

# 6 - 1

## Rounding Numbers and Calculation

### Expressing Approximate Numbers (1)

**Instruction** Round the following numbers to the nearest thousand.



5115 is close to 5000, so we say it is approximately 5000.  
5761 is close to 6000, so we say it is approximately 6000.

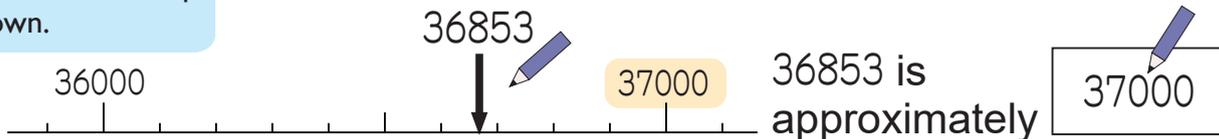
**“Approximate numbers”** make a number more simple when knowing the exact number isn’t important.

To know if the number is rounded up to 6000 or rounded down to 5000, evaluate the number in the hundreds place. If the number in the hundreds place is 4 or lower, round down.

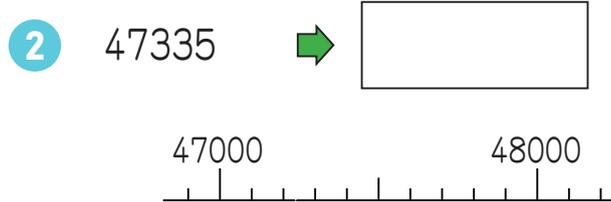
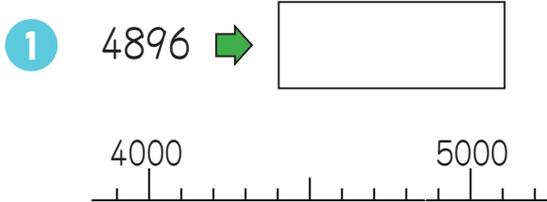
**Example** A football game was held yesterday. The newspaper reported that there were 36853 people in the stadium to watch the game. Show this number on the number line and round it to the nearest thousand.



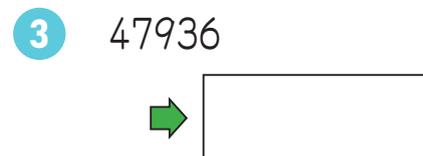
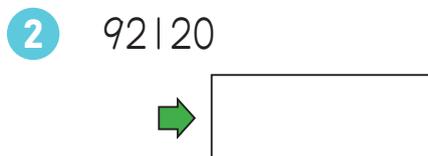
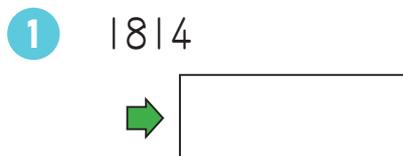
Look at the number in the hundreds place if we round up or down.



**1** Show the following numbers on the number line and round it to the nearest thousand.



**2** Round the following numbers to the nearest thousand by paying attention to the digits in the hundreds place.



# 6 - 2

## Rounding Numbers and Calculation

### Expressing Approximate Numbers (2)

**Instruction** Round the numbers 5115 and 5761 to the nearest thousand without using the number line.

When approximating a number between 5000 and 6000 to the nearest thousand, if the digit in the hundreds place is 0, 1, 2, 3, or 4, we round down and say it is approximately 5000. If it is 5, 6, 7, 8, or 9, we round up and say it is approximately 6000. This process is called **rounding**.

5115 → Pay attention to the digit in the hundreds place. It is 1. 5115 is rounded down to 5000.

5761 → Pay attention to the digit in the hundreds place. It is 7. 5761 is rounded up to 6000.

**Example** Round the following numbers to the nearest ten thousand by paying attention to the digits in the one thousands place.

