

Place Value and Rounding: practice solutions, Grade 3 – download the PDF

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

1 Value of a digit



The 6 is in the hundreds place: it is worth **600**. The 3 is in the tens place: it is worth **30**. The 8 is in the ones place: it is worth **8**.

Check: $600 + 30 + 8 = 638$.

2 Numbers in digits



- a. 4 hundreds, 1 ten, 2 ones: **412**.
- b. 7 hundreds, no tens, 6 ones: **706**. The 0 is a placeholder.
- c. 9 hundreds, 9 tens, no ones: **990**.

3 Numbers in words



- a. 580 is **five hundred eighty**.
- b. 305 is **three hundred five**.
- c. 861 is **eight hundred sixty-one**.

4 Expanded form



- a. $253 = 200 + 50 + 3$
- b. $807 = 800 + 0 + 7 = 800 + 7$, because there are no tens.
- c. $460 = 400 + 60$, because there are no ones.

5 Greater or less?



- a. The hundreds are equal. Tens: $4 < 5$, so $345 < 354$.
- b. Hundreds: $6 > 5$, so $600 > 599$.
- c. The hundreds are equal. Tens: $2 > 1$, so $721 > 712$.
- d. The hundreds are equal. Tens: $0 < 8$, so $408 < 480$.

6 Round to the nearest 10



- a. The ones digit is 3, round down: **20**.
- b. The ones digit is 7, round up: **70**.
- c. The ones digit is 5, round up: **90**.
- d. The ones digit is 2, round down: **140**.
- e. The ones digit is 5, round up: 39 tens becomes 40 tens, so **400**.

7 Round to the nearest 100



- a. The tens digit is 4, round down: **200**.
- b. The tens digit is 6, round up: **800**.
- c. The tens digit is 5, round up: **500**.
- d. The tens digit is 2, round down: **100**.

8

Order the numbers

Look at the hundreds first. The hundreds digits are 4, 4, 8, 2 and 8. So 248 is the least. Then 428 and 482 (4 hundreds): the tens give **428 < 482**. Finally 824 and 842 (8 hundreds): **824 < 842**.

The order is **248, 428, 482, 824, 842**.

9

True or false?

- a. **False.** The first 5 is worth 500 and the last 5 is worth 5.
- b. **True.** 6 hundreds, 3 tens and 9 ones make 639.
- c. **True.** The ones digit is 9, so we round up: 45 tens becomes 46 tens, and 459 rounds to 460.
- d. **False.** $90 + 800 + 1 = 800 + 90 + 1 = 891$, not 981. The 9 is worth 90.

10

Books in the library

- a. The ones digit is 7, so we round up: 487 rounds to **490**. The library has about 490 books.
- b. The tens digit is 8, so we round up: 487 rounds to **500**. The library has about 500 books.

11

Missing digit

The hundreds digit is 5, the same as in 560, so we compare the tens. We need the tens digit to be greater than 6, or equal to 6 with a bigger ones digit. If the box is 6, the number is 563, and **563 > 560** because $3 > 0$. So 6 works. Digits 7, 8 and 9 also work. For 0 to 5 the number is below 560.

The possible digits are **6, 7, 8 and 9**.

12 Jumps of 10 and 100



- a. Add 1 to the tens digit: $39 \text{ tens} + 1 \text{ ten} = 40 \text{ tens}$, so **405**.
- b. $70 \text{ tens} - 1 \text{ ten} = 69 \text{ tens}$, so **690**.
- c. Add 1 to the hundreds digit: **445**.
- d. Subtract 1 from the hundreds digit: **899**.

13 Use the number line



The distance from 70 to 76 is $76 - 70 = 6$. The distance from 76 to 80 is $80 - 76 = 4$. Since 4 is smaller than 6, 76 is closer to **80**. This matches the rule: the ones digit is 6, so we round up. 76 rounds to **80**.

14 Who scored the most?



- a. The scores are Ana 365, Ben 356, Cy 635 and Dee 653. The greatest hundreds digit is 6, shared by Cy and Dee. Their tens: $5 \text{ tens} > 3 \text{ tens}$, so **653 > 635**. **Dee** scored the most.
- b. Greatest to least: **653, 635, 365, 356**.

15 Round to the nearest hundred



- a. The ones digit is 8, so we round up: **550**.
- b. The tens digit is 4, so we round down: **500**.

The halfway point between 500 and 600 is 550. Since $548 < 550$, it is closer to 500. The two answers are different because each rounding looks at a different digit.

16 Find the mistake



Both answers are **wrong**.

- Nearest 10: the ones digit is 9, so we must round up. 349 rounds to **350**, not 340. Leo dropped the ones digit without rounding.
- Nearest 100: the tens digit is 4, so we round down. 349 rounds to **300**. Leo probably rounded 349 to 350 first, then rounded 350 up to 400, which is rounding twice.

17 Mystery number



- To round up to 580, the ones digit must be 5, 6, 7, 8 or 9. If it were 0 to 4, the number would round down to 570. So the ones digit is **5, 6, 7, 8 or 9**.
- The even digits among these are 6 and 8, so I could be **576 or 578**.

18 Largest and smallest



- With 4 first: 407 and 470. With 7 first: 704 and 740. Numbers starting with 0 are not allowed. The list is **407, 470, 704, 740**.
- The **greatest is 740** and the **least is 407**.
- 407 has tens digit 0: **400**. 470 has tens digit 7: **500**. 704 has tens digit 0: **700**. 740 has tens digit 4: **700**.

19 Estimate at the bakery



284 rounds to 300 (the tens digit is 8) and 347 rounds to 300 (the tens digit is 4). The estimate is **$300 + 300 = 600$** .

The exact total is **$284 + 347 = 631$** . The estimate 600 is close to 631, and it was quick to find in your head. The bakery sold about 600 muffins, exactly 631.

20 Numbers that round to 700



- a. 650 rounds up to 700 (tens digit 5). 649 rounds down to 600. The smallest is **650**.
- b. 749 rounds down to 700 (tens digit 4). 750 rounds up to 800. The greatest is **749**.
- c. From 650 to 749, there are $749 - 650 + 1 = 100$ numbers. **100 numbers** round to 700.

21 Hundreds, tens and ones



- a. 12 tens is 120. So $400 + 120 + 3 = 523$. The number is **523**.
- b. 15 tens is 150. So $700 + 150 = 850$. The number is **850**.
- c. 9 tens is 90, and 14 ones is 14. So $90 + 14 = 104$. The number is **104**.



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