Tips, Commissions, and Fees

Spot mistakes, reason, and work backward

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

QUICK REVIEW

A percent tip, commission, or fee is rate times the stated base; a fixed fee is added separately. A 12% fee on 25 dollars is 3 dollars. Add a separate 2 dollar fee to get 5 dollars in total fees.

Worked example

Equipment rental: the base is \$55.00, the percent fee is 10% of base, and a fixed fee is \$2.00. Find the fee total and final payment.

1. Percent amount: $55(10/100) = \frac{11}{2}$ dollars.
2. Total fees: $\frac{11}{2} + 2 = \frac{15}{2}$ dollars.
3. Base plus fees: $55 + \frac{15}{2} = \frac{125}{2}$ dollars.
Answer: Percent amount \$5.50; fees \$7.50, payment \$62.50.

Practice Problems

Show your thinking.

1. Meal tip before tax: a final payment of \$46.00 includes base plus 15% of base and \$0.00 fixed. Recover the base payment.

2. Ticket service fee: a final payment of \$87.00 includes base plus 5% of base and \$3.00 fixed. Recover the base payment. Express total payment T as a rule in base payment b.

3. A worker earns \$70.00 including \$50.00 base pay and 4% commission. Find sales, not pay.

4. A worker earns \$104.00 including \$80.00 base pay and 3% commission. Find sales, not pay. Find the sales needed for a commission alone of 30 dollars.

5. Group meal: a final payment of \$74.00 includes base plus 20% of base and \$2.00 fixed. Recover the base payment. Explain why the fixed fee is not multiplied by the tip percent.

6. Booking fee: a final payment of \$137.00 includes base plus 10% of base and \$5.00 fixed. Recover the base payment.

7. Online reservation: a final payment of \$159.00 includes base plus 4% of base and \$3.00 fixed. Recover the base payment.

8. A worker earns 117 dollars, including 45 dollars base and 6% sales commission. Find sales.

Answer Key

1. Base \$40.00.
2. Base \$80.00. $T = 1.05b + 3$.
3. Sales \$500.00.
4. Sales \$800.00. Sales 1000 dollars.
5. Base \$60.00. The stated percent applies to the base only; the fixed fee is separate.
6. Base \$120.00.
7. Base \$150.00.
8. Sales 1200 dollars.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Let b be the base: $1.15b + 0 = 46$.
2. Undo the fixed fee and then the multiplier: $b = (46 - 0)/1.15 = 40$ dollars.
3. Check $1.15(40) + 0 = 46$ dollars.

Problem 2

1. Let b be the base: $1.05b + 3 = 87$.
2. Undo the fixed fee and then the multiplier: $b = (87 - 3)/1.05 = 80$ dollars.
3. Check $1.05(80) + 3 = 87$ dollars.
4. Base plus variable fee plus fixed fee gives $b + 0.05b + 3 = 1.05b + 3$.

Problem 3

1. Subtract base pay: $70 - 50 = 20$ dollars of commission.
2. Sales are $20 \div (4/100) = 500$ dollars.
3. Check $50 + 500(4/100) = 70$ dollars in total pay.

Problem 4

1. Subtract base pay: $104 - 80 = 24$ dollars of commission.
2. Sales are $24 \div (3/100) = 800$ dollars.
3. Check $80 + 800(3/100) = 104$ dollars in total pay.
4. $0.03s = 30$ gives $s = 30/0.03 = 1000$ dollars.

Problem 5

1. Let b be the base: $1.2b + 2 = 74$.
2. Undo the fixed fee and then the multiplier: $b = (74 - 2)/1.2 = 60$ dollars.
3. Check $1.2(60) + 2 = 74$ dollars.
4. The percent is stated on the 60 dollar base: $60(0.20) = 12$ dollars. Using the fixed fee in that base would instead give $(60 + 2)(0.20) = 12.40$ dollars, changing the stated rule.

Problem 6

1. Let b be the base: $1.1b + 5 = 137$.
2. Undo the fixed fee and then the multiplier: $b = (137 - 5)/1.1 = 120$ dollars.
3. Check $1.1(120) + 5 = 137$ dollars.

Problem 7

1. Let b be the base: $1.04b + 3 = 159$.
2. Undo the fixed fee and then the multiplier: $b = (159 - 3)/1.04 = 150$ dollars.
3. Check $1.04(150) + 3 = 159$ dollars.

Problem 8

1. Subtract base pay: $117 - 45 = 72$ dollars of commission.
2. Sales are $72 \div (6/100) = 1200$ dollars.
3. Check $45 + 1200(6/100) = 117$ dollars in total pay.

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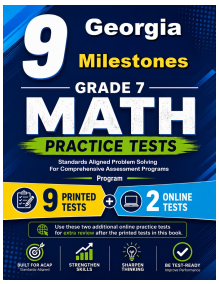

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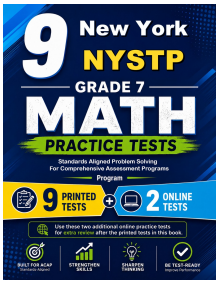

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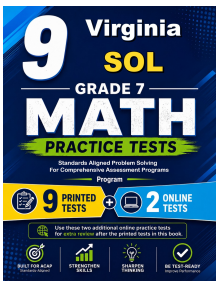

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