

# Ratios and Unit Rates

## Section 1 — Word problems.

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| 1. A fruit bowl contains 5 apples and 3 bananas. What is the ratio of apples to bananas? Write it in three ways (a:b, a to b, a/b). | 2. The local park has 20 benches and 40 trees. What is the ratio of benches to trees? Simplify the ratio.         |
| 3. There are 25 students and 1 teacher in the room. What is the ratio of students to teachers? Write this in three ways.            | 4. For a class project, a group needs 3 red markers and 5 blue markers. What is the ratio of red to blue markers? |

## Section 2 — Complete an equivalent ratio table.

| Original Ratio | Equivalent Ratio | Original Ratio | Equivalent Ratio |
|----------------|------------------|----------------|------------------|
| 1 : 4 =        | 5 : _____        | 3 : 7 =        | 12 : _____       |
| 6 : 9 =        | 2 : _____        | 5 : 8 =        | _____ : 32       |
| 3 : 8 =        | _____ : 32       | 11 : 22 =      | 1 : _____        |
| 20 : 25 =      | 4 : _____        | 7 : 7 =        | 20 : _____       |
| 8 : 12 =       | 2 : _____        | 9 : 15 =       | 3 : _____        |
| 14 : 21 =      | 2 : _____        | 2 : 9 =        | _____ : 45       |

## Section 3 — Unit rates.

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| 1. A car travels 240 miles in 4 hours. What is the unit rate in miles per hour (mph)? | 2. A class orders 8 pizzas for \$72.00. What is the unit price per pizza?                    |
| 3. A grocer buys 10 cartons of juice for \$45.00. What is the unit price per carton?  | 4. A student types 225 words in 5 minutes. What is the typing unit rate in words per minute? |

## Section 4 — Comparing rates.

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| 1. Store A sells a 10-ounce bag of chips for \$2.50. Store B sells a 15-ounce bag for \$3.60. Which store has the better unit price? Explain. | 2. David ran 6 miles in 48 minutes. Liam ran 8 miles in 60 minutes. Who ran faster (had a lower unit rate of minutes per mile)? Show your work. |
| 3. Brand A offers a 6-pack of soda for \$4.20. Brand B offers a 12-pack of the same soda for \$7.80. Which brand is the better buy per can?   | 4. A 4-lb bag of apples costs \$5.00. An 8-lb bag of apples costs \$9.20. Which bag has the lower unit price per pound?                         |

## Section 5 — Real-world rate applications.

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| 1. A printer prints 120 pages in 3 minutes. How many pages can it print in 10 minutes at the same rate? | 2. A recipe requires 3 cups of flour for every 2 cups of sugar. How many cups of flour are needed for 6 cups of sugar? |
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# Ratios and Unit Rates

## — ANSWER KEY —

### Section 1 — Word problems.

|                                                                       |                                                                                |
|-----------------------------------------------------------------------|--------------------------------------------------------------------------------|
| 1. Ratio of 5 apples to 3 bananas:<br><b>Answer: 5:3, 5 to 3, 5/3</b> | 2. 20 benches to 40 trees (simplified):<br><b>Answer: 1:2 (or 1 to 2, 1/2)</b> |
| 3. 25 students to 1 teacher:<br><b>Answer: 25:1, 25 to 1, 25/1</b>    | 4. 3 red markers to 5 blue markers:<br><b>Answer: 3:5 (or 3 to 5, 3/5)</b>     |

### Section 2 — Complete an equivalent ratio table.

| Original Ratio | Equivalent Ratio | Original Ratio | Equivalent Ratio |
|----------------|------------------|----------------|------------------|
| 1 : 4 =        | 5 : <b>20</b>    | 3 : 7 =        | 12 : <b>28</b>   |
| 6 : 9 =        | 2 : <b>3</b>     | 5 : 8 =        | <b>20</b> : 32   |
| 3 : 8 =        | <b>12</b> : 32   | 11 : 22 =      | 1 : <b>2</b>     |
| 20 : 25 =      | 4 : <b>5</b>     | 7 : 7 =        | 20 : <b>20</b>   |
| 8 : 12 =       | 2 : <b>3</b>     | 9 : 15 =       | 3 : <b>5</b>     |
| 14 : 21 =      | 2 : <b>3</b>     | 2 : 9 =        | <b>10</b> : 45   |

### Section 3 — Unit rates.

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|----------------------------------------------------------------------------|------------------------------------------------------------------------|
| 1. 240 miles in 4 hours:<br><b>Answer: 60 mph (240 ÷ 4)</b>                | 2. 8 pizzas for \$72.00:<br><b>Answer: \$9.00 per pizza (\$72 ÷ 8)</b> |
| 3. 10 cartons for \$45.00:<br><b>Answer: \$4.50 per carton (\$45 ÷ 10)</b> | 4. 225 words in 5 minutes:<br><b>Answer: 45 WPM (225 ÷ 5)</b>          |

### Section 4 — Comparing rates.

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| 1. Store A vs. Store B:<br><b>Answer: Store B is better.</b><br>• Store A: $\$2.50 \div 10 \text{ oz} = \$0.25/\text{oz}$<br>• Store B: $\$3.60 \div 15 \text{ oz} = \$0.24/\text{oz}$ | 2. David vs. Liam:<br><b>Answer: Liam ran faster.</b><br>• David: $48 \text{ min} \div 6 \text{ mi} = 8 \text{ min/mi}$<br>• Liam: $60 \text{ min} \div 8 \text{ mi} = 7.5 \text{ min/mi}$ |
| 3. Brand A vs. Brand B:<br><b>Answer: Brand B is better.</b><br>• Brand A: $\$4.20 \div 6 = \$0.70/\text{can}$<br>• Brand B: $\$7.80 \div 12 = \$0.65/\text{can}$                      | 4. 4-lb Bag vs. 8-lb Bag:<br><b>Answer: 8-lb bag is cheaper.</b><br>• 4-lb: $\$5.00 \div 4 = \$1.25/\text{lb}$<br>• 8-lb: $\$9.20 \div 8 = \$1.15/\text{lb}$                               |

### Section 5 — Real-world rate applications.

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| 1. Printer rate (120 pages / 3 min):<br><b>Answer: 400 pages</b><br>• $120 \div 3 = 40 \text{ pages/min}$<br>• $40 \times 10 \text{ min} = 400 \text{ pages}$ | 2. Flour to sugar ratio (3 : 2):<br><b>Answer: 9 cups of flour</b><br>• Sugar ratio multiplier: $6 \div 2 = 3$<br>• Flour needed: $3 \times 3 = 9 \text{ cups}$ |
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