Personal Financial Literacy

Percent, Pay, and Interest Models

Name _____ **Date** _____ **Score** _____ / 10

QUICK REVIEW

Convert a percent to a decimal before calculating: $7\% = 0.07$. Net pay equals gross pay minus deductions; a budget balances income with spending and saving. Simple interest is $I = Prt$, using an annual rate and time in years, and $A = P + I$. Annual compounding multiplies the current balance by $1 + r$ each year. Unit prices compare equal quantities.

Worked example

A $\$600$ deposit earns 5% annual simple interest for 9 months. Find final balance.

1. Convert the term to years: $t = \frac{9}{12} = 0.75$. Substitute into $I = Prt$: $I = 600(0.05)(0.75) = 22.50$ dollars.

2. Add principal and interest: $A = 600 + 22.50 = 622.50$. Because this is simple interest, no additional interest-on-interest is included in the final $\$622.50$ balance.

Answer: $\$622.50$.

Practice Problems

Show your thinking.

1. A worker earns $\$14$ per hour for 12 hours. Deductions are 15% of gross pay. Find net pay.

2. Monthly income is $\$950$. Fixed expenses are $\$420$ and variable expenses are $\$285$. Find the amount left for saving.

3. A $\$72$ jacket is discounted 25%. Find the sale price before tax.

4. A meal costs $\$32$ before tax. Sales tax is 6.5% and no tip is added. Find the total.

5. A $\$800$ deposit earns 3% annual simple interest for 2.5 years. Find interest and final balance.

6. A 6-pack costs $\$4.50$ and a 10-pack costs $\$7.20$. Which has the lower price per item?

7. A bill rises from $\$40$ to $\$46$. Find the percent increase.

8. A savings goal is $\$360$. You already have $\$96$ and save $\$22$ weekly. How many whole weeks are needed?

9. An account holds $\$500$ and compounds 4% interest annually for 2 years, with no deposits. Find its balance.

10. A bank charges $\$3$ monthly plus $\$0.50$ for each withdrawal beyond 4. Find the fee for 9 withdrawals.

Answer Key

1. $\$142.80$.
2. $\$245$.
3. $\$54$.
4. $\$34.08$.
5. Interest $\$60$; balance $\$860$.
6. The 10-pack: $\$0.72$ per item.
7. 15%.
8. 12 weeks.
9. $\$540.80$.
10. $\$5.50$.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Gross pay is $14(12) = 168$ dollars. This is the amount earned before the stated deductions, not the amount taken home.

2. Deductions are $0.15(168) = 25.20$ dollars. Subtract them: $168 - 25.20 = 142.80$, so net pay is $\$142.80$.

Problem 2

1. Add the two expense categories: $420 + 285 = 705$ dollars. Both fixed and variable expenses reduce the available monthly income.

2. Subtract total expenses from income: $950 - 705 = 245$. With no other expenses in this budget, $\$245$ remains available to save.

Problem 3

1. The discount amount is $0.25(72) = 18$ dollars. The percent is applied to the original price, not to the reduced price.

2. Subtract the discount: $72 - 18 = 54$. Equivalently, $0.75(72) = 54$, so the jacket costs $\$54$ before any tax.

Problem 4

1. Convert the tax rate to 0.065. The tax amount is $32(0.065) = 2.08$ dollars on the stated pretax meal price.

2. Add tax to the meal: $32 + 2.08 = 34.08$. Therefore the complete bill, with no other charges, is $\$34.08$.

Problem 5

1. Use years in $I = Prt$: $I = 800(0.03)(2.5) = 60$. Simple interest uses the original $\$800$ principal throughout the time period.

2. Add the interest once: $A = P + I = 800 + 60 = 860$. Thus interest is $\$60$ and the final balance is $\$860$.

Problem 6

1. For the smaller pack, divide price by count: $4.50 \div 6 = 0.75$ dollar per item. This compares equal quantities rather than package totals.

2. For the larger pack, $7.20 \div 10 = 0.72$ dollar per item. Since $0.72 < 0.75$, the 10-pack has the lower unit price.

Problem 7

1. The dollar increase is $46 - 40 = 6$. The reference amount for a percent increase is the original bill, $\$40$.

2. Divide by that original amount: $\frac{6}{40} = 0.15$. Multiplying by 100% gives a 15% increase, not 6%.

Problem 8

1. The remaining amount is $360 - 96 = 264$ dollars. Only this difference must be covered by the future weekly deposits.

2. Divide the shortfall by the weekly saving: $264 \div 22 = 12$. After 12 weeks, $96 + 12(22) = 360$, exactly meeting the goal.

Problem 9

1. After year one, $500(1.04) = 520$ dollars. Annual compounding means the next year earns interest on this new balance.

2. After year two, $520(1.04) = 540.80$. Thus the balance is $\$540.80$, which includes $\$40.80$ interest above the original deposit.

Problem 10

1. The first 4 withdrawals are included, leaving $9 - 4 = 5$ chargeable withdrawals. Only those extra withdrawals incur the per-use charge.

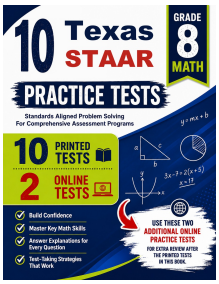
2. The extra charge is $5(0.50) = 2.50$ dollars. Add the monthly fee: $3 + 2.50 = 5.50$, so total fees are $\$5.50$.

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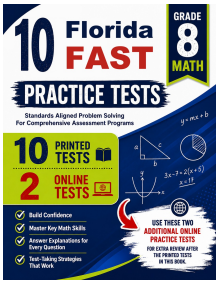
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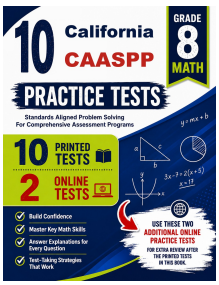
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