

Adding and Subtracting Whole Numbers: practice solutions, Grade 4 – download the PDF

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

1 Add four-digit numbers



a. No carrying is needed: $5 + 3 = 8$, $2 + 6 = 8$, $4 + 1 = 5$, $3 + 2 = 5$. The sum is **5,588**.

b. Ones: $8 + 5 = 13$, write 3, carry 1. Tens: $3 + 8 + 1 = 12$, write 2, carry 1. Hundreds: $7 + 6 + 1 = 14$, write 4, carry 1. Thousands: $4 + 2 + 1 = 7$. The sum is **7,423**.

c. Ones: $6 + 7 = 13$, write 3, carry 1. Tens: $9 + 0 + 1 = 10$, write 0, carry 1. Hundreds: $0 + 9 + 1 = 10$, write 0, carry 1. Thousands: $8 + 1 + 1 = 10$. The sum is **10,003**.

2 Subtract four-digit numbers



- a. No borrowing is needed: $4 - 1 = 3$, $6 - 2 = 4$, $7 - 5 = 2$, $8 - 3 = 5$. The difference is **5,243**.
- b. Ones: $5 - 8$ is not possible, so borrow from the tens (0), which means borrowing from the hundreds first: 3 hundreds become 2 hundreds and 10 tens, then 9 tens and 15 ones. $15 - 8 = 7$. Tens: $9 - 4 = 5$. Hundreds: $2 - 1 = 1$. Thousands: $6 - 2 = 4$. The difference is **4,157**.
- c. Ones: $2 < 7$, borrow: $12 - 7 = 5$, tens become 0. Tens: $0 < 8$, borrow: $10 - 8 = 2$, hundreds become 3. Hundreds: $3 < 6$, borrow: $13 - 6 = 7$, thousands become 8. Thousands: $8 - 5 = 3$. The difference is **3,725**.

3 Trading places



- a. 1 thousand = **10 hundreds**.
- b. 15 ones = 1 ten and 5 ones, so the tens become $3 + 1 = 4$. The number is **4 hundreds, 4 tens, 5 ones** (445).
- c. $6,040 = 6$ thousands and 4 tens. Trading 1 thousand for 10 hundreds gives 5 thousands, **10 hundreds**, 4 tens. Check: $5,000 + 1,000 + 40 = 6,040$.

4 Round and estimate



- A. 3,462 has a 6 in the tens place, so it rounds up to **3,500**. 7,849 has a 4 in the tens place, so it rounds down to **7,800**. 2,950 has a 5 in the tens place, so it rounds up to **3,000**. 9,951 has a 5 in the tens place, so it rounds up to **10,000**.
- B. $3,462 \approx 3,500$ and $2,538 \approx 2,500$. The estimate is $3,500 + 2,500 = 6,000$.

5 Fans at the stadium



Add the two days: $12,450 + 8,375$. Ones: $0 + 5 = 5$. Tens: $5 + 7 = 12$, write 2, carry 1. Hundreds: $4 + 3 + 1 = 8$. Thousands: $2 + 8 = 10$, write 0, carry 1. Ten thousands: $1 + 1 = 2$.

$12,450 + 8,375 = 20,825$. 20,825 fans came during the weekend.

6 True or false?



- a. **False**. Check by adding: $3,866 + 1,234 = 5,100$, not 5,000. Borrowing across zeros gives $5,000 - 1,234 = 3,766$.
- b. **True**. Ones: $6 + 4 = 10$. Tens: $5 + 4 + 1 = 10$. Hundreds: $4 + 5 + 1 = 10$. Thousands: $3 + 2 + 1 = 6$. The sum is 6,000.

7 Check with the inverse



- a. Add the answer to the number subtracted: $4,623 + 4,578 = 9,201$. It matches, so Jana is **correct**.
- b. $4,755 + 2,345 = 7,100$, which is not 7,000. Leo is **wrong**. The correct difference is $7,000 - 2,345 = 4,655$. Check: $4,655 + 2,345 = 7,000$.

8

Subtract across zeros

- a. Rewrite 6,000 as 5 thousands, 9 hundreds, 9 tens, 10 ones. Subtract: $10 - 7 = 3$, $9 - 8 = 1$, $9 - 4 = 5$, $5 - 2 = 3$. The answer is **3,513**. Check: $3,513 + 2,487 = 6,000$.
- b. Rewrite 30,007 as 2 ten thousands, 9 thousands, 9 hundreds, 10 tens, 7 ones. Ones: $7 < 9$, so take 1 ten: 17 ones and 9 tens. $17 - 9 = 8$, $9 - 2 = 7$, $9 - 4 = 5$, $9 - 8 = 1$, $2 - 1 = 1$. The answer is **11,578**. Check: $11,578 + 18,429 = 30,007$.
- c. Regroup 80,400: take 1 hundred to make 10 tens, then 1 ten to make 10 ones, so the number has 3 hundreds, 9 tens, and 10 ones. The hundreds are still too small ($3 < 9$), and the thousands are 0, so take 1 ten thousand to make 10 thousands, then 1 thousand to make 10 more hundreds. Now the number is 7 ten thousands, 9 thousands, 13 hundreds, 9 tens, 10 ones. Ones: $10 - 2 = 8$. Tens: $9 - 6 = 3$. Hundreds: $13 - 9 = 4$. Thousands: $9 - 5 = 4$. Ten thousands: $7 - 3 = 4$. The answer is **44,438**. Check: $44,438 + 35,962 = 80,400$.

