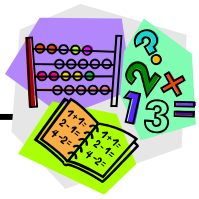
# Rounding Whole Numbers



**Why round numbers?**

When exact numbers are not needed, numbers are often rounded to give approximate values and quantities. Rounding also helps us estimate.

**Temperature**:

Daily temperatures are often rounded to the nearest degree Celsius.

E.g., 25.7°C is generally reported as 26°C

**Money**:

People often use rounding and estimating at a store to make sure they have enough money to pay for items before they get to the cashier.

**Using large numbers:**

- Newspapers often round large numbers to take up less space. They may print $10M rather than $10 490 721.00.
- When adding or subtracting large numbers mentally, it is easier to round them first!

## Think About …

For the next week, find examples of when you use or hear rounded numbers when talking to friends, family and other people in your community.

Discuss in groups when and how rounding is used in the workplace.

# Rounding Using Number Lines

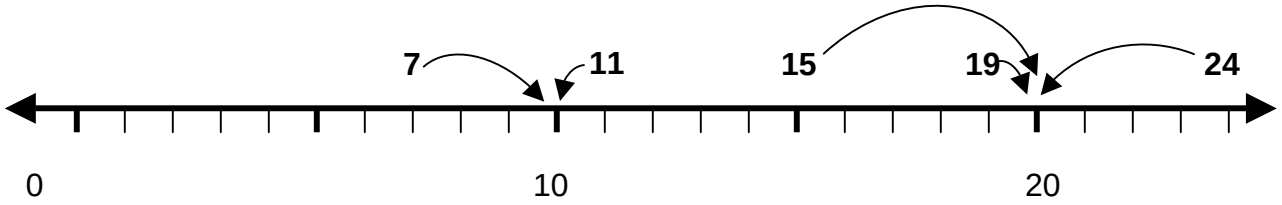
A **number line** has numbers placed in order along a straight line. Number values increase from left to right.

Check out Hints for Rounding for more rounding strategies.

## Rounding to the nearest 10

**Example** Round the following numbers to the nearest 10:

**11 7 19 15 24**




**Where are the numbers on the number line?**

The numbers 7 and 11 are close to 10 on the number line.
The numbers 19 and 24 are close to 20 on the number line.
The number 15 is exactly in the middle between the 10 and 20.

**Rounding to the nearest 10**

7 and 11 are both closer to 10 than they are to 0 or 20.

- 7 rounds up to 10
- 11 rounds down to 10

19 and 24 are both closer to 20 than to 0 or 10.

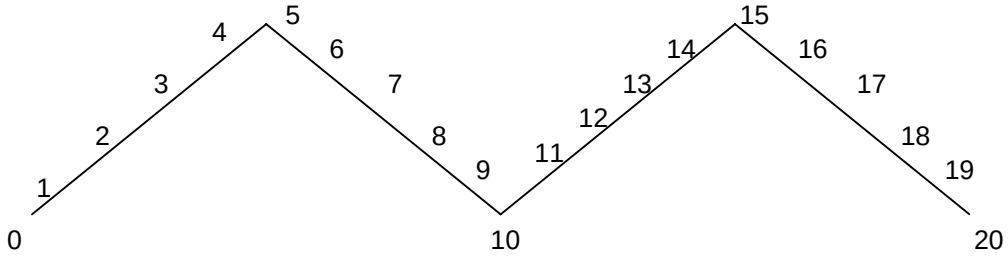
- 19 rounds up to 20
- 24 rounds down to 20

**What about 15?**

If a number is *exactly* half way, round to the larger of the two numbers.

- 15 rounds up to 20 because it is exactly half way between 10 and 20.

Another way to think about rounding is to pull the number line up into a mountain.

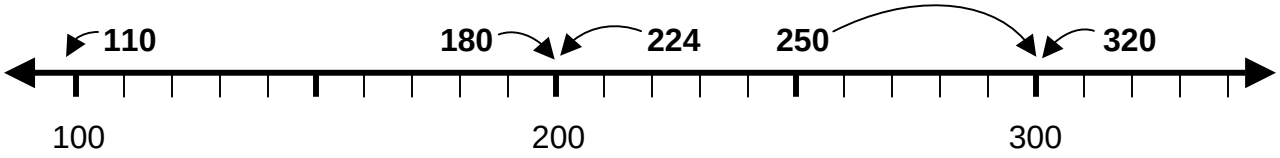



- Any number below 5 rolls down the hill to the left and rounds down.
- Any number 5 and above rolls down the hill to the right and rounds up.

