

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. $162 \div 4$

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?
