Dividing with Two-Digit Divisors

Dividing with Two-Digit Divisors: Find, Fix, and Work Backward

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

QUICK REVIEW

Estimate a quotient, subtract groups, then check. In $437 \div 18$, $18 \times 20 = 360$, leaving 77; $18 \times 4 = 72$, leaving 5. Thus 24 remainder 5, and $18 \times 24 + 5 = 437$. A remainder is less than the divisor.

Worked example

Divide $597 \div 22$. Give quotient and remainder.

1. Take 20 groups: $22 \times 20 = 440$; $597 - 440 = 157$.
2. Take 7 more groups: $22 \times 7 = 154$; $157 - 154 = 3$.
3. Quotient $20 + 7 = 27$; check $22 \times 27 + 3 = 597$ and $3 < 22$.
Answer: 27 remainder 3.

Practice Problems

Show your thinking.

1. A child reports $602 \div 24 = 24$ remainder 26. Explain why that remainder is too large and fix it.

2. Find the two-digit divisor: $453 \div \square = 28$ remainder 5.

3. Find a dividend giving quotient 31 and remainder 8 when divided by 35.

4. A child reports $963 \div 28 = 33$ remainder 39. Explain why that remainder is too large and fix it.

5. A supply has 1568 sheets. Each class needs 42. Can 38 full classes receive sheets? How many additional sheets would be needed?

6. Find the two-digit divisor: $737 \div \square = 40$ remainder 17.

7. Use chunks of 40 and then smaller chunks to find $1396 \div 32$.

8. Find a dividend giving quotient 46 and remainder 23 when divided by 25.

Answer Key

1. 25 remainder 2.
2. 16.
3. 1093.
4. 34 remainder 11.
5. No; 28 additional sheets.
6. 18.
7. 43 remainder 20.
8. 1173.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Take 20 groups: $24 \times 20 = 480$; $602 - 480 = 122$.
2. Take 5 more groups: $24 \times 5 = 120$; $122 - 120 = 2$.
3. Quotient $20 + 5 = 25$; check $24 \times 25 + 2 = 602$ and $2 < 24$.

Problem 2

1. Remove the leftover from the dividend: $453 - 5 = 448$.
2. This is 28 equal groups, so each has $448 \div 28 = 16$.
3. Check: $16 \times 28 + 5 = 453$ and $5 < 16$.

Problem 3

1. Full groups contain $35 \times 31 = 1085$ items.
2. Add the leftovers: $1085 + 8 = 1093$ items.
3. Check the valid remainder: $8 < 35$; grouping the total returns 31 full groups.

Problem 4

1. Take 30 groups: $28 \times 30 = 840$; $963 - 840 = 123$.
2. Take 4 more groups: $28 \times 4 = 112$; $123 - 112 = 11$.
3. Quotient $30 + 4 = 34$; check $28 \times 34 + 11 = 963$ and $11 < 28$.

Problem 5

1. Take 30 groups: $42 \times 30 = 1260$; $1568 - 1260 = 308$.
2. Take 7 more groups: $42 \times 7 = 294$; $308 - 294 = 14$.
3. Quotient $30 + 7 = 37$; check $42 \times 37 + 14 = 1568$ and $14 < 42$.
4. $42 \times 38 = 1596$; $1596 - 1568 = 28$ sheets short.

Problem 6

1. Remove the leftover from the dividend: $737 - 17 = 720$.
2. This is 40 equal groups, so each has $720 \div 40 = 18$.
3. Check: $18 \times 40 + 17 = 737$ and $17 < 18$.

Problem 7

1. Take 40 groups: $32 \times 40 = 1280$; $1396 - 1280 = 116$.
2. Take 3 more groups: $32 \times 3 = 96$; $116 - 96 = 20$.
3. Quotient $40 + 3 = 43$; check $32 \times 43 + 20 = 1396$ and $20 < 32$.

Problem 8

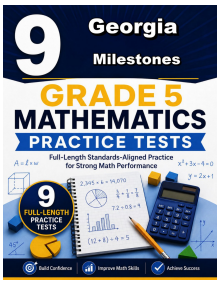
1. Full groups contain $25 \times 46 = 1150$ items.
2. Add the leftovers: $1150 + 23 = 1173$ items.
3. Check the valid remainder: $23 < 25$; grouping the total returns 46 full groups.

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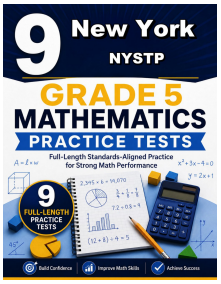
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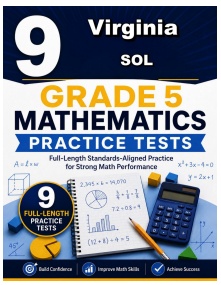
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