Dividing with Two-Digit Divisors

Dividing with Two-Digit Divisors: Models and Computation

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 $575 \div 22$. Give quotient and remainder.

1. Take 20 groups: $22 \times 20 = 440$; $575 - 440 = 135$.
2. Take 6 more groups: $22 \times 6 = 132$; $135 - 132 = 3$.
3. Quotient $20 + 6 = 26$; check $22 \times 26 + 3 = 575$ and $3 < 22$.
Answer: 26 remainder 3.

Practice Problems

Show your thinking.

1. Divide $553 \div 24$. Give quotient and remainder.

2. Use chunks of 20 and then smaller chunks to find $420 \div 16$.

3. Pack 1022 beads into full bags of 35. How many full bags and leftover beads?

4. Share 906 whole counters among 28 students without breaking counters. State each share and the unused count.

5. A child reports $1483 \div 42 = 34$ remainder 55. Explain why that remainder is too large and fix it.

6. Divide $700 \div 18$. Give quotient and remainder.

7. Find a dividend giving quotient 41 and remainder 19 when divided by 32.

8. A van seats 25 people. How many vans are needed for 1122 people?

Answer Key

1. 23 remainder 1.
2. 26 remainder 4.
3. 29 remainder 7.
4. 32 remainder 10.
5. 35 remainder 13.
6. 38 remainder 16.
7. 1331.
8. 45 vans.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Take 20 groups: $24 \times 20 = 480$; $553 - 480 = 73$.
2. Take 3 more groups: $24 \times 3 = 72$; $73 - 72 = 1$.
3. Quotient $20 + 3 = 23$; check $24 \times 23 + 1 = 553$ and $1 < 24$.

Problem 2

1. Take 20 groups: $16 \times 20 = 320$; $420 - 320 = 100$.
2. Take 6 more groups: $16 \times 6 = 96$; $100 - 96 = 4$.
3. Quotient $20 + 6 = 26$; check $16 \times 26 + 4 = 420$ and $4 < 16$.

Problem 3

1. Take 20 groups: $35 \times 20 = 700$; $1022 - 700 = 322$.
2. Take 9 more groups: $35 \times 9 = 315$; $322 - 315 = 7$.
3. Quotient $20 + 9 = 29$; check $35 \times 29 + 7 = 1022$ and $7 < 35$.

Problem 4

1. Take 30 groups: $28 \times 30 = 840$; $906 - 840 = 66$.
2. Take 2 more groups: $28 \times 2 = 56$; $66 - 56 = 10$.
3. Quotient $30 + 2 = 32$; check $28 \times 32 + 10 = 906$ and $10 < 28$.

Problem 5

1. Take 30 groups: $42 \times 30 = 1260$; $1483 - 1260 = 223$.
2. Take 5 more groups: $42 \times 5 = 210$; $223 - 210 = 13$.
3. Quotient $30 + 5 = 35$; check $42 \times 35 + 13 = 1483$ and $13 < 42$.

Problem 6

1. Take 30 groups: $18 \times 30 = 540$; $700 - 540 = 160$.
2. Take 8 more groups: $18 \times 8 = 144$; $160 - 144 = 16$.
3. Quotient $30 + 8 = 38$; check $18 \times 38 + 16 = 700$ and $16 < 18$.

Problem 7

1. Full groups contain $32 \times 41 = 1312$ items.
2. Add the leftovers: $1312 + 19 = 1331$ items.
3. Check the valid remainder: $19 < 32$; grouping the total returns 41 full groups.

Problem 8

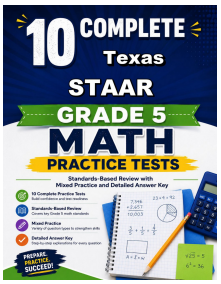
1. Take 40 groups: $25 \times 40 = 1000$; $1122 - 1000 = 122$.
2. Take 4 more groups: $25 \times 4 = 100$; $122 - 100 = 22$.
3. Quotient $40 + 4 = 44$; check $25 \times 44 + 22 = 1122$ and $22 < 25$.
4. One extra van is needed for the remaining 22 people; total 45 vans.

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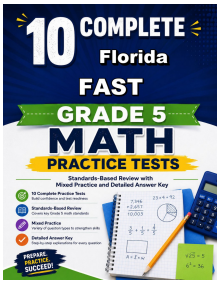
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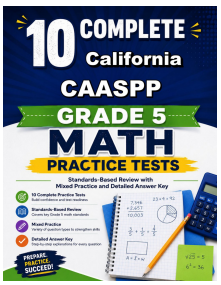
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