## Rounding to the nearest 100

**Example** Round the following numbers to the nearest 100:

**110 180 320 250 224**

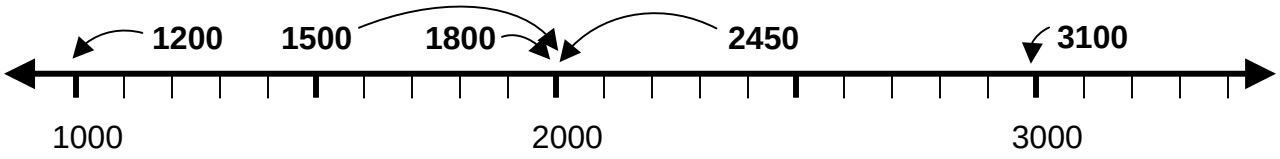



- 110 rounds down to 100
- 180 rounds up to 200
- 224 rounds down to 200
- 320 rounds down to 300
- 250 rounds up to 300 because it is exactly half way between 200 and 300.

## Rounding to the nearest 1000

**Example** Round the following numbers to the nearest 1000:

**1200 1800 3100 2450 1500**

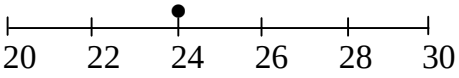



- 1200 rounds down to 1000
- 1800 rounds up to 2000
- 2450 rounds down to 2000
- 3100 rounds down to 3000
- 1500 rounds up to 2000 because it is exactly half way between 1000 and 2000.

## Rounding to larger numbers

When rounding numbers to the nearest 10 000, 100 000, 1 000 000 and beyond, the same methods are used for rounding to the nearest 10, 100 and 1000.

### Practice: Rounding

| Use a number line or other method to round each number to the nearest 10. | |
|---|---|
| 1. 24 → 20 |   |
| 2. 55 | |
| 3. 87 | |
| 4. 66 | |
| 5. 193 | |

| Use a number line or other method to round each number to the nearest 100. | |
|---|---|
| 6. 342 | |
| 7. 459 | |
| 8. 112 | |
| 9. 749 | |
| 10. 1123 | |

| Use a number line or other method to round each number to the nearest 1000. | |
|---|---|
| 11. 4600<br>12. 9250<br>13. 2730<br>14. 3800<br>15. 23 400 | |

| Use a number line or other method to round each number to the nearest 10 000. | |
|---|---|
| 16. 64 000<br>17. 29 050<br>18. 72 300<br>19. 83 000<br>20. 335 400 | |

| Use a number line or other method to round each number to the nearest 1 000 000. | |
|---|---|
| 21. 3 450 950<br>22. 7 234 734<br>23. 9 499 999<br>24. 1 900 000<br>25. 6 540 100 | |

26. Round each number in the chart below to the indicated place value. For each column, go back to the original number on the left. Two examples are shown for you.

| | Round to the nearest | | | | | |
|---|---|---|---|---|---|---|
| **Number** | **1 000 000** | **100 000** | **10 000** | **1000** | **100** | **10** |
| 23 549 214 | 24 000 000 | 23 500 000 | 23 550 000 | 23 549 000 | 23 549 200 | 23 549 210 |
| 6387 | | | 10 000 | 6000 | 6400 | 6390 |
| 72 | | | | | | |
| 32749 | | | | | | |
| 310 056 | | | | | | |
| 7 328 074 | | | | | | |
| 462 | | | | | | |
| 3472 | | | | | | |

## Practice: Rounding Problems

1. Tommas has two savings accounts. In the first one, he has $324.08 and in the second he has $896.54. He also has $245.76 in a chequing account.

   a. Use **rounding to 100** to estimate the amount of money Tommas has all together.

   | | |
   |---|---|
   | $324.08 | rounds to $300 |
   | $896.54 | rounds to $900 |
   | $245.76 | rounds to $200 |

   Rounding to 100, Tommas has an estimated $1400 in his three accounts.

   b. Calculate the exact amount in his accounts. How close is the estimation to the real value of his accounts?

   c. Discuss these questions with classmates:
   - In what situations would Tommas need to know the exact amount of money in his accounts?
   - When do you need exact numbers, and when would estimated and rounded numbers be appropriate? Think about situations in your life.

2. After receiving her baby-sitting money, Shelly went shopping. Shelly had a total of $90.00 in her wallet. Use rounding and estimation to determine the items that she can purchase so that she spends close to, but not more than $90.00.
   Create at least two combinations of items.

| | |
|---|---|
| Sweater – $24.56 | Capri Pants – $32.98 |
| Sunglasses – $12.45 | Blazer – $33.40 |
| Jeans – $56.98 | Watch – $26.99 |
| Hat – $8.99 | Shoes – $18.95 |
| T-shirt – $16.78 | Boots – $53.59 |

3. Taylor's parents are thinking about buying a recreational trailer to park out at the lake for the summer. There were 4 trailers in which they were interested. The first trailer cost $54 753, the second cost $19 403, the third was $48 265 and the fourth trailer was $32 581. How much is each trailer rounded to the nearest 10 000?

4. Check out the use of large numbers in newspapers, magazines, tables in atlases and other information sources. Discuss the use of rounded numbers and exact numbers in the information that you find.