

LESSON **Proportional Relationships**

8 Practice C: Solving Percent Problems

Solve. Round answers to the nearest tenth, if necessary.

- | | |
|---|--|
| 1. 14 is 28% of what number?
_____ | 2. 28% of what number is 7?
_____ |
| 3. 35% of what number is 70?
_____ | 4. What percent of 63 is 7?
_____ |
| 5. 28 is what percent of 210?
_____ | 6. 65% of what number is 13?
_____ |
| 7. What percent of 180 is 36?
_____ | 8. 15 is 45% of what number?
_____ |
| 9. 7 is 2% of what number?
_____ | 10. What percent of 144 is 108?
_____ |
| 11. What percent of 350 is 840?
_____ | 12. 13 is what percent of 77?
_____ |
| 13. 11 is 4% of what number?
_____ | 14. 135% of what number is 115?
_____ |
| 15. 14 is 16% of what number?
_____ | 16. 12 is 30% of what number?
_____ |
| 17. 18 is what percent of 108?
_____ | 18. 9 is what percent of 39?
_____ |
| 19. I am thinking of a number. This number is 18% of 425. What is the number? _____ | |
| 20. I am thinking of a percent. This percent times 135 gives 40.5 as the result. What is the percent? _____ | |
| 21. Jed buys a sweater that has a sale price of \$48. Jed gives the sales clerk \$60 and receives \$7.80 in change. What is the sales tax rate? _____ | |

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LESSON **8** **Proportional Relationships**
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
_____ |