

Grade 6 Chapter 6 Lesson 9 Estimating Quotients

Answers

- A. 4800; e.g., $24 \times 200 = 2 \times 24 \times 100 = 48 \times 100 = 4800$.
- B. For example, the answer of 187.5 is between 100 and 200, so the answer is reasonable.
- C. For example, each case costs \$24.99, so 188 cases cost $188 \times \$24.95 = \4690.60 , or about \$4700. \$24.95 is close to \$25 and 188 is close to 200. 100 cases would cost \$2500, so 200 cases would cost $2 \times \$2500 = \5000 . This means that an answer of \$4690.60 is reasonable.
1. For example, $3 \times 2 = 6$, and $6 \times 750 = 6 \times 700 + 6 \times 50 = 4200 + 300 = 4500$.
2. For example, 100×24 is the same as 24×1 hundred = 24 hundred, or 2400. 200×24 is double 100×24 , so it is equal to $2 \times 2400 = 4800$.
3. a) 666.67 or 667 cases; \$9971.65
- b) To find the number of cases: For example, each person will drink 16 bottles during the powwow. 16×500 is the same as $8 \times 1000 = 8000$. There are 12 bottles in each case. $8000 \div 12$ is close to $8000 \div 10$. I know $8000 \div 10 = 800$. So the number of cases should be less than 800. So my answer of 667 cases is reasonable. To find the cost: $667 \times \$14.95$ is between $600 \times \$10 = \6000 and $700 \times \$20 = \$14\ 000$. So an answer of about \$10 000 is reasonable.
- d) Yes. Round 52 to 50. 50×100 is 5000 and 50×200 is 10 000. 6245 is between 5000 and 10 000 and is closer to 5000. The answer should be between 100 and 200 but closer to 100. An answer of 120.096 is reasonable.
- e) Yes. Round 13 to 10. 10×200 is 2000. Since 6201 is higher than 2000, the answer should also be higher than 200. $400 \times 10 = 4000$, $500 \times 10 = 5000$, and $600 \times 10 = 6000$. The answer should be less than 600, so the answer of 477 is reasonable.
- f) Yes. Round 48 to 50. 50×100 is 5000 and 50×200 is 10 000. Since 8220 is closer to 10 000, the answer should be between 100 and 200, but closer to 200. The answer of 171.25 is reasonable.
5. a) Wayne Gretzky, 98.15 or about 98; Ron Francis, 54.30 or about 54; Ray Bourque, 53.14 or about 53; and Mark Messier, 47.72 or about 48.
- b) For Gretzky, $20 \times 100 = 2000$, and $20 \times 75 = 1500$. An answer of 98 is between 75 and 100, and is reasonable. For Francis, round 23 to 20. 20×60 is 1200, which is close to 1249. So an answer of 54 is reasonable. Bourque had the same number of seasons and close to the same number of assists as Francis, so his mean number of assists must be close to but less than 54. An answer of 53 is reasonable. Messier had almost the same number of assists as Bourque, but more seasons. Messier should have a mean close to but less than Bourque's mean. So an answer of about 48 is reasonable.
6. a) About \$12.82 or \$13 each.
- b) 78 is about 80. 80×10 is 800. 80×20 is 1600. The answer lies between \$10 and \$20, but is closer to \$10. So an answer of about \$13 is reasonable.
7. a) 76.92 m, or about 77 m.
- b) For example, $3000 \div 39$ is between $3000 \div 30 = 100$ and $3000 \div 50 = 60$, so an answer of 77 m is reasonable.
4. a) Yes. Round 23 to 20. 20×100 is 2000 and 20×200 is 4000. An answer of 145 is reasonable because it is between 100 and 200.
- b) No. Round 47 to 50 and 298.979 to 300. 50×300 is 1500, which is not close to 9305. This means that 298.979 is not a reasonable answer.
- c) No. Round 77 to 80. 80×100 is 8000 and 80×200 is 16 000. Since 9625 lies between 8000 and 16 000, the quotient should be between 100 and 200. An answer of 225 is unreasonable.