

Dividing Whole Numbers: practice solutions, Grade 5 – download the PDF

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

1 Mental division with zeros



- a. $36 \div 9 = 4$, so $3,600 \div 9 = 400$.
- b. $54 \div 9 = 6$, so $540 \div 90 = 6$.
- c. Cross out one zero: $280 \div 4 = 70$.
- d. $63 \div 3 = 21$, so $630 \div 30 = 21$.
- e. Cross out one zero: $4,500 \div 5 = 900$.

Answers: 400, 6, 70, 21 and 900.

2 Estimate with compatible numbers



- a. $2,415$ is close to $2,400$, and $2,400 \div 8 = 300$. Estimate: about 300.
- b. $5,987 \approx 6,000$, and $6,000 \div 3 = 2,000$. Estimate: about 2,000.
- c. $4,130 \approx 4,200$, and $4,200 \div 7 = 600$. Estimate: about 600.
- d. $812 \approx 800$, and $800 \div 4 = 200$. Estimate: about 200.

Other reasonable compatible numbers are accepted if they are easy to divide.

3 Partial quotients with 848



$4 \times 200 = 800$, and $848 - 800 = 48$.

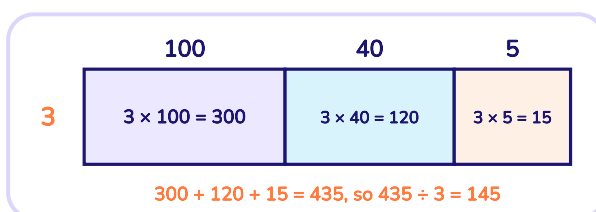
$4 \times 12 = 48$, and $48 - 48 = 0$.

Add the partial quotients: $200 + 12 = 212$. Check: $4 \times 212 = 848$. So $848 \div 4 = 212$.

4 Complete the area model



$3 \times 100 = 300$, and $435 - 300 = 135$. Next, $3 \times 40 = 120$, and $135 - 120 = 15$. Finally $3 \times 5 = 15$.



The quotient is $100 + 40 + 5 = 145$.

5 Long division by 4



$12 \div 4 = 3$, and $12 - 12 = 0$. Bring down 9: $9 \div 4 = 2$, and $4 \times 2 = 8$, so the remainder is 1. Bring down 6 to make 16: $16 \div 4 = 4$, with nothing left.

The quotient is 324. Check: $4 \times 324 = 1,296$.

6 Sticker sharing



We share equally, so we divide: $252 \div 6$. $6 \times 40 = 240$, and $252 - 240 = 12$. $6 \times 2 = 12$. So $40 + 2 = 42$.

Each friend gets **42 stickers**. Check: $6 \times 42 = 252$.

7 True or false?



- a. True. $420 \div 6 = 70$, and $60 \times 70 = 4,200$.
- b. False. $540 \div 9 = 60$, so $5,400 \div 90 = 60$. Check: $90 \times 600 = 54,000$, which is too big.
- c. False. $7 \times 105 = 735$, not 7,350. The correct quotient is **1,050**, because $7 \times 1,050 = 7,350$.

8 A division with a remainder



$34 \div 6 = 5$, and $6 \times 5 = 30$, so the remainder is 4. Bring down 5 to make 45: $45 \div 6 = 7$, and $6 \times 7 = 42$, remainder 3. Bring down 7 to make 37: $37 \div 6 = 6$, and $6 \times 6 = 36$, remainder 1.

$3,457 \div 6 = 576 \text{ R } 1$. Check: $6 \times 576 + 1 = 3,456 + 1 = 3,457$.

9 A first 2-digit divisor



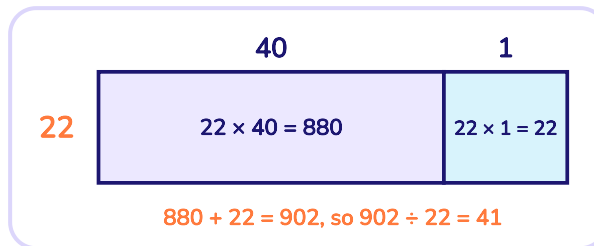
12 is less than 24, so start with 124: $124 \div 24 = 5$, because $24 \times 5 = 120$, and $124 - 120 = 4$. Bring down 8 to make 48: $48 \div 24 = 2$, with nothing left.

The quotient is **52**. Check: $24 \times 52 = 1,248$.