1 58213 →  2 274865 →

**1** Round the following numbers to the nearest ten thousand.

1 36845 →  2 51382 →   
3 128056 →  4 306392 →   
5 7954302 →  6 8217920 →

**2** Round the following numbers to the nearest hundred thousand.

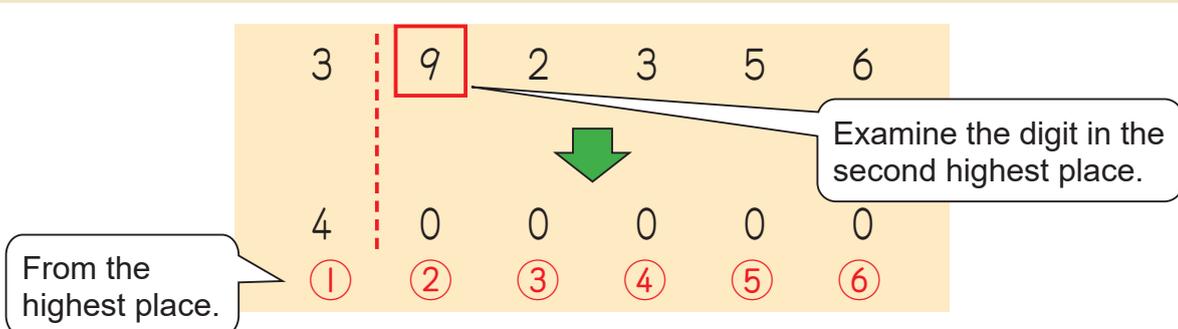
1 682038 →  2 338902 →   
3 4519736 →  4 2153219 →   
5 35076493 →  6 62437548 →

# 6 - 3

## Rounding Numbers and Calculation

### Expressing Approximate Numbers (3)

**Instruction** Round a number of 392356 to its highest place.



In order to round to the highest place, we round the digit in the second highest place.

In this case, we round up to 400000, because the number in the second highest place is 9.

**Example** Round 28|36 to the highest place.  
Round 28|36 to the second highest place.

1 28|36 → The number rounded to the highest place.

→ The number rounded to the second highest place.

**1** Round the following numbers to the highest place.

- |                                 |                                 |
|---------------------------------|---------------------------------|
| 1 3899 → <input type="text"/>   | 2 5379 → <input type="text"/>   |
| 3 82659 → <input type="text"/>  | 4 68029 → <input type="text"/>  |
| 5 639203 → <input type="text"/> | 6 258293 → <input type="text"/> |

**2** Round the following numbers to the second highest place.

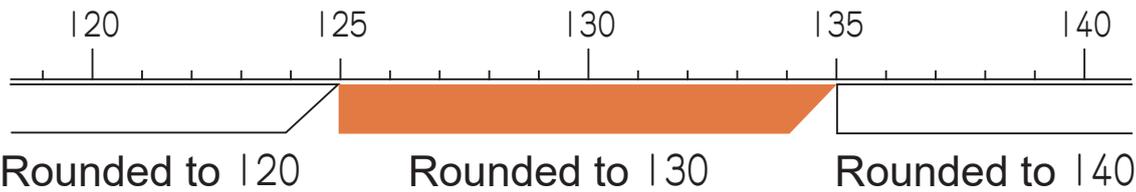
- |                                  |                                  |
|----------------------------------|----------------------------------|
| 1 62987 → <input type="text"/>   | 2 78301 → <input type="text"/>   |
| 3 454390 → <input type="text"/>  | 4 626929 → <input type="text"/>  |
| 5 1469020 → <input type="text"/> | 6 2090800 → <input type="text"/> |

# 6 - 4

## Rounding Numbers and Calculation

### Range of Rounded Numbers

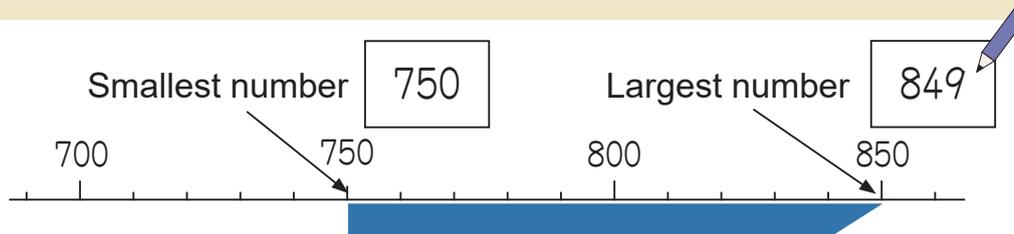
**Instruction** Think about the range of the original number that has been rounded to 130.



