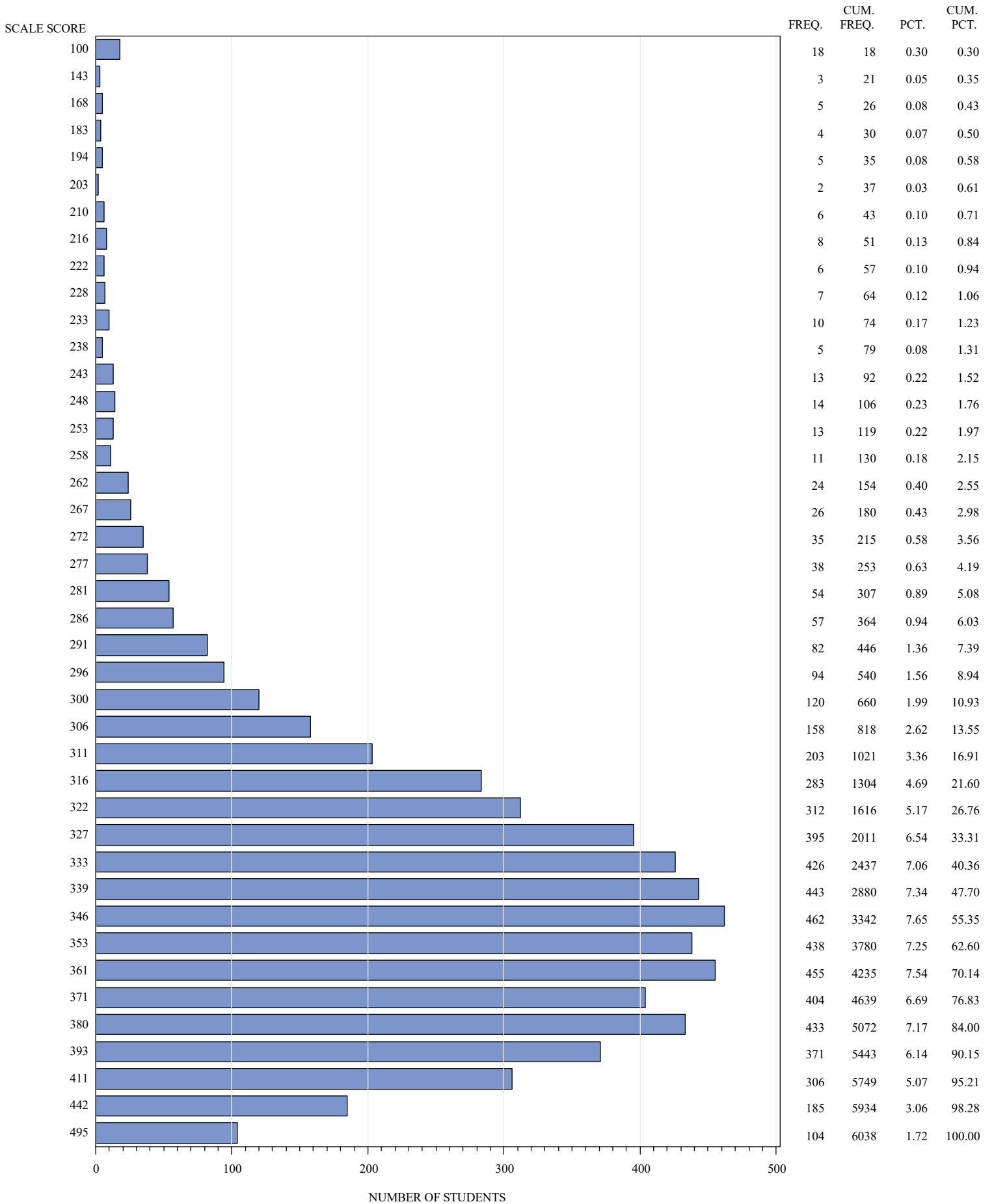


Figure C.6.11 2019 STAAR Alternate 2 Grade 7 Reading  
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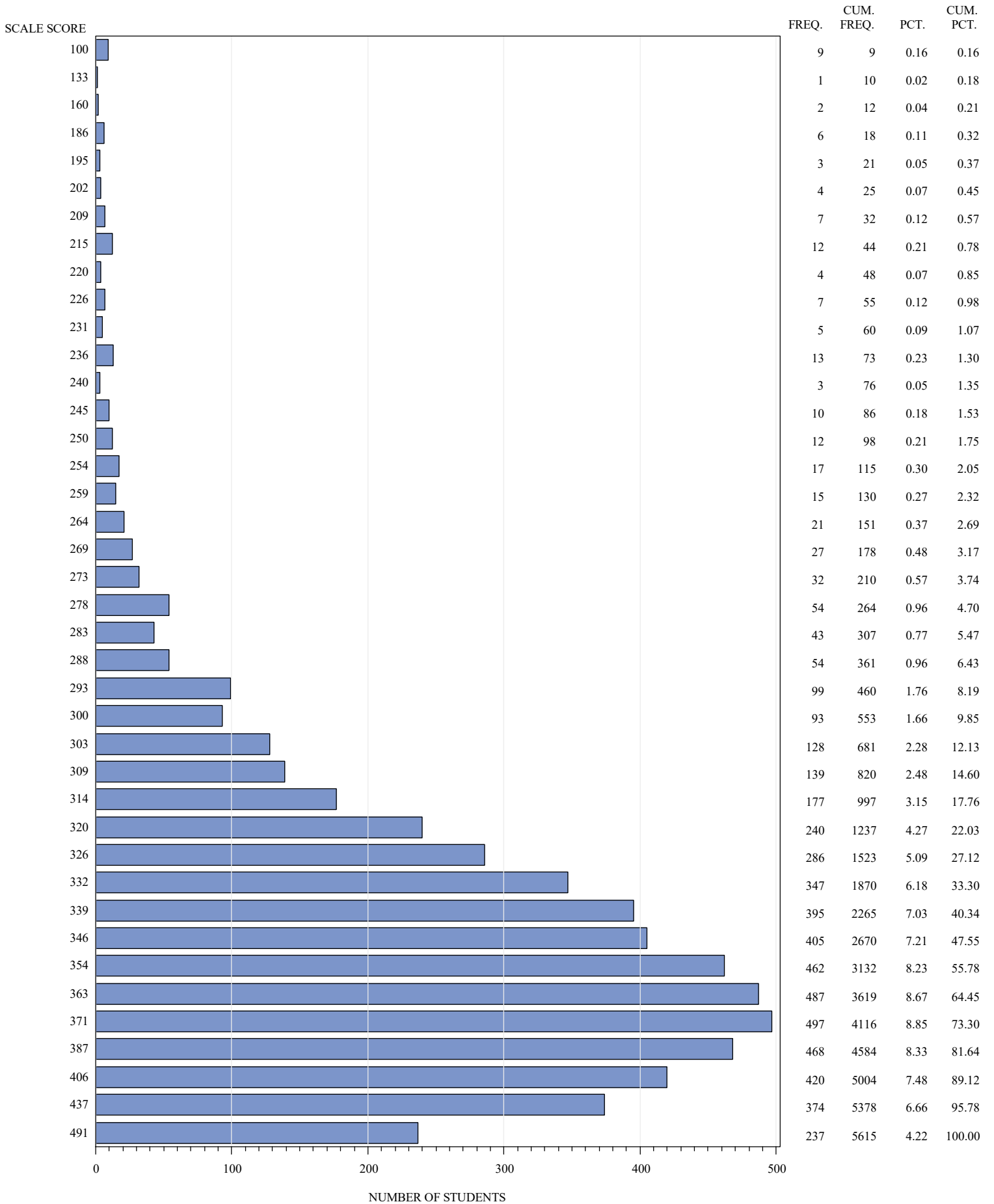


Figure C.6.12 2019 STAAR Alternate 2 Grade 8 Reading  
