

# Estimating Quotients

There are several ways to adjust whole numbers to estimate quotients.

Example:

There are 216 students. The school has 8 classrooms.  
How many students will be in each classroom?

Estimate  $216 \div 8$ .

## Rounding

You can use rounding to estimate a quotient.

Round 216 to the nearest hundred.

In this case, 216 rounds to 200.

$$200 \div 8 = 25$$

25 students per room is an underestimate, because 216 was rounded down to 200.

## Compatible Numbers

You can use compatible numbers to estimate a quotient.

Change 216 to a compatible number for 8.

Compatible numbers for 8 are numbers divisible by 8, such as 160, 240, and 320. Choose 240, because it is the closest compatible number to 216.

$$240 \div 8 = 30$$

30 students per class is an overestimate, because 216 was rounded up to 240.

## Multiplication

You can use multiplication to estimate a quotient.

Think: 8 times what number is about 216?

$$8 \times 25 = 200$$

$$8 \times 30 = 240$$

216 is between 200 and 240. So a good estimate is a little more than 25 and a little less than 30 students per classroom.

Estimate each quotient. You may use any method.

1.  $411 \div 2$

2.  $162 \div 4$

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3. **Estimation** If you estimate  $342 \div 7$  by using  $350 \div 7 = 50$ , is 50 greater than or less than the exact answer? How did you decide? Is 50 an overestimate or an underestimate?

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Name \_\_\_\_\_

# Estimating Quotients

Estimate each quotient. Tell which method you used.

1.  $195 \div 4$  \_\_\_\_\_

2.  $283 \div 5$  \_\_\_\_\_

3.  $766 \div 8$  \_\_\_\_\_

4.  $179 \div 2$  \_\_\_\_\_

5.  $\$395.20 \div 5$  \_\_\_\_\_

6.  $\$31.75 \div 8$  \_\_\_\_\_

7.  $\$247.80 \div 5$  \_\_\_\_\_

8. If you use  $\$63.00 \div 9$  to estimate  $\$62.59 \div 9$ , is  $\$7.00$  greater than or less than the exact answer? Explain.

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9. A band played 3 concerts and earned a total of  $\$321.00$ . The band earned about the same amount for each concert. Estimate how much the band earned each night.

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10. At a department store, a woman's total was  $\$284.00$  for 7 items. Estimate the average cost per item.

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11. Which is the closest estimate for  $213 \div 4$ ?

**A** 50

**B** 40

**C** 30

**D** 20

12. Explain how to estimate  $524 \div 9$ .

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