

Mastering Long Division: Dividing Multi-Digit Numbers

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■ Concept Explanation

Long division is a method used to divide large numbers by smaller numbers. It helps us find out how many times one number can fit into another. Imagine you have 432 cookies and you want to put them into boxes that hold 12 cookies each. How many boxes can you fill? That's where long division comes in. It's like a step-by-step recipe to solve division problems with big numbers.

= ■ Worked Examples

Example 1

Problem: Divide 432 by 12

Solution:

Step 1: Divide 4 by 12. Since 12 doesn't fit into 4, we look at the next digit, which is 3. So, we divide 43 by 12.

Step 2: 12 fits into 43 three times ($12 \times 3 = 36$), with a remainder of 7 ($43 - 36 = 7$).

Step 3: Now, we bring down the next digit, which is 2. So, we divide 72 by 12.

Step 4: 12 fits into 72 six times ($12 \times 6 = 72$), with no remainder.

Answer: 36

Example 2

Problem: Divide 945 by 15

Solution:

Step 1: Divide 9 by 15. Since 15 doesn't fit into 9, we look at the next digit, which is 4. So, we divide 94 by 15.

Step 2: 15 fits into 94 six times ($15 \times 6 = 90$), with a remainder of 4 ($94 - 90 = 4$).

Step 3: Now, we bring down the next digit, which is 5. So, we divide 45 by 15.

Step 4: 15 fits into 45 three times ($15 \times 3 = 45$), with no remainder.

Answer: 63

Example 3

Problem: Divide 216 by 18

Solution:

Step 1: Divide 2 by 18. Since 18 doesn't fit into 2, we look at the next digit, which is 1. So, we divide 21 by 18.

Step 2: 18 fits into 21 one time ($18 \times 1 = 18$), with a remainder of 3 ($21 - 18 = 3$).

Step 3: Now, we bring down the next digit, which is 6. So, we divide 36 by 18.

Step 4: 18 fits into 36 two times ($18 \times 2 = 36$), with no remainder.

Answer: 12

■ Practice Questions

1. Divide 756 by 12 [MEDIUM]

2. Divide 945 by 15 [MEDIUM]

3. Divide 360 by 10 [EASY]

4. Divide 216 by 12 [EASY]

5. Divide 504 by 18 [HARD]

6. Divide 630 by 15 [MEDIUM]

7. Divide 900 by 25 [HARD]

8. Divide 480 by 20 [EASY]

■ Answer Key

For teacher/tutor reference

1. 63

2. 63

3. 36

4. 18

5. 28

6. 42

7. 36

8. 24