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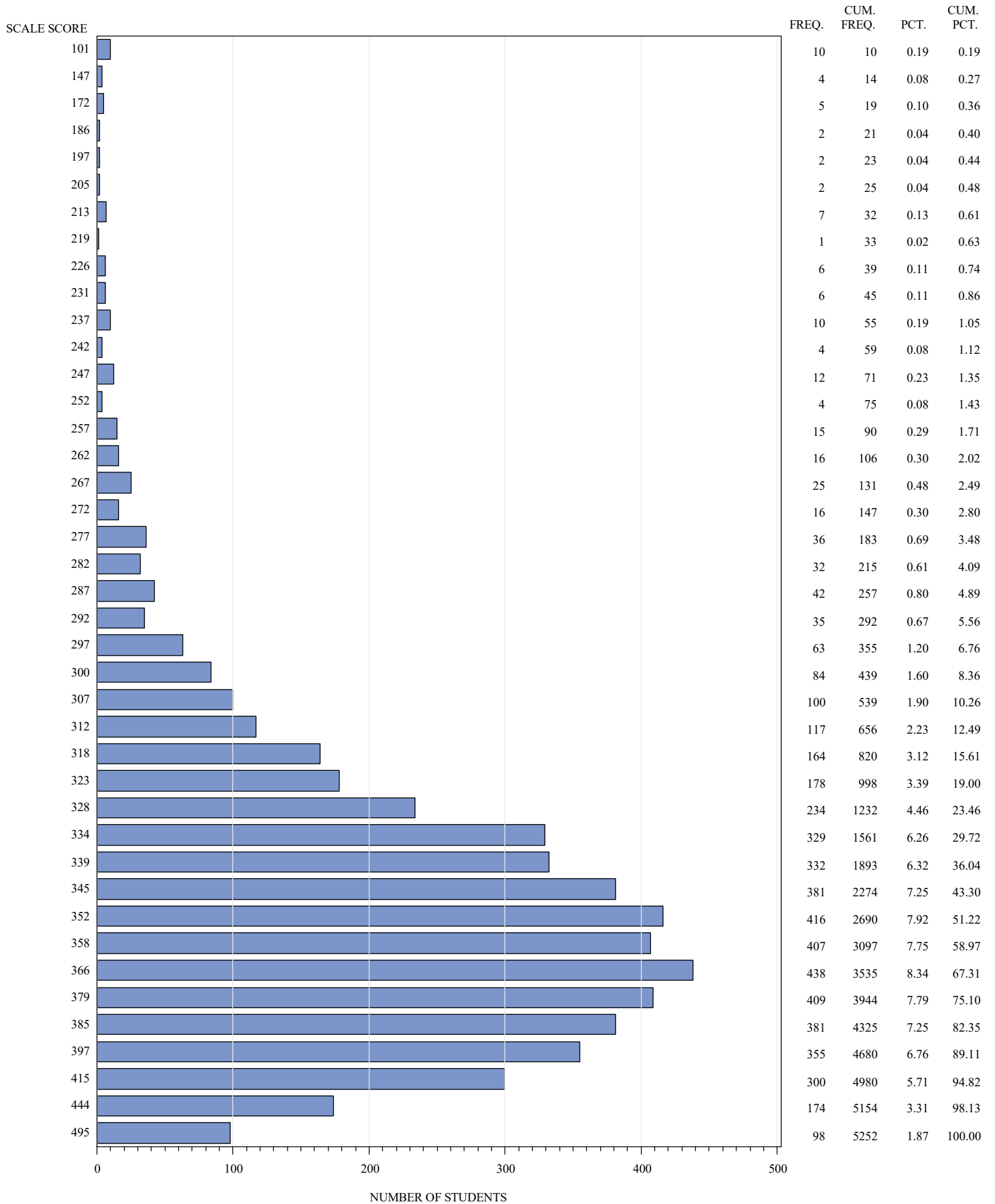


Figure C.6.13 2019 STAAR Alternate 2 Grade 4 Writing  
 Frequency Distribution of Scale Scores  
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