Student Guide

Estimating Quotients

Questions 1–13 (SG pp. 541–542)

1. Strategies will vary. 206 ÷ 5 = 41 R1. Possible estimate: 206 ÷ 5 is a little more than 40. Each parent made about 40 popcorn balls. I know my answer is reasonable because 5 × 40 = 200.

2. They put 20 balloons on each table with 3 left over. I used the column method. I checked my answer by using multiplication facts. 183 ÷ 9 is more than 20 because 9 × 20 = 180. So each table will have a little more than 20 balloons, which is close to my answer.

3. 200 ÷ 9 = 22 with 2 band members left over. 200 ÷ 9 is a little more than 20 because 9 × 20 =180; so 9 times a little more than 20 is 200.

4. $2200 ÷ 7 =314 R2. I know my answer is reasonable because 2100 ÷ 7 = 300, which is close. So 2200 ÷ 7 is going to be a little more than 300. There are about 300 band members in each row.

5. 71 students ÷ 6 people per car = 11 R5. They will need 12 cars so all can ride. I know my answer is reasonable because I thought of 6 × 10 = 60, 6 × 11 = 66, 6 × 12 = 72. 66 students will fill 11 cars and the remaining 5 students will go in the twelfth car.

6.* Possible response: 468 ÷ 7 is between 60 and 70. So each girl will have between $60 and $70 for camp. 7 × 60 = 420 and 7 × 70 = 490.

Estimating Quotients

Solve the following problems. Show how you checked to see if your answer is reasonable.

1. Five parents made 206 popcorn balls to sell at the school fair. Each parent made about the same number. How many popcorn balls did each parent make?

2. The boys and girls decorated the tables with balloons. They used 183 balloons for 9 tables. They wanted to put the same number on each table. How many balloons did they put on each table?

3. A marching band has 200 members. The band members march in rows of nine. Estimate about how many rows of band member there are.

4. A basketball league raised about $2200 for uniforms. If the money is shared equally among the seven teams in the league, estimate about how much money each team can spend on uniforms.

5. 71 students from Bessie Coleman School are going to go on the giant ferris wheel ride. Each car holds six people. How many cars will the students need so that they all can ride?

6. Seven girls have been selling cookies to raise money to go to camp. They will split the money they raise equally. Together they have raised $468. About how much money will each girl get?

Use the *Using Multiplication Facts to Estimate* pages in your *Student Activity Book* to practice estimating quotients.

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*Answers and/or discussion are included in the lesson.

Estimation Problems

Write a division number sentence for each question below. Then estimate answers to the problems. **Show how you made your estimates.** Do *not* find an exact answer.

7. There are 165 students enrolled in the fourth grade at Wentworth School. If there are six fourth-grade classrooms, about how many students are in each class? Write your answer as a range between two numbers of students.

8. Jacob listed the following quotients to help him solve 496 ÷ 8.

   $8 \times \boxed{40} = 320$
   $8 \times \boxed{50} = 400$
   $8 \times \boxed{60} = 480$
   $8 \times \boxed{70} = 560$

   Write an estimate using his list of quotients.

9. A typical baby male gorilla weighs about 3 pounds at birth. A typical adult male gorilla can weigh about 475 pounds. About how many times heavier is an adult male gorilla than a baby male gorilla?

10. About eight times as many students from Bessie Coleman School attended the basketball game than students from James Madison School. Maya counted about 260 students at the game from Bessie Coleman. About how many students were from James Madison School?

11. Jackie baked 485 cookies for the bake sale. She wants to sell them in bags of six. She has 75 bags. Does she have enough bags?

✓ **Check-In: Questions 12–13**

12. Nila has a jar with about 600 jelly beans in it. She wants to divide the jelly beans into nine shares to give out to her friends. About how many jelly beans should be in each share?

13. Ming has 425 stickers to share equally among his seven friends. About how many stickers should he give each friend?

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Questions 7–13

Estimates and strategies will vary. One possible strategy is given for each.

7.* $165 \div 6$. Possible estimate: Between 20 and 30 students; $6 \times 20 = 120$ and $6 \times 30 = 180$, so $165 \div 6$ is between 20 and 30 students.

8.* $496 \div 8$ is between 60 and 70; $8 \times 60 = 480$ and $8 \times 70 = 560$.

9.* $475 \div 3$ is more than 100. $3 \times 100 = 300$ and $3 \times 50 = 150$, so $3 \times 150 = 450$. A better estimate would be about 150.

10.* $260 \div 8$. Possible estimate: Between 30 and 40 students; $8 \times 30 = 240$ and $8 \times 40 = 320$, so $260 \div 8$ is between 30 and 40.

11.* $485 \div 6$. Possible estimate: No, she does not have enough bags. She needs at least 80 bags, because $6 \times 80 = 480$, which is fewer than the 485 cookies she has.

12.* $600 \div 9$. Possible estimate: Between 60 and 70 jelly beans; $9 \times 60 = 540$ and $9 \times 70 = 630$, so $600 \div 9$ is between 60 and 70.

13.* $425 \div 7$ is between 60 and 70; $7 \times 60 = 420$ and $7 \times 70 = 490$.

*Answers and/or discussion are included in the lesson.