

LESSON **Proportional Relationships**

8 **Challenge: Percentile Rank**

Just as there are three quartiles (the lower quartile, the median, and the upper quartile) that divide a data set into four equal groups, there are 99 *percentiles* that divide a data set into 100 groups.

The definition of a percentile is:

$$\text{percentile of score } x = \frac{\text{number of scores less than or equal to score}}{\text{total number of scores}} \cdot 100$$

The frequency table at the right shows the test scores for 28 students.

Score	Frequency
100	1
95	2
90	5
85	6
80	7
75	3
70	2
65	2

Find the percentile corresponding to 80.

$$\begin{aligned} \text{percentile of 80} &= \frac{\text{number of scores less than or equal to 80}}{\text{total number of scores}} \cdot 100 \\ &= \frac{14}{28} \times 100 = 0.5 \times 100 = 50 \end{aligned}$$

So, 80 is the 50th percentile.

Use the frequency table to find the percentile corresponding to each score. Round your answer to the nearest whole number.

- 1. 90
- 2. 70
- 3. 100
- 4. 75
- 5. 95
- 6. 85

Use the test scores listed below to find the percentile corresponding to each score. Round your answer to the nearest whole number. (*Hint: Make a frequency table of the scores.*)

84, 77, 77, 77, 92, 77, 84, 84, 95, 84, 68, 92, 84, 100, 77, 77, 84, 92, 77, 92, 92, 95, 77, 68, 84, 100, 92, 84, 95, 92

- 7. 100
- 8. 95
- 9. 92
- 10. 84
- 11. 77
- 12. 68