

# Percents: Tax, Discount, and Markup

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Score: \_\_\_\_\_ / 24

## Q Quick Review

Stores use percents every day. A **discount** lowers a price: a 25% discount means you pay  $100\% - 25\% = 75\%$  of the original, so multiply by 0.75. **Sales tax** raises the price you actually pay: 8% tax means the total is  $100\% + 8\% = 108\%$  of the price, so multiply by 1.08. **Markup** is how a store raises a price above its cost: a 35% markup means the selling price is 135% of cost, so multiply by 1.35. The shortcut is always the same — for an increase use  $(1 + \text{percent})$ , and for a decrease use  $(1 - \text{percent})$ , with the percent written as a decimal.

◊ **Example:** A jacket costs \$80 and is on sale for 25% off. Find the sale price.  
 ⇒ A 25% discount means you don't pay the whole price — you pay what's left, which is  $100\% - 25\% = 75\%$ . Write 75% as the decimal 0.75. Now multiply the original price by it:  $\$80 \times 0.75 = \$60$ . Another way to see it: 25% of \$80 is \$20 off, and  $\$80 - \$20 = \$60$ . Either path lands on the same sale price.

**Answer:** \$60

## PRACTICE

Find the final price or amount. Watch whether the percent goes up or down.

- |                        |       |  |       |
|------------------------|-------|--|-------|
| 1. \$40 item, 8% tax   | _____ | 11. \$45 item, 40% off                           | _____ |
| 2. \$60 item, 7% tax   | _____ | 12. \$70 item, 9% tax                            | _____ |
| 3. \$25 item, 20% off  | _____ | 13. Cost \$100, 35% markup                       | _____ |
| 4. \$50 item, 30% off  | _____ | 14. Cost \$24, 50% markup                        | _____ |
| 5. \$120 item, 6% tax  | _____ | 15. \$300 item, 12% off                          | _____ |
| 6. \$90 item, 10% off  | _____ | 16. \$18 item, 6.5% tax                          | _____ |
| 7. \$200 item, 15% off | _____ | 17. Cost \$250, 20% markup                       | _____ |
| 8. \$35 item, 5% tax   | _____ | 18. \$64 item, 75% off                           | _____ |
| 9. \$80 item, 25% off  | _____ | 19. Sale price \$48 after 20% off; find original | _____ |
| 10. \$150 item, 8% tax | _____ | 20. Tax <i>amount</i> on \$130 at 7%             | _____ |

## ◆ Word Problems

21. A pair of sneakers is priced at \$250. They are marked 30% off, and then 8% sales tax is added to the sale price. What does the customer pay? \_\_\_\_\_
22. A store buys backpacks for \$24 each and marks them up 50%. If a backpack later goes on sale for 25% off the marked price, what is the sale price? \_\_\_\_\_
23. At a restaurant the bill is \$60. Carlos adds a 20% tip on the \$60 and then realizes 7% tax of \$4.20 was already included in the \$60. How much does he leave in total (bill plus tip)? \_\_\_\_\_
24. A tablet's sale price is \$170 after a 15% discount. What was the original price before the discount? \_\_\_\_\_



## Answer Keys

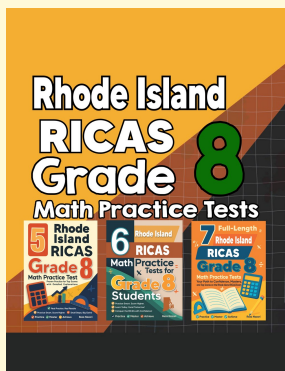
- |   |   |
|---|---|
| <p>1. <input type="text" value="\$43.20"/></p> <p>2. <input type="text" value="\$64.20"/></p> <p>3. <input type="text" value="\$20.00"/></p> <p>4. <input type="text" value="\$35.00"/></p> <p>5. <input type="text" value="\$127.20"/></p> <p>6. <input type="text" value="\$81.00"/></p> <p>7. <input type="text" value="\$170.00"/></p> <p>8. <input type="text" value="\$36.75"/></p> <p>9. <input type="text" value="\$60.00"/></p> <p>10. <input type="text" value="\$162.00"/></p> <p>11. <input type="text" value="\$27.00"/></p> <p>12. <input type="text" value="\$76.30"/></p> | <p>13. <input type="text" value="\$135.00"/></p> <p>14. <input type="text" value="\$36.00"/></p> <p>15. <input type="text" value="\$264.00"/></p> <p>16. <input type="text" value="\$19.17"/></p> <p>17. <input type="text" value="\$300.00"/></p> <p>18. <input type="text" value="\$16.00"/></p> <p>19. <input type="text" value="\$60.00"/></p> <p>20. <input type="text" value="\$9.10"/></p> <p>21. <input type="text" value="\$189.00"/></p> <p>22. <input type="text" value="\$27.00"/></p> <p>23. <input type="text" value="\$72.00"/></p> <p>24. <input type="text" value="\$200.00"/></p> |
|---|---|

### Step-by-Step Explanations

- |   |   |
|---|---|
| <p>1. Tax raises the price: <math>40 \times 1.08 = 43.20</math>.</p> <p>2. Multiply by 1.07: <math>60 \times 1.07 = 64.20</math>.</p> <p>3. You pay 80%: <math>25 \times 0.80 = 20</math>.</p> <p>4. You pay 70%: <math>50 \times 0.70 = 35</math>.</p> <p>5. Multiply by 1.06: <math>120 \times 1.06 = 127.20</math>.</p> <p>6. You pay 90%: <math>90 \times 0.90 = 81</math>.</p> <p>7. You pay 85%: <math>200 \times 0.85 = 170</math>.</p> <p>8. Multiply by 1.05: <math>35 \times 1.05 = 36.75</math>.</p> <p>9. You pay 75%: <math>80 \times 0.75 = 60</math>.</p> <p>10. Multiply by 1.08: <math>150 \times 1.08 = 162</math>.</p> <p>11. You pay 60%: <math>45 \times 0.60 = 27</math>.</p> <p>12. Multiply by 1.09: <math>70 \times 1.09 = 76.30</math>.</p> <p>13. Markup raises the price: <math>100 \times 1.35 = 135</math>.</p> | <p>14. Selling price is 150% of cost: <math>24 \times 1.50 = 36</math>.</p> <p>15. You pay 88%: <math>300 \times 0.88 = 264</math>.</p> <p>16. Multiply by 1.065: <math>18 \times 1.065 = 19.17</math>.</p> <p>17. Selling price is 120% of cost: <math>250 \times 1.20 = 300</math>.</p> <p>18. You pay only 25%: <math>64 \times 0.25 = 16</math>.</p> <p>19. The sale price is 80% of the original, so divide: <math>48 \div 0.80 = 60</math>.</p> <p>20. Just the tax part: <math>130 \times 0.07 = 9.10</math>.</p> <p>21. First the discount: <math>250 \times 0.70 = \\$175</math>. Then add tax on that amount: <math>175 \times 1.08 = \\$189.00</math>.</p> <p>22. Marked price: <math>24 \times 1.50 = \\$36</math>. Sale price: <math>36 \times 0.75 = \\$27.00</math>.</p> <p>23. The tip is <math>60 \times 0.20 = \\$12</math>. The total he leaves is the bill plus the tip: <math>\\$60 + \\$12 = \\$72.00</math>. (The tax was already part of the \$60.)</p> <p>24. After 15% off, the sale price is 85% of the original. So divide: <math>170 \div 0.85 = \\$200.00</math>.</p> |
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