Writing Two-Step Equations from Word Problems

Spot mistakes, reason, and work backward

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

QUICK REVIEW

Define the unknown with units, distinguish a once-only amount from a repeated amount, then write the total. A 4 dollar entry fee plus 3 dollars per game totaling 19 dollars gives $3g + 4 = 19$, so $g = 5$ games. The fee is not charged five times.

Worked example

Game model: a signed model gives $3x + 4 = 19$. Recover the input and use substitution to verify it.

1. Subtract (4) from both sides: $3x + 4 - (4) = 19 - (4)$, so $3x = 15$.
2. Divide by (3): $x = 15 \div (3) = 5$.
3. Check: $3(5) + (4) = 19$.
Answer: $x = 5$.

Practice Problems

Show your thinking.

1. A museum charges \$5.00 once plus \$3.00 per unit. A student models a \$26.00 total with $3(x + 5) = 26$. Correct the equation and find the number of tickets.

2. A 44 dollar bill includes an 8 dollar fee and 6 dollars per lesson. A student divides 44 by 6 first. Write the correct equation and explain what must happen first.

3. A tank goes from 24 L to 14 L while losing 2.5 L/min. A student writes $24 + 2.5t = 14$. Repair and solve for the time.

4. Five identical notebooks plus 3 dollars for shipping cost 28 dollars. A student uses $5 + 3x = 28$ to find the price x of one notebook. Correct the equation and the price.

5. Five identical tickets cost 44 dollars after a single 6 dollar discount. An equation says $5t + 6 = 44$. Correct the discount operation and solve for the original price t.

6. A game starts at 21 points and subtracts 3 points per mistake, finishing at 9. A player writes $21 - 3 - m = 9$. Explain the error and solve for mistakes m.

7. Bowling visit: a total of \$42.00 covers \$12.00 once and \$3.00 per activity. A student writes $3(x + 12) = 42$. Repair the model and solve.

8. Craft workshop: a total of \$43.00 covers \$8.00 once and \$5.00 per activity. A student writes $5(x + 8) = 43$. Repair the model and solve.

Answer Key

1. Let x count tickets; $3x + 5 = 26$; $x = 7$.
2. $6x + 8 = 44$; 6 lessons.
3. $24 - 2.5t = 14$; $t = 4$ minutes.
4. $5x + 3 = 28$; $x = 5$ dollars per notebook.
5. $5t - 6 = 44$; $t = 10$ dollars per ticket.
6. $21 - 3m = 9$; $m = 4$ mistakes.
7. $3x + 12 = 42$; $x = 10$.
8. $5x + 8 = 43$; $x = 7$.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. The fixed amount is 5 and the repeated charge is $3x$: $3x + 5 = 26$.
2. Subtract 5: $3x = 21$; divide by 3: $x = 7$.
3. Check $3(7) + 5 = 26$ dollars.

Problem 2

1. Let x count lessons. The fee is not part of each lesson: $6x + 8 = 44$.
2. Remove the fee before dividing: $6x = 44 - 8 = 36$.
3. $x = 36/6 = 6$, and $6(6) + 8 = 44$ checks it.

Problem 3

1. The water level decreases, so subtract $2.5t$: $24 - 2.5t = 14$.
2. The water removed is $24 - 14 = 10$ L, so $2.5t = 10$.
3. $t = 10/2.5 = 4$ minutes. Check $24 - 2.5(4) = 14$ L.

Problem 4

1. Multiply the unknown unit price by the notebook count 5, not by the shipping fee.
2. $5x + 3 = 28$ gives $5x = 25$ after removing shipping.
3. $x = 25/5 = 5$ dollars. Check $5(5) + 3 = 28$.

Problem 5

1. A discount reduces the bill, so use $5t - 6 = 44$.
2. Undo the discount by adding 6: $5t = 50$.
3. $t = 50/5 = 10$. Check $5(10) - 6 = 44$.

Problem 6

1. The 3 points are removed for each of m mistakes, so subtract the product $3m$.
2. $21 - 3m = 9$ gives $3m = 21 - 9 = 12$.
3. $m = 12/3 = 4$. Check $21 - 3(4) = 9$.

Problem 7

1. Let x count activities; total rule $C = 3x + 12$.
2. Set $3x + 12 = 42$: $x = (42 - 12)/3 = 10$.
3. Check $3(10) + 12 = 42$ dollars.

Problem 8

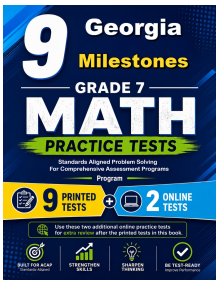
1. Let x count activities; total rule $C = 5x + 8$.
2. Set $5x + 8 = 43$: $x = (43 - 8)/5 = 7$.
3. Check $5(7) + 8 = 43$ dollars.

TESTINAR

Keep Building Grade 7 Math Skills

Choose the practice book matched to your state assessment and turn worksheet practice into a complete test-prep plan.

All Grade 7 books



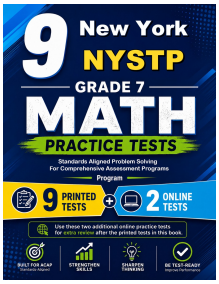
GEORGIA MILESTONES

9 Full-Length Math Practice Tests

Build Grade 7 accuracy, confidence, and test stamina with 9 printable practice tests.

Printable eBook • Instant PDF access

View eBook



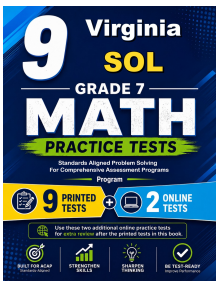
NEW YORK NYSTP

9 Full-Length Math Practice Tests

Build Grade 7 accuracy, confidence, and test stamina with 9 printable practice tests.

Printable eBook • Instant PDF access

View eBook



VIRGINIA SOL

9 Full-Length Math Practice Tests

Build Grade 7 accuracy, confidence, and test stamina with 9 printable practice tests.

Printable eBook • Instant PDF access

View eBook

Need a different state?
Testinar has Grade 7 math practice books for state assessments across the country.

TESTINAR.COM/GRADES/7