Estimating Products and Quotients

Estimating Products and Quotients: Models and Computation

Name _____ **Date** _____ **Score** _____ / 8

QUICK REVIEW

Use rounded or compatible numbers that are easy to compute. $198 \times 31 \approx 200 \times 30 = 6000$; $1196 \div 29 \approx 1200 \div 30 = 40$. An estimate is not an exact answer. For a guaranteed capacity decision, check the original numbers.

Worked example

Find an estimate for 294×21 using 300×20. Say whether this estimate is above or below the exact value.

1. Replace the original numbers by the requested compatible pair: $294 \times 21 \approx 300 \times 20$.
2. Calculate the friendly expression: $300 \times 20 = 6000$.
3. The exact value is 6174; the absolute difference is 174.
Answer: About 6000. It is below the exact result; absolute error 174.

Practice Problems

Show your thinking.

1. Estimate 50×19. Use the compatible numbers 50 and 20.

2. Find an estimate for $616 \div 31$ using $600 \div 30$. Say whether this estimate is above or below the exact value.

3. A school uses 197 sheets per day for 42 days. Estimate its sheet use with 200×40.

4. Estimate $896 \div 29$. Use the compatible numbers 900 and 30.

5. Compute the estimate 300×20 for 305×18, then use the exact result to state its error.

6. A student claims $722 \div 24$ is about 300. Test the claim using $720 \div 24$.

7. A compatible-number estimate replaces 70×28 by $\square \times 30 = 2100$. Find the missing compatible dividend or factor.

8. Find an estimate for $1211 \div 61$ using $1200 \div 60$. Say whether this estimate is above or below the exact value.

Answer Key

1. About 1000.
2. About 20. It is above the exact result; absolute error $\frac{4}{31}$.
3. About 8000.
4. About 30.
5. About 6000. It is above the exact result; absolute error 510.
6. The claim is ten times the compatible estimate; use about 30.
7. 70.
8. About 20. It is above the exact result; absolute error $\frac{9}{61}$.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Replace the original numbers by the requested compatible pair: $50 \times 19 \approx 50 \times 20$.

2. Calculate the friendly expression: $50 \times 20 = 1000$.

Problem 2

1. Replace the original numbers by the requested compatible pair: $616 \div 31 \approx 600 \div 30$.

2. Calculate the friendly expression: $600 \div 30 = 20$.

3. The exact value is $\frac{616}{31}$; the absolute difference is $\frac{4}{31}$.

Problem 3

1. Replace the original numbers by the requested compatible pair: $197 \times 42 \approx 200 \times 40$.

2. Calculate the friendly expression: $200 \times 40 = 8000$.

Problem 4

1. Replace the original numbers by the requested compatible pair: $896 \div 29 \approx 900 \div 30$.

2. Calculate the friendly expression: $900 \div 30 = 30$.

Problem 5

1. Replace the original numbers by the requested compatible pair: $305 \times 18 \approx 300 \times 20$.

2. Calculate the friendly expression: $300 \times 20 = 6000$.

3. The exact value is 5490; the absolute difference is 510.

Problem 6

1. Replace the original numbers by the requested compatible pair: $722 \div 24 \approx 720 \div 24$.

2. Calculate the friendly expression: $720 \div 24 = 30$.

3. $300 \div 30 = 10$, so the claimed scale is not reasonable.

Problem 7

1. Undo the known compatible number: $2100 \div 30 = 70$.

2. Replace the original numbers by the requested compatible pair: $70 \times 28 \approx 70 \times 30$.

3. Calculate the friendly expression: $70 \times 30 = 2100$.

Problem 8

1. Replace the original numbers by the requested compatible pair: $1211 \div 61 \approx 1200 \div 60$.

2. Calculate the friendly expression: $1200 \div 60 = 20$.

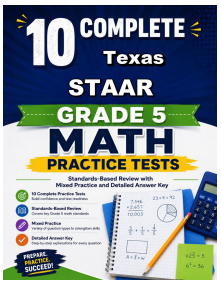
3. The exact value is $\frac{1211}{61}$; the absolute difference is $\frac{9}{61}$.

TESTINAR

Keep Building Grade 5 Math Skills

Choose the practice book matched to your state assessment and turn worksheet practice into a complete test-prep plan.

All Grade 5 books



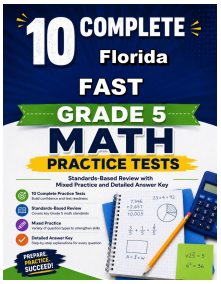
TEXAS STAAR

10 Full-Length Math Practice Tests

Build Grade 5 accuracy, confidence, and test stamina with 10 printable practice tests.

Printable eBook • Instant PDF access

View eBook



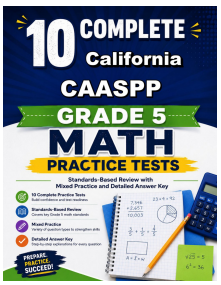
FLORIDA FAST

10 Full-Length Math Practice Tests

Build Grade 5 accuracy, confidence, and test stamina with 10 printable practice tests.

Printable eBook • Instant PDF access

View eBook



CALIFORNIA CAASPP

10 Full-Length Math Practice Tests

Build Grade 5 accuracy, confidence, and test stamina with 10 printable practice tests.

Printable eBook • Instant PDF access

View eBook

Need a different state?
Testinar has Grade 5 math practice books for state assessments across the country.

TESTINAR.COM/GRADES/5