Terms, Factors, and Coefficients

Terms, factors, and coefficients: Applications and decisions

Name _____ **Date** _____ **Score** _____ / 6

QUICK REVIEW

Terms are parts that are added at the outermost level. A coefficient is a number multiplying a variable part, while a constant term has no variable. Factors are the parts being multiplied. In $5(p+2)$, 5 and $(p+2)$ are factors; after expanding, $5p+10$ has two terms.

Worked example

Identify the terms in $8t+11$. Give the coefficient of t and the constant term.

1. The outer sum joins $8t$ and 11, so those are the two terms.
2. In $8t$, the number 8 multiplies t. The term 11 has no variable.
Answer: Terms $8t$ and 11; coefficient 8; constant 11.

Practice Problems

Show your thinking.

1. A studio plan costs $7+3h$ dollars for h hours. Another has the same fixed fee and charges 2 dollars more for each hour. Write its expression and find how much more it costs for 4 hours.

2. An art project uses 4 boxes. Each holds b blue beads and 3 gold beads. Write the total as a product and as a sum. Name the constant in the sum.

3. A score sheet says $p+10$ gives one point per puzzle plus 10 bonus points. The rule changes so that 10 points are earned per puzzle and there is no bonus. Write the new rule and explain which parts changed.

4. A maker wants a rule $rx+f$ with a whole-dollar rate and fee. The no-item price is 5 dollars and 3 items must cost 17 dollars. Determine both parts and write the rule.

5. Use n for the same number of pages in each of 3 notebooks. A kit contains those notebooks plus a separate 20-page pad. Does $3(n+20)$ model the number of pages? Give a rule and explain why.

6. Two delivery quotes are $6p+9$ dollars and $6p+4$ dollars for p parcels. Which is cheaper for every parcel count and by how much? Explain using the parts of each rule.

Answer Key

1. $7 + 5h$; 8 dollars more for 4 hours.
2. $4(b + 3) = 4b + 12$; constant 12 beads.
3. $10p$; coefficient changes from 1 to 10 and constant from 10 to 0.
4. $4x + 5$; 4 dollars per item and 5 dollars fixed.
5. No; $3n + 20$.
6. The second quote is always 5 dollars less.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. The coefficient increases from 3 to $3 + 2 = 5$. The constant stays 7.

2. The additional hourly charge applies 4 times: $(5 - 3)(4) = 8$ dollars.

Problem 2

1. Each box contains $b + 3$ beads, and 4 identical groups give $4(b + 3)$.

2. Count colors separately: $4b$ blue plus $4(3) = 12$ gold. The gold count is fixed.

Problem 3

1. Per-puzzle points multiply p, so change the hidden 1 to 10.

2. No fixed bonus is added, so remove the separate constant term 10.

Problem 4

1. At $x = 0$, no rate is charged, so the fixed fee $f = 5$.

2. After the fee, 3 items cost $17 - 5 = 12$ dollars. Each costs $12/3 = 4$ dollars.

3. Check: $4(3) + 5 = 17$ dollars.

Problem 5

1. Only the n pages in each notebook are repeated 3 times, giving $3n$.

2. The single pad adds 20 once. The proposed product would add $3(20) = 60$ pad pages.

Problem 6

1. Both coefficients are 6, so both charge the same $6p$ dollars for parcels.

2. Only the fixed fees differ; the second charges $9 - 4 = 5$ fewer dollars.

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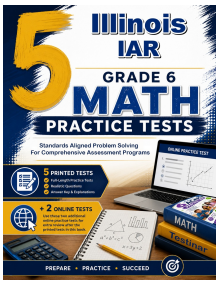

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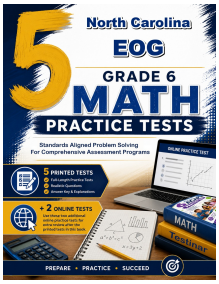

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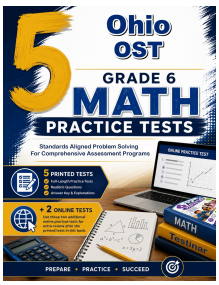

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