The range in which the number will be rounded to 130 when it is rounded to the nearest ten is said to be, “**greater than or equal to 125, and less than 135.**”

Greater than or equal to 125	.....→	Equal to 125 or larger
Less than 135	.....→	Smaller than 135
Less than or equal to 135	.....→	Equal to 135 or smaller

**Example** What are the largest and smallest numbers that can be rounded to 800 when rounded to the nearest hundred?



When looking at the tens number, any number between 750 and 849 will round to 800.

**1** What are the largest and smallest numbers that can be rounded to the following numbers when rounded to the nearest ten.

	Smallest	Largest		Smallest	Largest
① 60			② 30		
③ 120			④ 380		

**2** What are the largest and smallest numbers that can be rounded to the following numbers when rounded to the nearest hundred.

	Smallest	Largest		Smallest	Largest
① 400			② 700		
③ 2600			④ 4800		

# 6 - 5

## Rounding Numbers and Calculation

### Calculation with Approximate Numbers (1)

#### Example

I own a restaurant. 197 guests came to my restaurant on Sunday, 173 guests came yesterday, and 128 guests came today. Approximately how many total guests came to my restaurant over these days? Estimate the number of guests to the nearest hundred.

$$197 + 173 + 128 = 498$$



$$200 + 200 + 100 = 500$$

Round each number first and then add.



Math sentence

$$200 + 200 + 100 = 500$$

Answer 500 guests

- 1** There is a famous park in my town. 322 tourists came to the park in April, 172 tourists came in May, and 207 tourists came in June. Approximately how many tourists came to the park during these three months? Estimate the number of tourists to the nearest hundred.

Math sentence

Answer \_\_\_\_\_

- 2** The table below shows the number of people that came to a football stadium on Saturday, Sunday and Monday.

Day of the week	Saturday	Sunday	Monday
Number of people	15340	23537	8752

- 1** Approximately how many people came to the stadium these three days? Estimate the number of people to the nearest thousand.

Math sentence

Answer \_\_\_\_\_

- 2** What is the difference between the number of people that came on Saturday and the number of people that came on Monday? Round to the nearest thousand.

Math sentence

Answer \_\_\_\_\_

# 6 - 6

## Rounding Numbers and Calculation

### Calculation with Approximate Numbers (2)

#### Example

The distance from my house to school is 1890 m round trip. If I go to school 209 days this year, what is the approximate distance I will walk this year? Estimate the total distance by using rounded numbers to the highest place.

$$1890 \times 209 = 395010$$



$$2000 \times 200 = 400000$$

Round each number first and then multiply.



Math sentence

$$2000 \times 200 = 400000$$

Answer 400000 m

- 1** The distance from my house to the market is 725 m round trip. My mother walks to this market 295 days a year. What is the approximate travel distance that my mother walks in a year? Estimate the total distance by using rounded numbers to the highest place.

Math sentence

Answer \_\_\_\_\_

- 2** My father delivers newspapers to 289 houses in our neighborhood 317 days a year. Approximately how many newspapers does he deliver in one year? Estimate the answer by using rounded numbers to the nearest hundred.

Math sentence

Answer \_\_\_\_\_

- 3** In one day, a company sold 615 packages of sweet. Approximately how many packages of sweet will this company sell in half year (182 days)? Estimate the answer by using rounded numbers to the nearest hundred.

Math sentence

Answer \_\_\_\_\_

# 6 - 7

## Rounding Numbers and Calculation

### Calculation with Approximate Numbers (3)

#### Example

A bakery sold 15820 loafs of bread in one year (365 days). Approximately how many loafs of bread did this bakery sell in one day? Estimate the answer by using rounded numbers to the nearest thousand for the dividend and to the nearest hundred for the divisor.

$$15820 \div 365 = 43 \text{ R}125$$



$$16000 \div 400 = 40$$

Round each number first and then divide.



Math sentence

$$16000 \div 400 = 40$$

Answer 40 loafs

- 1** An automobile company sold 23708 cars last year (365 days). Approximately how many cars did the company sell in one day? Estimate the answer by using rounded numbers to the nearest thousand for the dividend and to the nearest hundred for the divisor.

Math sentence

Answer \_\_\_\_\_

- 2** The perimeter of the lake at the park is 790 m. The distance you run during a marathon is 42195 m. How many times would you have to run around the perimeter of the lake to run as far as a marathon? Estimate the answer by using rounded numbers to the nearest ten thousand for the dividend and to the nearest hundred for the divisor.