10 Area model with 22



$22 \times 40 = 880$, and $902 - 880 = 22$. Then $22 \times 1 = 22$. The two pieces of the missing side are 40 and 1.



The quotient is $40 + 1 = 41$.

11 Trays of muffins



Divide: $1,260 \div 15$. With partial quotients: $15 \times 80 = 1,200$, and $1,260 - 1,200 = 60$.
 $15 \times 4 = 60$. So $80 + 4 = 84$.

The cafe fills **84 trays**. Check: $15 \times 84 = 1,260$.

12 Find the error



- Leo used the basic fact $30 \div 5 = 6$ but forgot that two zeros remain after crossing out one zero in each number. $3,000 \div 50 = 300 \div 5 = 60$. Check: $50 \times 60 = 3,000$.
- Priya forgot the zero placeholders. $9 \div 9 = 1$ thousand; the 0 in the hundreds and the 7 in the tens are too small to divide by 9, so we write 0 in both places; then $72 \div 9 = 8$. The quotient is **1,008**. Check: $9 \times 1,008 = 9,072$.

13 Bags of rolls



$275 \div 12$: $12 \times 20 = 240$, and $275 - 240 = 35$. $12 \times 2 = 24$, and $35 - 24 = 11$. So $275 \div 12 = 22 \text{ R } 11$.

- a. The store can make **22 full bags**.
- b. **11 rolls** are left over, because 11 is less than 12 and $12 \times 22 + 11 = 275$.

14 Long division by 36



Estimate: $7,200 \div 36 = 200$, so the answer should be a little more than 200.

Divide: 78 is the first big enough group; $78 \div 36 = 2$, and $36 \times 2 = 72$, remainder 6. Bring down 4 to make 64: $64 \div 36 = 1$, remainder 28. Bring down 8 to make 288: $288 \div 36 = 8$, because $36 \times 8 = 288$.

The quotient is **218**, close to the estimate. Check: $36 \times 218 = 7,848$.

15 Cutting a rope



Divide: $2,450 \div 35$. $35 \times 60 = 2,100$, and $2,450 - 2,100 = 350$. $35 \times 10 = 350$. So $60 + 10 = 70$.

Each piece is **70 centimeters** long. In inches: $70 \div 2.54 \approx 27.6$, so each piece is about **28 inches**.

16 Three questions, one remainder



$83 \div 6 = 13 \text{ R } 5$, because $6 \times 13 = 78$ and $83 - 78 = 5$.

- a. Only full boxes count, so we ignore the remainder: **13 full boxes**.
- b. Every person needs a seat, so we round up: **14 vans** (13 full vans and one van for the last 5 people).
- c. Each cousin gets **13 dollars**, and **5 dollars** are left over.

17 Work backward from a quotient



Use **divisor** $\times$ **quotient** + **remainder** = **dividend**. First $27 \times 45 = 1,215$. Then $1,215 + 13 = 1,228$.

The number is **1,228**. Check: $1,228 \div 27$ gives 45 groups of 27 (that is 1,215) and $1,228 - 1,215 = 13$, which is less than 27.

18 Estimate, then divide by 18



a. $6,372 \approx 6,300$, and $18 \times 350 = 6,300$. The estimate is about 350.

b. 63 is the first group big enough: $63 \div 18 = 3$, and $18 \times 3 = 54$, remainder 9. Bring down 7 to make 97: $97 \div 18 = 5$, and $18 \times 5 = 90$, remainder 7. Bring down 2 to make 72: $72 \div 18 = 4$. The quotient is **354**.

c. 354 is very close to 350, so the answer is reasonable. Check: $18 \times 354 = 6,372$.

19 Packs of pencils



Divide: $4,860 \div 45$. 48 is the first group big enough: $48 \div 45 = 1$, remainder 3. Bring down 6 to make 36. Since 36 is less than 45, write **0** in the quotient. Bring down 0 to make 360: $360 \div 45 = 8$, because $45 \times 8 = 360$.

The quotient is 108, so the school ordered **108 packs**. In the tens place we write 0 because 36 cannot be divided by 45. Check: $45 \times 108 = 4,860$.

20 Order without long division



The dividend is the same, so a bigger divisor gives a smaller quotient. Order the divisors: $60 < 80 < 90$. So the quotients go the other way:

$7,200 \div 90 < 7,200 \div 80 < 7,200 \div 60$.

Check with basic facts: $720 \div 9 = 80$, $720 \div 8 = 90$, $720 \div 6 = 120$. From least to greatest: **80, 90, 120**.



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