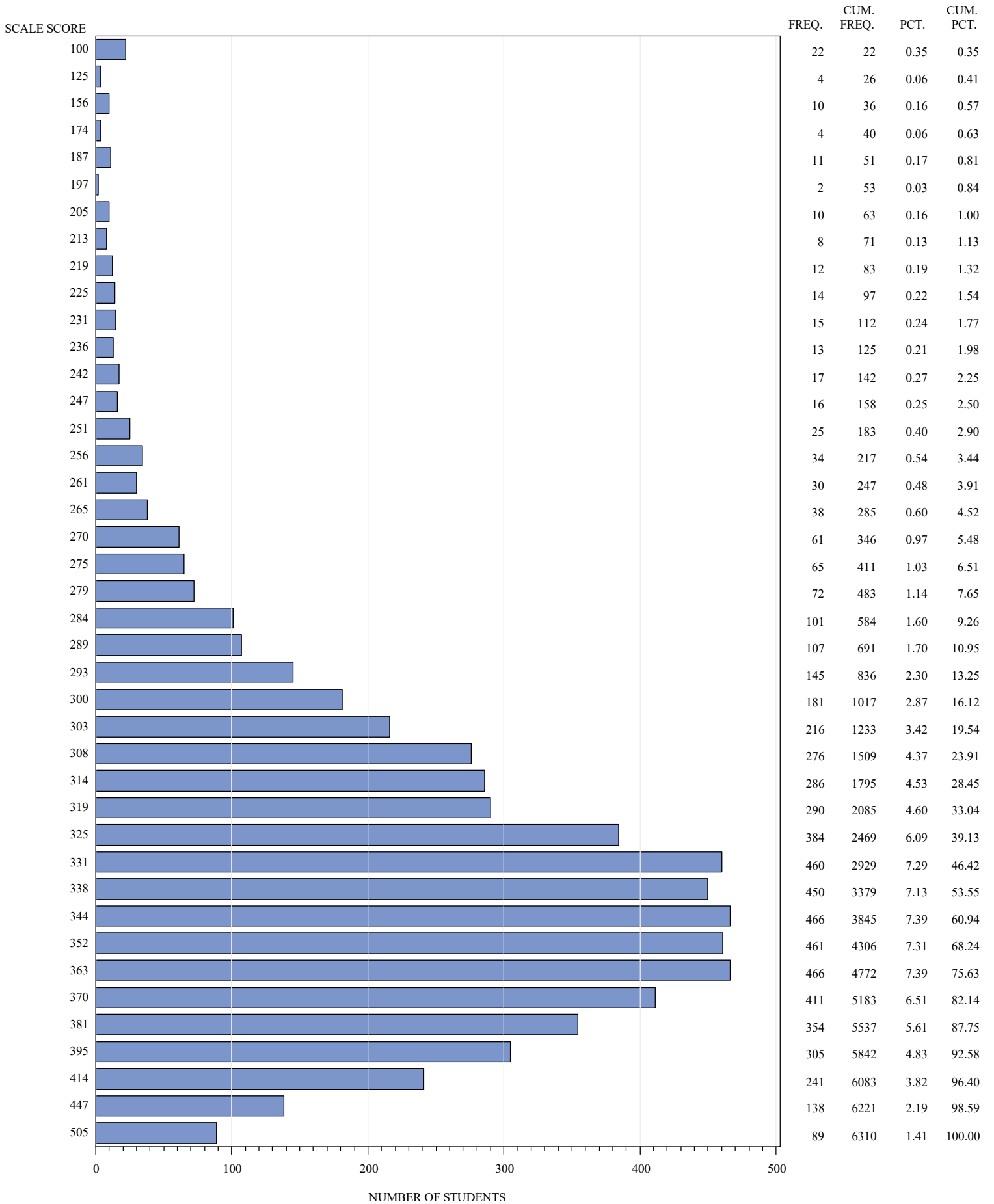


Figure C.6.14 2019 STAAR Alternate 2 Grade 7 Writing  
 Frequency Distribution of Scale Scores  
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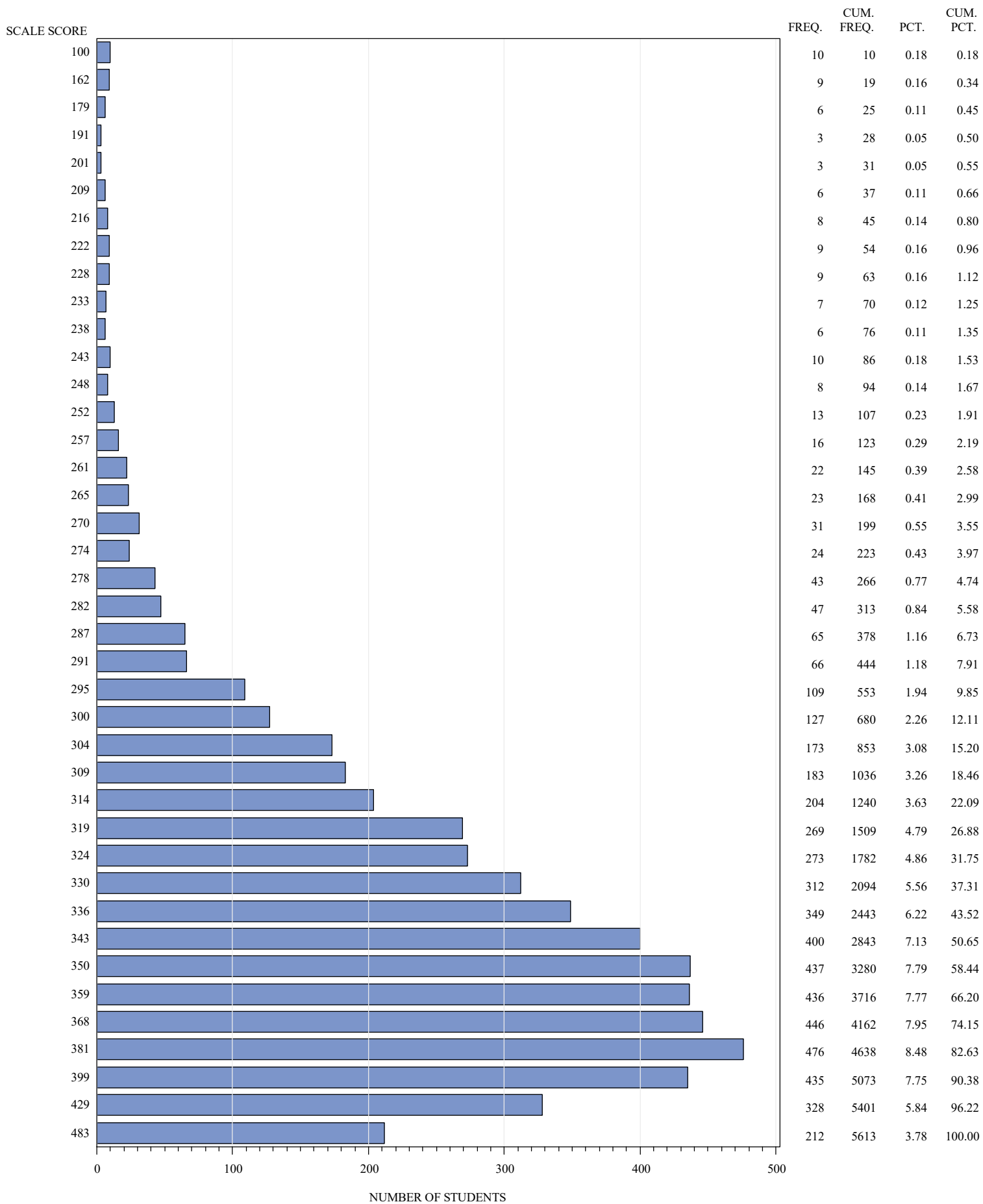


