Patterns with Powers of Ten

Patterns with Powers of Ten: Models and Computation

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

QUICK REVIEW

$10^2 = 100$ and $10^3 = 1000$. Multiplication by 10^k makes each digit worth 10^k times as much; division makes it worth that fraction. For example, $0.47 \times 100 = 47$ and $47 \div 1000 = 0.047$.

Worked example

Find 3.26×10^2 and check by division.

1. $10^2 = 10 \times 10 = 100$.
2. $3.26 \times 100 = 326$.
3. $326 \div 100 = 3.26$.
Answer: 326.

Practice Problems

Show your thinking.

1. Compute 0.638×100 and state whether the result is larger or smaller.

2. Use place values to find $47.2 \div 1000$.

3. Evaluate 6.04×10; check with the inverse operation.

4. Complete the quotient $803 \div 100 = \square$.

5. Continue the rule "multiply by 10": $0.024, 0.24, 2.4, \ldots$ Give two terms.

6. Explain why 2.8×100 is not 2.800.

7. A thousand identical beads each weigh 0.036 g. Find their total mass.

8. Write $10 \times 10 \times 10 \times 10$ as a power and a whole number.

Answer Key

1. 63.8; larger than 0.638.
2. 0.0472.
3. 60.4.
4. 8.03.
5. $24,240$.
6. The product is 280.
7. 36 g.
8. $10^4 = 10000$.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. The scale is $100 = 10^2$, so the value changes by that factor.
2. $0.638 \times 100 = 63.8$.
3. Check: $63.8 \div 100 = 0.638$.
4. Compare: $63.8 > 0.638$, so the result is larger than the starting value.

Problem 2

1. The scale is $1000 = 10^3$, so the value changes by that factor.
2. $47.2 \div 1000 = 0.0472$.
3. Check: $0.0472 \times 1000 = 47.2$.

Problem 3

1. The scale is $10 = 10^1$, so the value changes by that factor.
2. $6.04 \times 10 = 60.4$.
3. Check: $60.4 \div 10 = 6.04$.

Problem 4

1. The scale is $100 = 10^2$, so the value changes by that factor.
2. $803 \div 100 = 8.03$.
3. Check: $8.03 \times 100 = 803$.

Problem 5

1. $2.4 \times 10 = 24$.
2. $24 \times 10 = 240$; each step makes every digit worth ten times as much.

Problem 6

1. $2.8 \times 10 = 28$ and $28 \times 10 = 280$.
2. $2.800 = 2.8$; adding decimal zeros does not multiply the value.

Problem 7

1. $1000 = 10^3$.
2. $0.036 \times 1000 = 36$ g; $36 \div 1000 = 0.036$ g per bead.

Problem 8

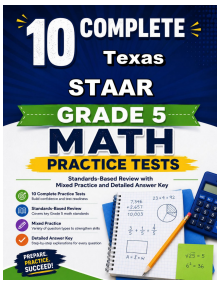
1. There are 4 factors equal to 10, so the power is 10^4.
2. $100 \times 100 = 10000$.

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



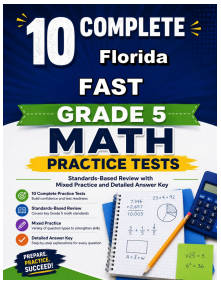
TEXAS STAAR

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



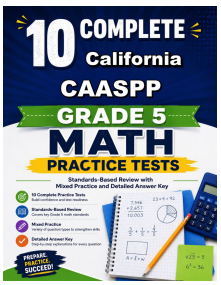
FLORIDA FAST

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