Markups, Discounts, and Sales Tax

Apply the skill to decisions and designs

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: budget \$63.80; tag \$80.00, discount 25%, then tax 8%. Can you buy it? Find the budget gap.

2. Skates: budget \$55.70; tag \$60.00, discount 10%, then tax 5%. Can you buy it? Find the budget gap. Check the total by dividing it by both percentage multipliers to recover the tag price.

3. Tent: budget \$99.80; tag \$120.00, discount 20%, then tax 5%. Can you buy it? Find the budget gap. Would reversing the two percentage multipliers change the total? Verify numerically, ignoring intermediate rounding.

4. A shop pays \$30.00, adds a 40% markup, then offers \$40.00 to a customer. Find the normal price and how far the offer is below it.

5. A shop pays \$50.00, adds a 20% markup, then offers \$58.00 to a customer. Find the normal price and how far the offer is below it. Write a multiplier equation for selling price s and cost c.

6. A shop pays \$80.00, adds a 25% markup, then offers \$98.00 to a customer. Find the normal price and how far the offer is below it.

7. Art supplies: budget \$74.60; tag \$96.00, discount 25%, then tax 5%. Can you buy it? Find the budget gap.

8. A shop buys an item for 24 dollars, marks it up 25%, then discounts the marked price 20%. Does it make a profit before tax?

Answer Key

1. No. Total \$64.80; short \$1.00.
2. No. Total \$56.70; short \$1.00. Recovered tag is \$60.00.
3. No. Total \$100.80; short \$1.00. No; both orders give \$100.80.
4. Cost \$30.00; markup \$12.00; normal selling price \$42.00. Offer is 2 dollars below normal.
5. Cost \$50.00; markup \$10.00; normal selling price \$60.00. Offer is 2 dollars below normal. $s = 1.20c$.
6. Cost \$80.00; markup \$20.00; normal selling price \$100.00. Offer is 2 dollars below normal.
7. No. Total \$75.60; short \$1.00.
8. Final price 24 dollars; no profit.

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. Budget shortage: $\frac{324}{5} - (\frac{319}{5}) = 1$ dollar. Since $\frac{324}{5} > \frac{319}{5}$, the purchase does not fit.

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. Budget shortage: $\frac{567}{10} - (\frac{557}{10}) = 1$ dollar. Since $\frac{567}{10} > \frac{557}{10}$, the purchase does not fit.
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. Budget shortage: $\frac{504}{5} - (\frac{499}{5}) = 1$ dollar. Since $\frac{504}{5} > \frac{499}{5}$, the purchase does not fit.
4. $120(0.80)(1.05) = 120(1.05)(0.80) = 100.80$ dollars.

Problem 4

1. Markup amount: $30(40/100) = 12$ dollars.
2. Selling price: $30 + 12 = 42$ dollars.
3. Normal price minus the offer: $42 - (40) = 2$ dollars; the offer is below normal by that amount.

Problem 5

1. Markup amount: $50(20/100) = 10$ dollars.
2. Selling price: $50 + 10 = 60$ dollars.
3. Normal price minus the offer: $60 - (58) = 2$ dollars; the offer is below normal by that amount.
4. $s = c + 0.20c = 1.20c$.

Problem 6

1. Markup amount: $80(25/100) = 20$ dollars.
2. Selling price: $80 + 20 = 100$ dollars.
3. Normal price minus the offer: $100 - (98) = 2$ dollars; the offer is below normal by that amount.

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. Budget shortage: $\frac{378}{5} - (\frac{373}{5}) = 1$ dollar. Since $\frac{378}{5} > \frac{373}{5}$, the purchase does not fit.

Problem 8

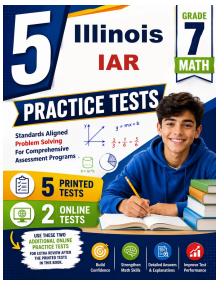
1. The marked price is $24(1.25) = 30$ dollars.
2. Take 20% off that price: $30(0.80) = 24$ dollars.
3. Profit is final price minus cost: $24 - 24 = 0$ dollars. The shop breaks even.

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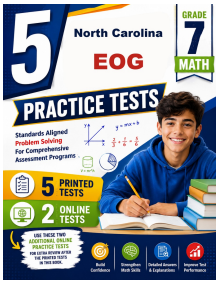
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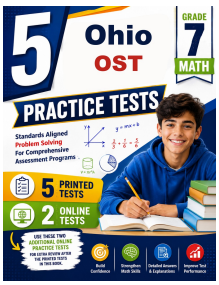
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