Figure C.6.15 2019 STAAR Alternate 2 Grade 5 Science  
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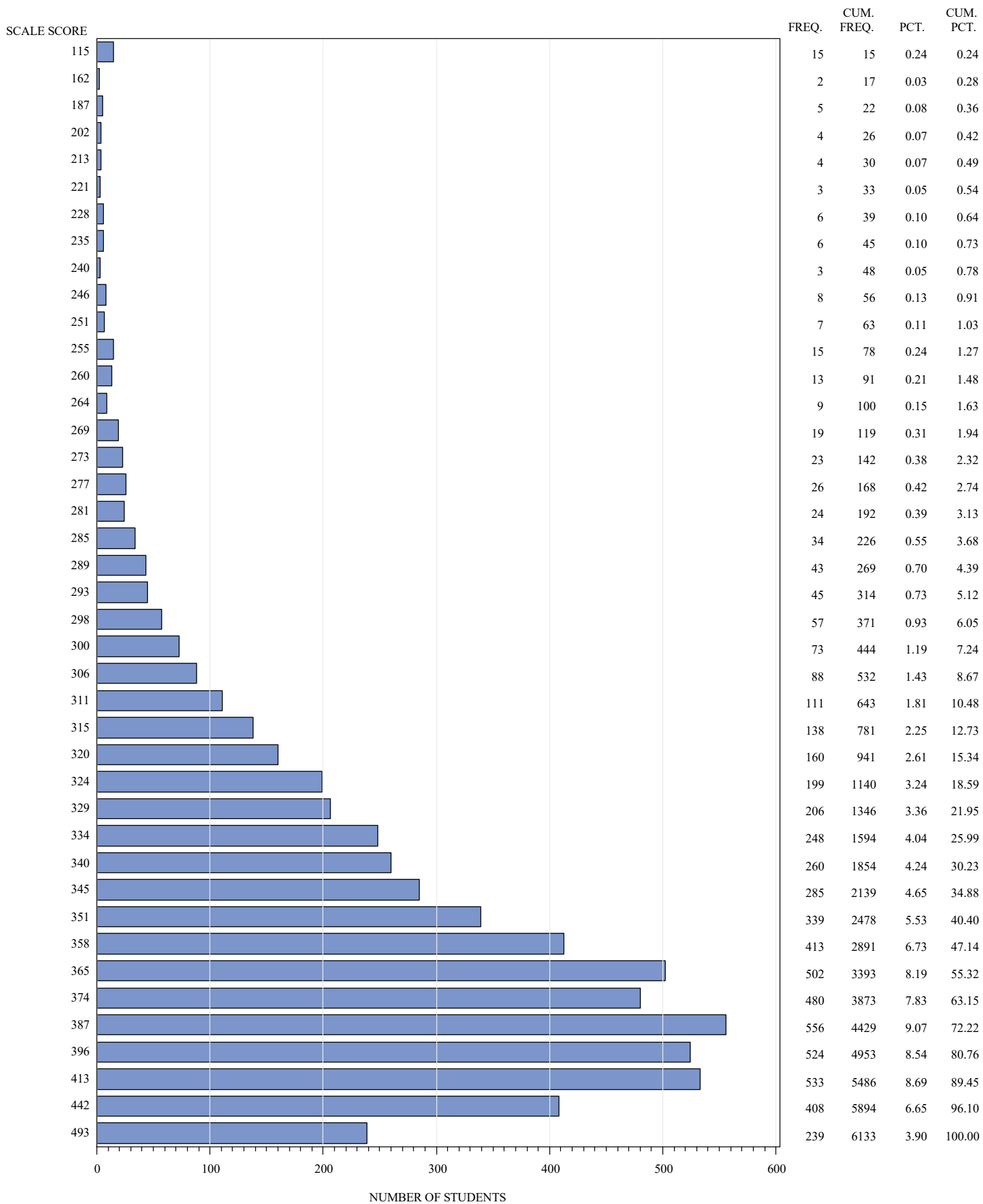


Figure C.6.16 2019 STAAR Alternate 2 Grade 8 Science  