9

Is the answer reasonable?

$48,725 \approx 50,000$ and $31,284 \approx 30,000$. The estimate is $50,000 + 30,000 = 80,000$.

70,009 is far from 80,000, so it is **not reasonable** (a key was probably mistyped). Exact sum: $48,725 + 31,284 = 80,009$, which is very close to the estimate.

10

Road trip

Miles driven in two days: $328 + 457 = 785$.

Miles left: $1,205 - 785 = 420$.

Check: $785 + 420 = 1,205$. They must drive **420 miles** on day 3.

11 Missing digits



Ones: $A + 9$ must end in 3, so $A + 9 = 13$ and $A = 4$, carry 1.

Tens: $8 + B + 1$ must end in 0, so $8 + B + 1 = 10$ and $B = 1$, carry 1.

Hundreds: $5 + 2 + 1 = 8$. It works. $A = 4$ and $B = 1$, and $584 + 219 = 803$.

12 Library shelves



Total before removing: $15,230 + 9,875 = 25,105$, then $25,105 + 4,360 = 29,465$.

After removing: $29,465 - 3,750 = 25,715$.

Check: $25,715 + 3,750 = 29,465$. **25,715 books** are left.

13 Savings model



a. Lena's bar is Sam's bar plus 1,275: $2,350 + 1,275 = 3,625$. Lena saved **3,625 dollars**.

b. Together: $2,350 + 3,625 = 5,975$. They saved **5,975 dollars**. Estimate:
 $2,000 + 4,000 = 6,000$, so the answer is reasonable.

14 Find the mistake



The student subtracted the smaller digit from the larger digit in every column ($7 - 5 = 2$, $6 - 0 = 6$, $8 - 2 = 6$, $4 - 1 = 3$) instead of borrowing.

Correct work: regroup 4,205 as 3 thousands, 11 hundreds, 9 tens, 15 ones (the 0 tens must borrow from the hundreds, and then the hundreds borrow from the thousands). Ones:

$15 - 7 = 8$. Tens: $9 - 6 = 3$. Hundreds: $11 - 8 = 3$. Thousands: $3 - 1 = 2$.

$4,205 - 1,867 = 2,338$. Check: $2,338 + 1,867 = 4,205$. The correct answer is **2,338**.

15 Ribbon in centimeters



Ribbon used: $348 + 275 = 623$ cm.

Ribbon left: $1,000 - 623 = 377$ cm. Check: $377 + 623 = 1,000$.

Since 1 inch is about 2.5 cm, 377 cm is about 150 inches ($2.5 \times 150 = 375$). **377 cm** of ribbon are left.

16 Mountain climber



After the first climb: $3,200 + 1,250 = 4,450$ ft.

At the lake: $4,450 - 475 = 3,975$ ft.

At the ridge: $3,975 + 890 = 4,865$ ft.

Check by estimate (nearest hundred): $3,200 + 1,300 - 500 + 900 = 4,900$, close to the exact answer. Her elevation is **4,865 feet**.

17 Concert tickets



a. Nights 1 and 2: $6,925 + 7,380 = 14,305$. Night 3: $18,640 - 14,305 = 4,335$. **4,335 tickets**. Check: $14,305 + 4,335 = 18,640$.

b. $7,380 - 4,335 = 3,045$. **3,045 more tickets** were sold on night 2.

18 Think of a number



Work backward using inverse operations. Undo “add 1,250” by subtracting:

$8,000 - 1,250 = 6,750$. Undo “subtract 3,785” by adding: $6,750 + 3,785 = 10,535$.

Check: $10,535 - 3,785 = 6,750$ and $6,750 + 1,250 = 8,000$. The number is **10,535**.

19 Digit cards



- a. Put the greatest digits in the tens place: tens 9 and 6, ones 4 and 2. For example $94 + 62 = 156$. Swapping the ones digits gives $92 + 64 = 156$ too. The greatest sum is **156**.
- b. Put the least digits in the tens place: tens 2 and 4, ones 6 and 9. For example $26 + 49 = 75$ (and $29 + 46 = 75$). The least sum is **75**.

20 Three towns



A and B together: $48,306 + 37,589 = 85,895$.

Difference with Town C: $85,895 - 52,014 = 33,881$.

Estimate: $48,000 + 38,000 - 52,000 = 34,000$, close to the exact answer. **33,881 more people** live in Towns A and B together.

21 Is the budget enough?



- a. $4,875 \approx 5,000$ and $3,260 \approx 3,000$. The estimate is 8,000, exactly the budget. The estimate **cannot decide** because the exact total could be a little above or a little below 8,000.
- b. $4,875 + 3,260 = 8,135$. Since 8,135 is more than 8,000, the budget is **not enough**. The school is short by $8,135 - 8,000 = 135$ dollars.

22 Video game rounds



Round 2: $24,560 - 3,875 = 20,685$.

Round 3: $20,685 + 5,430 = 26,115$.

Total: $24,560 + 20,685 = 45,245$, then $45,245 + 26,115 = 71,360$.

Estimate: $25,000 + 21,000 + 26,000 = 72,000$. Kira's total score was **71,360 points**.



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