

Dividing Multi-Digit Whole Numbers: practice solutions, Grade 4 – download the PDF

Written solutions to the chapter problems. Check each step, then correct yourself.

1 Sharing stickers



Divide the total by the number of friends: $36 \div 4 = 9$, because $4 \times 9 = 36$.

Each friend gets **9 stickers**.

2 Fact family



A multiplication fact gives a fact family: $9 \times 7 = 63$, $63 \div 7 = 9$ and $63 \div 9 = 7$.

3 Tens and hundreds



a. $18 \div 3 = 6$, so 18 tens $\div 3 = 6$ tens: $180 \div 3 = 60$.

b. $56 \div 7 = 8$, so $560 \div 7 = 80$.

c. $24 \div 8 = 3$, so 24 hundreds $\div 8 = 3$ hundreds: $2,400 \div 8 = 300$.

d. $35 \div 5 = 7$, so $3,500 \div 5 = 700$.

e. $48 \div 6 = 8$, so $4,800 \div 6 = 800$.

Check: $3 \times 60 = 180$, $7 \times 80 = 560$, $8 \times 300 = 2,400$.

4 Fill the area model



First part: $160 \div 4 = 40$. Second part: $8 \div 4 = 2$.

Whole length: $40 + 2 = 42$ inches. So $168 \div 4 = 42$. Check: $4 \times 42 = 168$.

5 Two partial quotients



$3 \times 30 = 90$ and $96 - 90 = 6$. Then $3 \times 2 = 6$ and nothing is left.

Add the partial quotients: $30 + 2 = 32$. So $96 \div 3 = 32$. Check: $3 \times 32 = 96$.

6 First long divisions



a. $4 \div 2 = 2$, $6 \div 2 = 3$, $8 \div 2 = 4$: the quotient is **234**.

b. $6 \div 3 = 2$, $3 \div 3 = 1$, $9 \div 3 = 3$: the quotient is **213**.

c. $9 \div 5 = 1$ with 4 left; bring down the 0 to make 40, $40 \div 5 = 8$; bring down the 5, $5 \div 5 = 1$: the quotient is **181**.

Checks: $2 \times 234 = 468$, $3 \times 213 = 639$, $5 \times 181 = 905$.

7 True or false?



a. **True.** $5 \times 600 = 3,000$.

b. **False.** $9 \times 5 = 45$, so $450 \div 9 = 50$.

c. **True.** Multiplication and division are inverse operations.

d. **True.** $4 \times 6 + 1 = 25$ and $1 < 4$.

e. **False.** A remainder must be smaller than the divisor. The correct answer is **6 R 1**, because $5 \times 6 + 1 = 31$.

8 Estimate, then divide



a. 623 is close to 630, and $630 \div 7 = 90$. About 90 apples per basket.

b. $62 \div 7 = 8$ with 6 left ($7 \times 8 = 56$). Bring down the 3 to make 63, and $63 \div 7 = 9$.
The quotient is 89.

Check: $7 \times 89 = 623$. Each basket gets **89 apples**, close to the estimate of 90.

9 Quotients with remainders



a. $6 \times 7 = 42$ and $47 - 42 = 5$: 7 R 5.

b. $8 \times 11 = 88$ and $92 - 88 = 4$: 11 R 4.

c. $9 \times 27 = 243$ and $245 - 243 = 2$: 27 R 2.

d. $7 \times 142 = 994$ and $1,000 - 994 = 6$: 142 R 6.

In each case the remainder is smaller than the divisor.

10 Spot the mistake



His multiplication check works ($528 + 10 = 538$), but a remainder of 10 is bigger than the divisor 6, so there are still whole groups of 6 left to take out.

$10 = 6 + 4$, so one more group fits: $88 + 1 = 89$ with 4 left. The correct answer is **89 R 4**.

Check: $6 \times 89 + 4 = 534 + 4 = 538$.

11 Vans for the field trip



$83 \div 9 = 9$ R 2, because $9 \times 9 = 81$ and $83 - 81 = 2$.

Nine vans carry only 81 students, and 2 students still need a ride. The school needs **10 vans**.

12 Ribbon pieces



$275 \div 8 = 34 \text{ R } 3$, because $8 \times 34 = 272$ and $275 - 272 = 3$.

Mia can cut **34 full pieces**, and **3 inches** are left over.

13 Three-part area model



$700 \div 7 = 100$, $140 \div 7 = 20$ and $21 \div 7 = 3$.

Length: $100 + 20 + 3 = 123$ feet. So $861 \div 7 = 123$. Check: $7 \times 123 = 861$.

14 Jumps on a number line



The jumps are 5, 10, 15, 20, 25, 30, 35, 40, 45: that is 9 jumps, and $5 \times 9 = 45$. From 45 to 47 there are 2 left.

So $47 \div 5 = 9 \text{ R } 2$. Check: $5 \times 9 + 2 = 47$.

15 A zero in the quotient



a. $32 \div 8 = 4$ and nothing is left. Bring down the 2: $2 \div 8 = 0$, so write 0. Bring down the 4: $24 \div 8 = 3$. The quotient is **403**. Check: $8 \times 403 = 3,224$.

b. $21 \div 7 = 3$, nothing left. Bring down the 0: $0 \div 7 = 0$. Bring down the 5: $5 \div 7 = 0$ with 5 left. The quotient is **300 R 5**. Check: $7 \times 300 + 5 = 2,105$.

16 Apples, crates and trucks



Step 1, number of crates: $1,248 \div 8$. Partial quotients: $8 \times 100 = 800$, left 448; $8 \times 50 = 400$, left 48; $8 \times 6 = 48$, left 0. So $100 + 50 + 6 = 156$ crates.

Step 2, crates per truck: $156 \div 4 = 39$, because $4 \times 39 = 156$.

Each truck carries **39 crates**.

17 Which quotient is larger?



$27 \div 9 = 3$, so $2,700 \div 9 = 300$. $35 \div 7 = 5$, so $3,500 \div 7 = 500$.

The second quotient is larger, by $500 - 300 = 200$.

18 Find the dividend



Use $\text{dividend} = \text{divisor} \times \text{quotient} + \text{remainder}$.

a. $6 \times 47 = 282$, and $282 + 5 = 287$. The number is **287**.

b. $7 \times 52 = 364$, and $364 + 6 = 370$. The number is **370**.

19 Error analysis



Estimate: $1,200 \div 4 = 300$. Nina's 39 is far too small, so a digit is missing.

$12 \div 4 = 3$, nothing left. Bring down the 3: $3 \div 4 = 0$, so write 0. Bring down the 6:

$36 \div 4 = 9$. The correct quotient is **309**. Nina forgot the 0. Check: $4 \times 309 = 1,236$.

20 Bags of beads



a. $1,000 \div 6 = 166 \text{ R } 4$, because $6 \times 166 = 996$ and $1,000 - 996 = 4$. The store can make **166 full bags** with **4 beads** left over.

b. The 4 extra beads need one more bag, so the store needs $166 + 1 = 167$ bags.

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Two ways to solve

Sample problem: a hiking club has 245 trail bars to put into 5 equal backpacks. How many bars go in each backpack?

Partial quotients: $5 \times 40 = 200$, left 45; $5 \times 9 = 45$, left 0. So $40 + 9 = 49$.

Area model: width 5, parts $5 \times 40 = 200$ and $5 \times 9 = 45$, total length $40 + 9 = 49$.

Each backpack gets **49 trail bars**. Check: $5 \times 49 = 245$.

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