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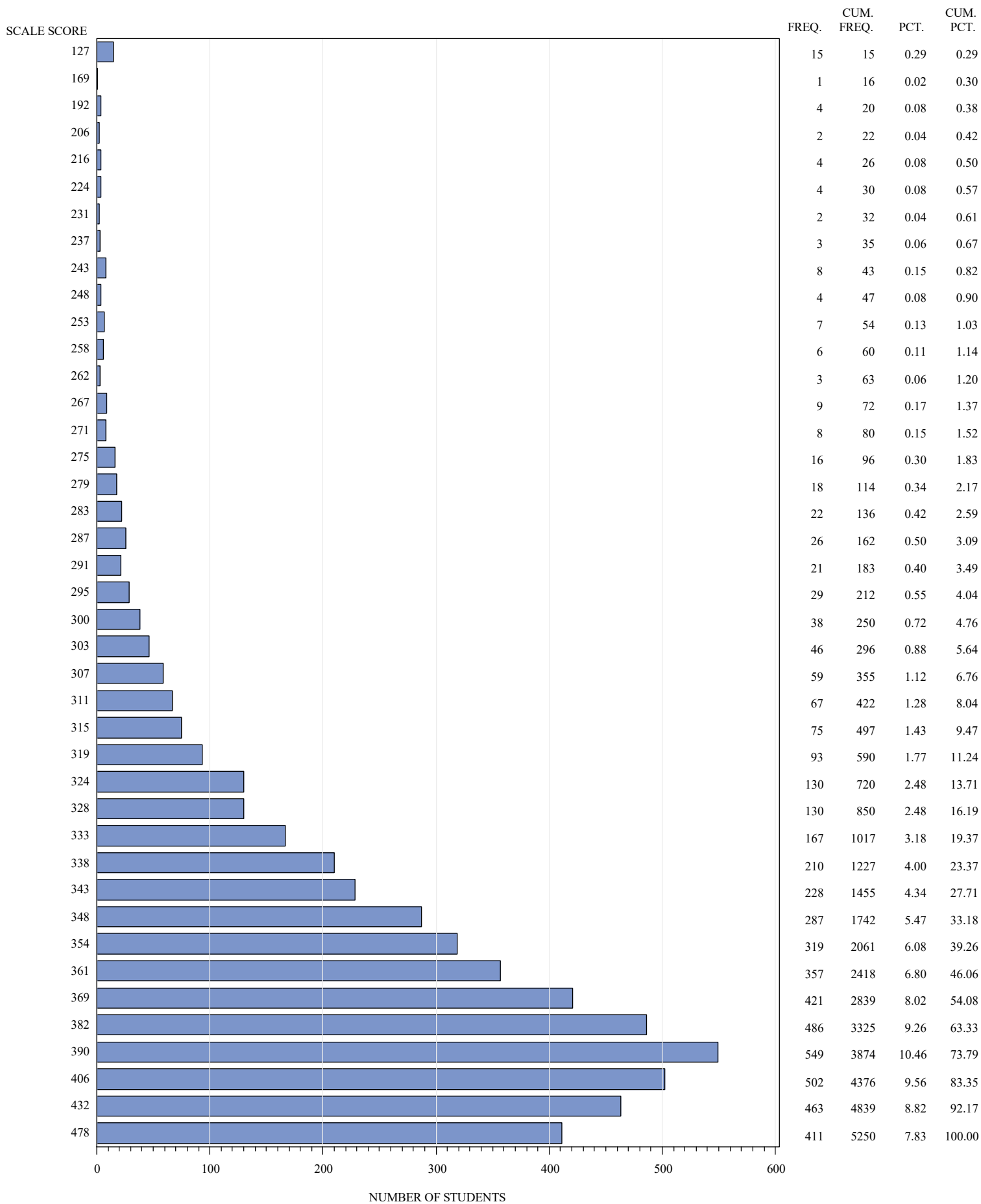


Figure C.6.17 2019 STAAR Alternate 2 Grade 8 Social Studies  
 Frequency Distribution of Scale Scores  
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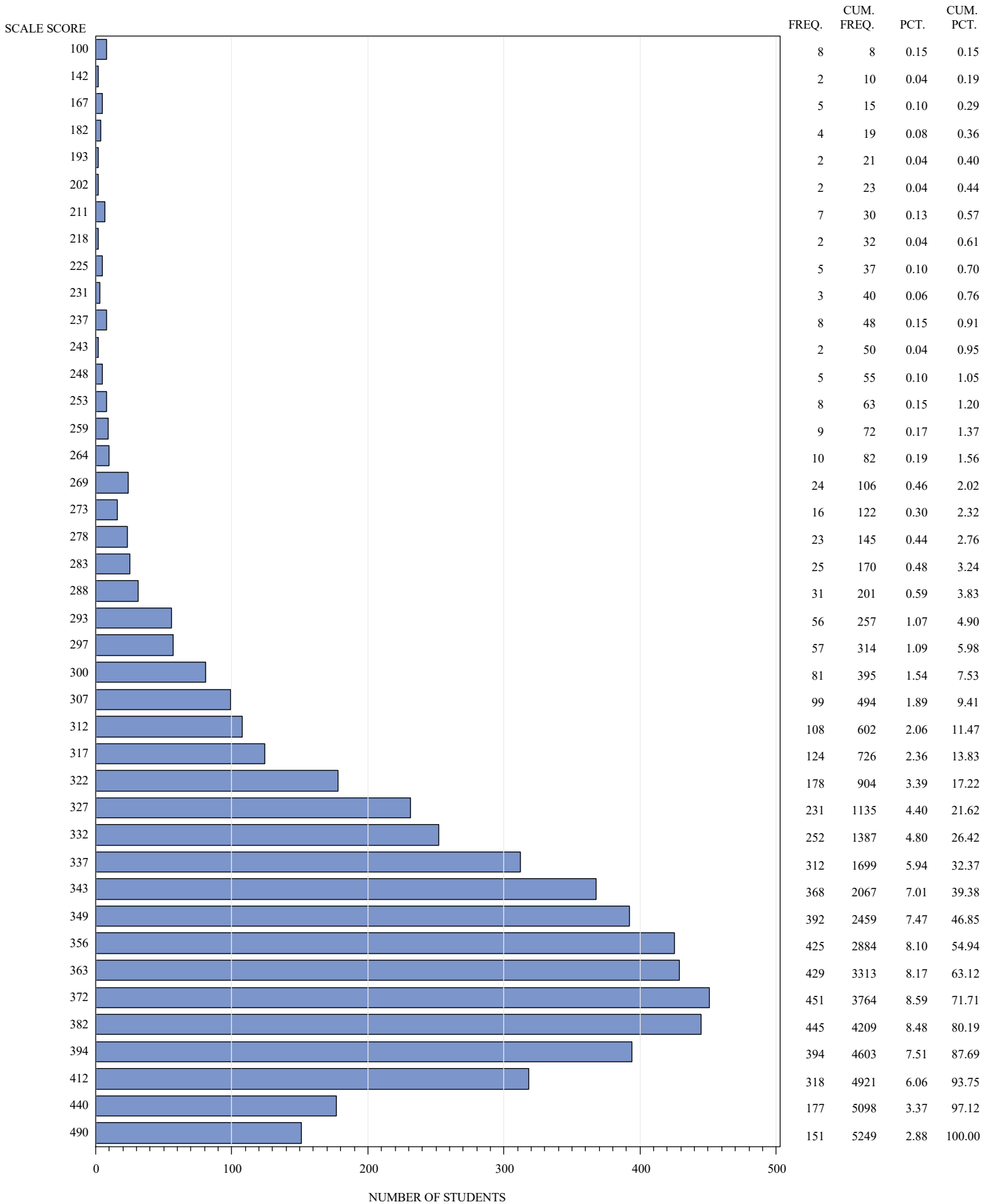




