Translating Words into Expressions

Translating words into expressions: Models and calculations

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QUICK REVIEW

Use a variable for the unknown. Three times the sum of n and 4 is $3(n+4)$, while 4 more than three times n is $3n+4$. At $n=2$, the values are 18 and 10, so grouping matters. 5 less than n is $n-5$, not $5-n$.

Worked example

Write three times the sum of n and 4, then evaluate at $n=2$.

1. Write the whole sum $n+4$, then multiply it by 3: $3(n+4)$.
2. Substitute $n=2$. First add: $2+4=6$.
3. Then multiply: $3\times 6=18$.
Answer: $3(n+4)$; at $n=2$, 18.

Practice Problems

Show your thinking.

1. Write 3 more than 4 times n. Check at $n=5$.

2. Write twice the sum of n and 6. Evaluate at $n=4$.

3. Write 5 less than triple n. Evaluate at $n=6$.

4. Write twice n subtracted from 30. Evaluate at $n=7$.

5. Write the sum of n and 8, divided by 4. Check at $n=12$.

6. A ticket bundle has 3 times the number remaining after 2 tickets are removed from n. Write the expression and find the number of tickets when $n=9$.

7. Write five times the sum of n and 2. Evaluate at $n=3$.

8. Explain 7 more than triple n by writing it and checking $n=4$.

Answer Key

1. $4n + 3$; at $n = 5, 23$.
2. $2(n + 6)$; at $n = 4, 20$.
3. $3n - 5$; at $n = 6, 13$.
4. $30 - 2n$; at $n = 7, 16$.
5. $\frac{n+8}{4}$; at $n = 12, 5$.
6. $3(n - 2)$; at $n = 9, 21$ tickets.
7. $5(n + 2)$; at $n = 3, 25$.
8. $3n + 7$; at $n = 4, 19$.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Write the product $4n$. Add 3 to that product: $4n + 3$.
2. Substitute $n = 5$. First multiply: $4 \times 5 = 20$.
3. Then add: $20 + 3 = 23$.

Problem 2

1. Write the whole sum $n + 6$, then multiply it by 2: $2(n + 6)$.
2. Substitute $n = 4$. First add: $4 + 6 = 10$.
3. Then multiply: $2 \times 10 = 20$.

Problem 3

1. Write the product $3n$. Subtract 5 from it: $3n - 5$.
2. Substitute $n = 6$. $3 \times 6 = 18$.
3. Subtract 5: $18 - 5 = 13$.

Problem 4

1. The amount removed is $2n$. Subtract it from 30: $30 - 2n$.
2. Substitute $n = 7$. The amount removed is $2 \times 7 = 14$.
3. Remaining: $30 - 14 = 16$.

Problem 5

1. Group the sum $n + 8$ first. Divide the whole group by 4: $\frac{n+8}{4}$.
2. Substitute $n = 12$. The numerator is $12 + 8 = 20$.
3. Divide by 4: $20/4 = 5$.

Problem 6

1. Write the difference $n - 2$ for one group, then multiply by 3: $3(n - 2)$.
2. Substitute $n = 9$. First subtract: $9 - 2 = 7$.
3. Multiply: $3 \times 7 = 21$ tickets.

Problem 7

1. Write the whole sum $n + 2$, then multiply it by 5: $5(n + 2)$.
2. Substitute $n = 3$. First add: $3 + 2 = 5$.
3. Then multiply: $5 \times 5 = 25$.

Problem 8

1. Write the product $3n$. Add 7 to that product: $3n + 7$.
2. Substitute $n = 4$. First multiply: $3 \times 4 = 12$.
3. Then add: $12 + 7 = 19$.

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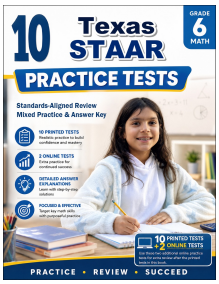

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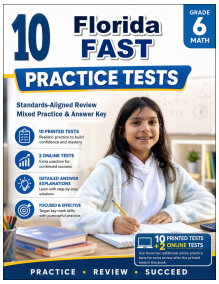

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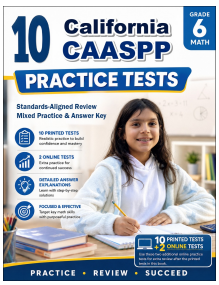

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