Math sentence

Answer \_\_\_\_\_

- 3** There are 213 boxes. The total weight is 27940 kg. Approximately how much does one box weigh? Estimate the answer by using rounded numbers to the nearest thousand for the dividend and to the nearest hundred for the divisor.

Math sentence

Answer \_\_\_\_\_

# 6 - 8

## Rounding Numbers and Calculation

### Calculation with Approximate Numbers (4)

#### Example 1

A girl shopping at a stationary shop is wondering if 500 zeds\* is enough to buy all of the following items. **Round up** the price of each item and estimate the total cost to know if she can buy all three items with 500 zeds. (“zed(s)” is the fictional currency unit.)



Colour pencil  
184 zeds

Math sentence



Stapler  
179 zeds



Notebook  
113 zeds

To judge whether the total cost is less than a certain amount, you can **round up** each price and then add them together. In this case, round the numbers to the nearest ten.

The total is about 490 zeds and she can buy all items.

Answer  $190 + 180 + 120 = 490$

1

Another girl is wondering if 600 zeds\* is enough to buy a ballpoint pen (135 zeds), scissors (222 zeds) and a diary (219 zeds). **Round up** the cost each item and estimate the total cost if she can buy all three items with 600 zeds. (\* “zed(s)” is the fictional currency unit.)

Math sentence

Answer

#### Example 2

At this stationary shop, we can draw one lot for purchases of 500 zeds\* or more. A boy wants to purchase a marker (126 zeds), a ruler (179 zeds) and a pencil case (221 zeds). He is wondering whether the total is 500 zeds or more. **Round down** the price of each item and estimate the total cost if he can draw one lot. (“zed(s)” is the fictional currency unit.)

Math sentence

$$120 + 170 + 220 = 510$$

Answer The total is more than 500 zeds and he can draw one lot.

To judge whether the total cost is more than a certain amount, you can **round down** each price and then add them together. In this case, round the numbers to the nearest ten.

2

At this store, we can get a small gift for purchases of 600 zeds\* or more. I would like to buy a pencil set (102 zeds), a set of paperclips (154 zeds) and a pencil sharpener (378 zeds). Can I get a small gift? Round down the cost each item and estimate the total cost. (\* “zed(s)” is the fictional currency unit.)

Math sentence

Answer

# 6 - 9

## Rounding Numbers and Calculation

### Review

**1** Which of the following numbers can be expressed as approximate numbers? Explain your reasoning.

- 1 The distance between your home and the station
- 2 Your temperature when you are sick
- 3 The number of people attending a school festival
- 4 Your height in cm

Answer

Your reason

**2** In which place do we need to round 3472856 in each of the following cases? Then answer the rounded numbers.

- 1 To find out about how many ten-thousands there are.
- 2 To approximate to the nearest thousand.
- 3 To approximate to the highest place.

1	place	
2	place	
3	place	

**3** Round the following numbers to the nearest ten thousand.

- 1 10942     2 437296     3 2985871

**4** Choose the numbers that become 50000 when you round them to the nearest thousand.

- 1 50263    2 40732    3 50941    4 49504

**5** What are the smallest and largest numbers that can be rounded to the following numbers when rounded to the nearest ten.

	Smallest	Largest		Smallest	Largest
1	30	<input type="text"/>	2	70	<input type="text"/>
3	250	<input type="text"/>	4	870	<input type="text"/>

**6** Estimate the answers to the following problems by rounding the numbers to the nearest hundred.

1  $338 + 267 + 1824$

2  $495 + 213 + 287$

3  $385 + 1183 + 2131$

4  $1000 - 176 - 325$

5  $1000 - 419 - 298$

6  $1000 - 526 - 396$

**7** Estimate the answers to the following problems by rounding the numbers to the highest place.

1  $847 \times 5649$

2  $7298 \times 284$

3  $1965 \times 412$

4  $76354 \div 38$

5  $626481 \div 190$

6  $892785 \div 315$

**8** My friend is wondering if 1000 zeds\* is enough to buy a tooth paste (246 zeds), a washing detergent (375 zeds) and a shampoo (418 zeds). **Round up** the cost each item and estimate the total cost if she can buy all three items with 1000 zeds. (\* “zed(s)” is the fictional currency unit.)

When calculating, round up the numbers to the nearest ten.



Math sentence

Answer

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