Figure C.6.18 2019 STAAR Alternate 2 EOC Algebra I  
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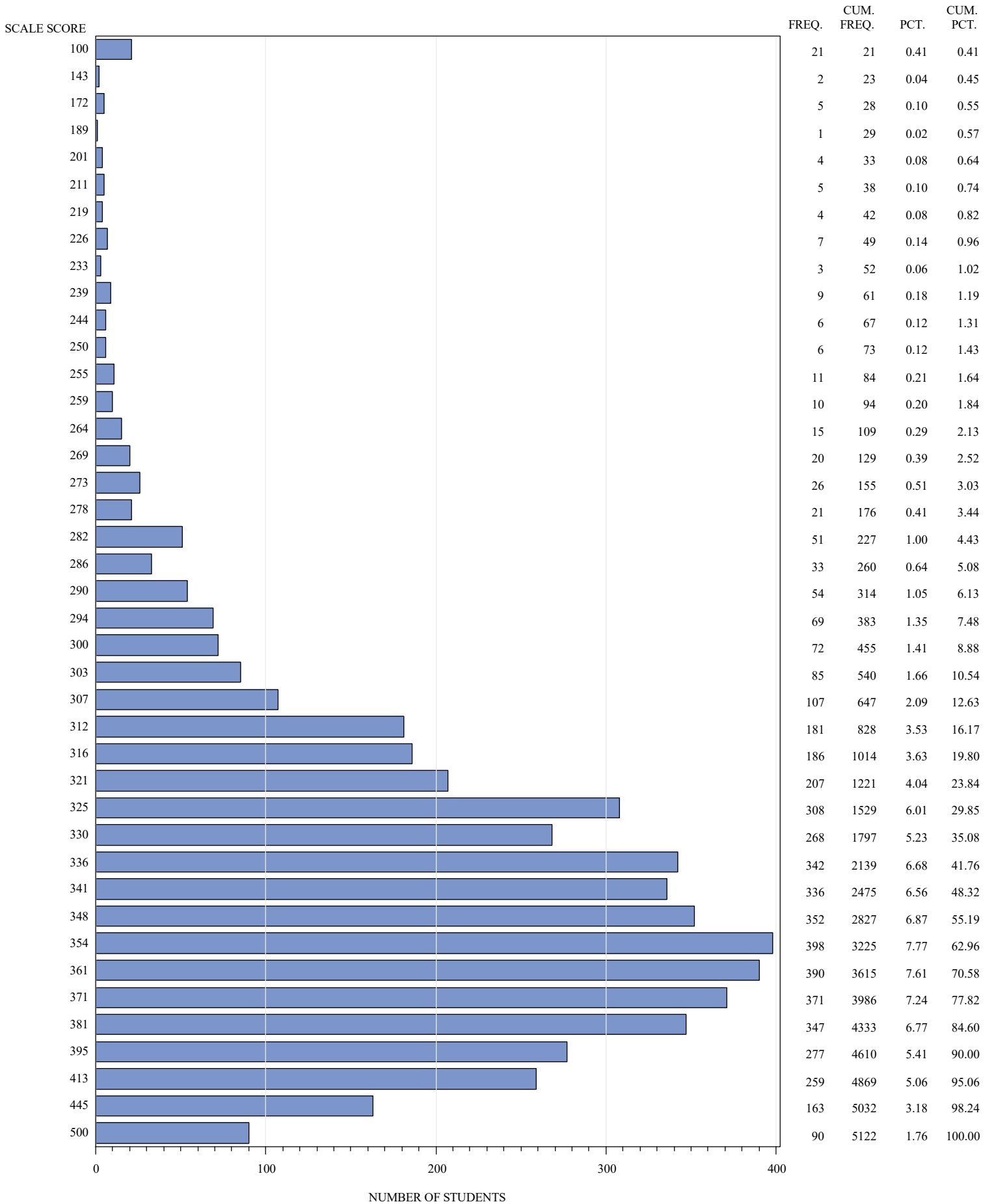


Figure C.6.19 2019 STAAR Alternate 2 EOC English I  
