Markups, Discounts, and Sales Tax

Spot mistakes, reason, and work backward

Name _____ **Date** _____ **Score** _____ / 8

QUICK REVIEW

A markup adds a percent of cost; a discount removes a percent of the tag. Tax is calculated on the taxable sale price. A 40 dollar tag discounted 25% becomes 30 dollars; 10% tax adds 3 dollars for 33 dollars total.

Worked example

Example costs \$40.00 before a 25% discount. Then 10% sales tax applies to the discounted price. Find the final cost.

1. Discount: $40(25/100) = 10$ dollars.
2. Discounted price: $40 - 10 = 30$ dollars.
3. Tax: $30(10/100) = 3$; total $30 + 3 = 33$ dollars.
Answer: \$33.00

Practice Problems

Show your thinking.

1. Backpack: a \$80.00 price is discounted 25%, then taxed 8%. A receipt taxes the original price. Find the correct total and tax.

2. Skates: a \$60.00 price is discounted 10%, then taxed 5%. A receipt taxes the original price. Find the correct total and tax. Check the total by dividing it by both percentage multipliers to recover the tag price.

3. Tent: a \$120.00 price is discounted 20%, then taxed 5%. A receipt taxes the original price. Find the correct total and tax. Would reversing the two percentage multipliers change the total? Verify numerically, ignoring intermediate rounding.

4. A lamp sells for \$42.00 after a 40% markup on cost. Recover cost; explain why subtracting 40% of the selling price is wrong.

5. A lamp sells for \$60.00 after a 20% markup on cost. Recover cost; explain why subtracting 20% of the selling price is wrong. Write a multiplier equation for selling price s and cost c.

6. A lamp sells for \$100.00 after a 25% markup on cost. Recover cost; explain why subtracting 25% of the selling price is wrong.

7. Art supplies: a \$96.00 price is discounted 25%, then taxed 5%. A receipt taxes the original price. Find the correct total and tax.

8. Cost is 24 dollars and marked price 30 dollars. A student divides the markup by 30. Find the correct markup percent.

Answer Key

1. Tax \$4.80; total \$64.80.
2. Tax \$2.70; total \$56.70. Recovered tag is \$60.00.
3. Tax \$4.80; total \$100.80. No; both orders give \$100.80.
4. Cost \$30.00; the markup percent applies to cost, not selling price.
5. Cost \$50.00; the markup percent applies to cost, not selling price. $s = 1.20c$.
6. Cost \$80.00; the markup percent applies to cost, not selling price.
7. Tax \$3.60; total \$75.60.
8. Markup 25% of cost.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Discount: $80(25/100) = 20$ dollars.
2. Discounted price: $80 - 20 = 60$ dollars.
3. Tax: $60(8/100) = \frac{24}{5}$; total $60 + \frac{24}{5} = \frac{324}{5}$ dollars.

Problem 2

1. Discount: $60(10/100) = 6$ dollars.
2. Discounted price: $60 - 6 = 54$ dollars.
3. Tax: $54(5/100) = \frac{27}{10}$; total $54 + \frac{27}{10} = \frac{567}{10}$ dollars.
4. $56.70/(0.90(1.05)) = 60$ dollars.

Problem 3

1. Discount: $120(20/100) = 24$ dollars.
2. Discounted price: $120 - 24 = 96$ dollars.
3. Tax: $96(5/100) = \frac{24}{5}$; total $96 + \frac{24}{5} = \frac{504}{5}$ dollars.
4. $120(0.80)(1.05) = 120(1.05)(0.80) = 100.80$ dollars.

Problem 4

1. The markup is based on cost c: $42 = (1 + 40/100)c$.
2. Divide by the markup multiplier: $c = 42 \div (1 + 40/100) = 30$ dollars.
3. Subtracting from selling price gives $42(1 - 40/100) = 25.2$ dollars. That uses selling price, not cost, as the percent base.

Problem 5

1. The markup is based on cost c: $60 = (1 + 20/100)c$.
2. Divide by the markup multiplier: $c = 60 \div (1 + 20/100) = 50$ dollars.
3. Subtracting from selling price gives $60(1 - 20/100) = 48$ dollars. That uses selling price, not cost, as the percent base.
4. $s = c + 0.20c = 1.20c$.

Problem 6

1. The markup is based on cost c: $100 = (1 + 25/100)c$.
2. Divide by the markup multiplier: $c = 100 \div (1 + 25/100) = 80$ dollars.
3. Subtracting from selling price gives $100(1 - 25/100) = 75$ dollars. That uses selling price, not cost, as the percent base.

Problem 7

1. Discount: $96(25/100) = 24$ dollars.
2. Discounted price: $96 - 24 = 72$ dollars.
3. Tax: $72(5/100) = \frac{18}{5}$; total $72 + \frac{18}{5} = \frac{378}{5}$ dollars.

Problem 8

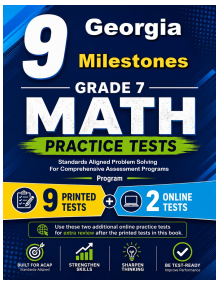
1. The markup amount is $30 - 24 = 6$ dollars.
2. Use cost as the base: $6/24 = 1/4 = 25\%$.
3. Dividing by 30 gives $6/30 = 20\%$ of selling price, not the markup percent of cost.

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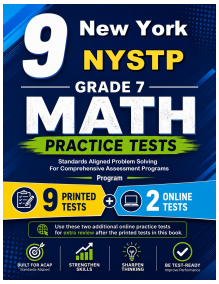
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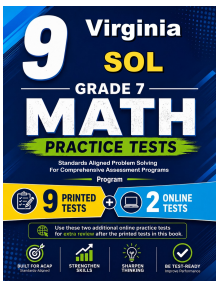
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