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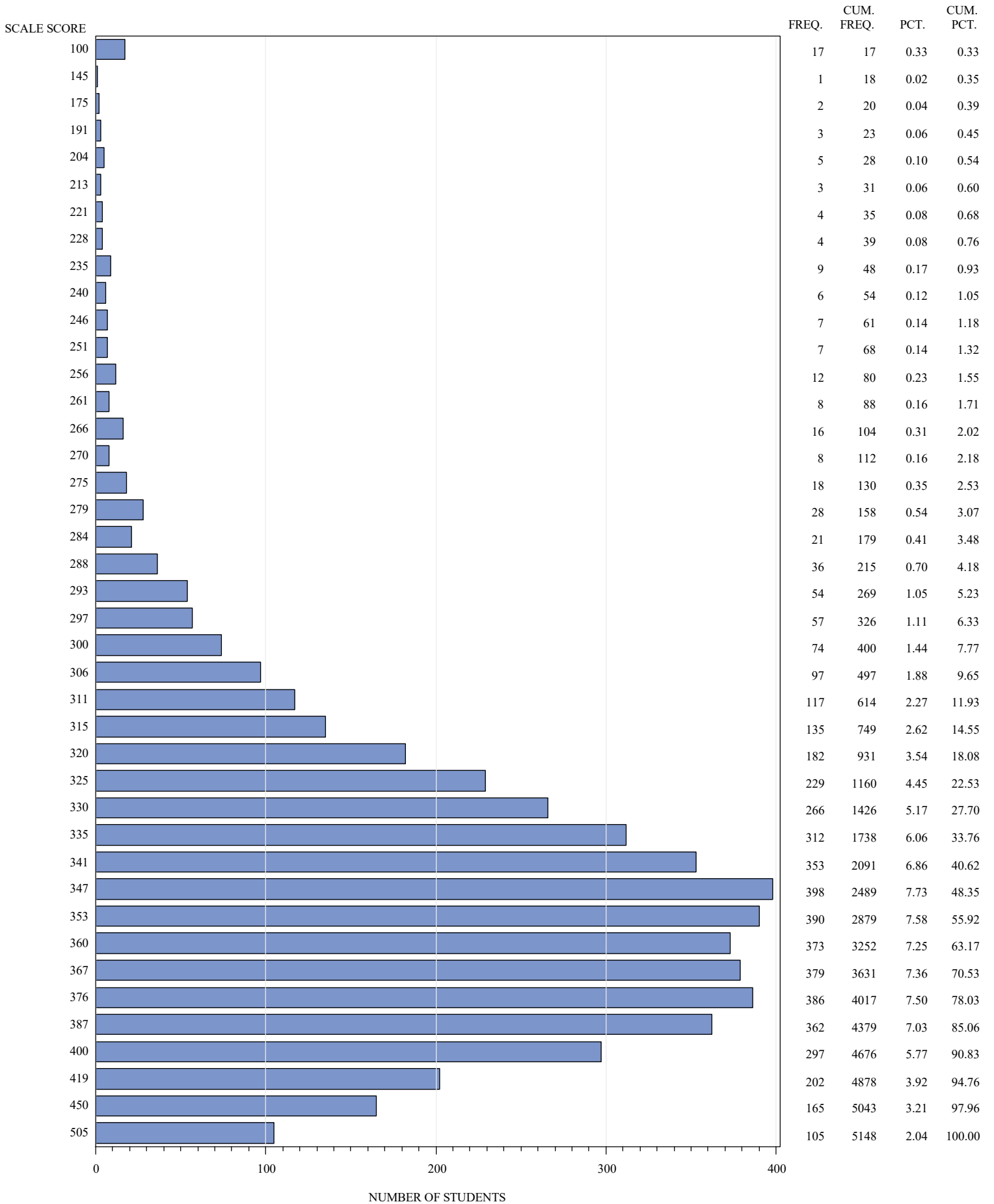


Figure C.6.20 2019 STAAR Alternate 2 EOC English II  
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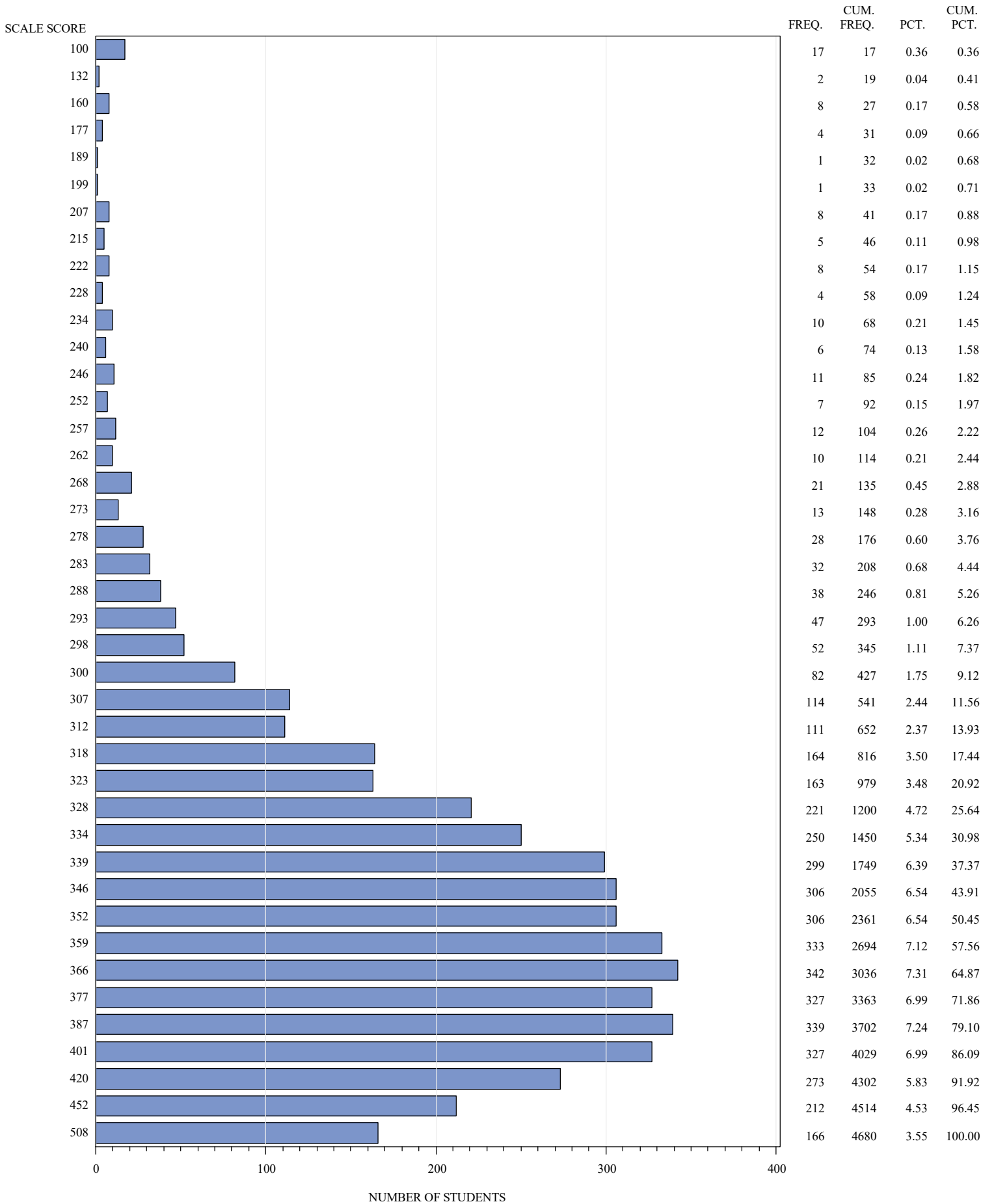


Figure C.6.21 2019 STAAR Alternate 2 EOC Biology  
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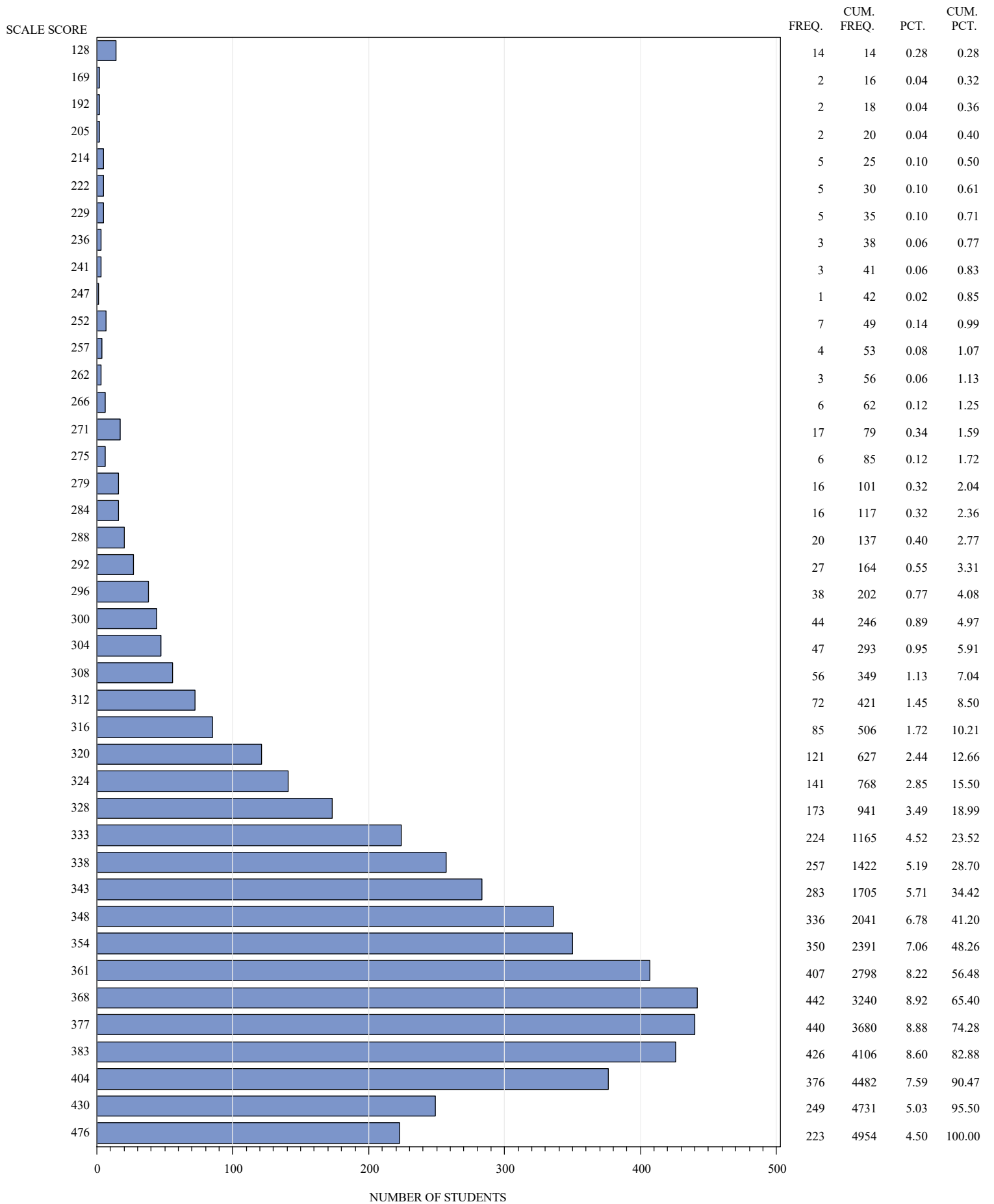


Figure C.6.22 2019 STAAR Alternate 2 EOC U.S. History  
 Frequency Distribution of Scale Scores  
 All Students

