

Powers, Powers of Ten and Order of Operations

Grade 6 math · Worksheet · Standards: 6.EE.A.1, 6.EE.A.2c

Name: _____ Date: _____ Class: _____

These 20 problems target standards 6.EE.A.1 and 6.EE.A.2c: writing and evaluating whole-number powers, working with powers of 10, and evaluating numerical expressions in the correct order, including grouping symbols.

Early problems use tile arrays and short expressions. The last six are word problems about growth, seating and costs; write the full expression first, then evaluate it one step at a time.

Standards: 6.EE.A.1, 6.EE.A.2c · **Level:** Grade 6

Problem 1 Repeated multiplication (easy)

Rewrite $6 \times 6 \times 6$ using an exponent, then find its value.

Problem 2 Evaluating powers (easy)

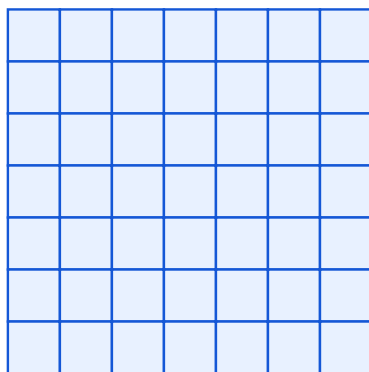
Evaluate each power: 3^4 , 7^2 , 2^6 , 10^3 .

Problem 3 Writing with exponents (easy)

Write each product with an exponent: (a) $9 \times 9 \times 9$ (b) $5 \times 5 \times 5 \times 5 \times 5$ (c) 1.5×1.5 .

Problem 4 Square floor (easy)

A square floor has the same number of tiles along each side. Write the total number of tiles as a power, then evaluate it.

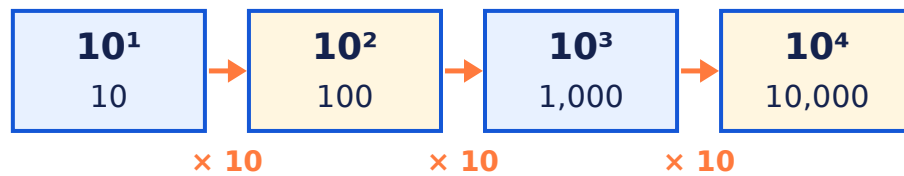


7 tiles per side

A square floor made of tiles.

Problem 5 Powers of 10 (easy)

Use the pattern to evaluate 10^2 , 10^4 and 10^6 .



Each power of 10 has one more zero than the one before.

Problem 6 Powers of 10 from numbers (easy)

Write 100,000 and 10,000,000 as powers of 10.

Problem 7 Left to right (medium)

Evaluate $18 - 6 + 4$.

Problem 8 Multiplication first (medium)

Evaluate $5 + 3 \times 7$ and $(5 + 3) \times 7$. Why are the results different?

Problem 9 Division and exponent (medium)

Evaluate (a) $40 \div 5 \times 2$ and (b) $9 + 2^3$.

Problem 10 Power and subtraction (medium)

Evaluate $5^2 + 6 \times 3 - 2^3$.

Problem 11 Grouping and exponent (medium)

Evaluate $6 \times (10 - 4)^2 \div 9$.

Problem 12 Find the error (medium)

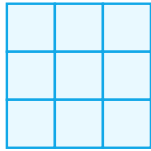
A student wrote $8 + 2 \times 5 = 50$. Explain the error and give the correct value.

Problem 13 Parentheses with a power (medium)

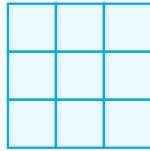
Evaluate $100 - 3 \times (2 + 3)^2$.

Problem 14 Crate of blocks (medium)

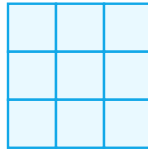
Each layer of a crate holds 3 rows of 3 blocks, and there are 3 layers. Write the total as a power and evaluate it.



Layer 1



Layer 2



Layer 3

A crate packed with 3 layers of blocks.

Problem 15 Spreading news (medium)

On day 1, Mia tells 3 friends a secret. On day 2, each of those friends tells 3 new people, and the pattern continues, with every person telling 3 new people the next day. Using a power, how many people hear the secret for the first time on day 5?

Problem 16 Growing culture (hard)

A lab culture starts with 5 cells. The number of cells doubles every hour. Write an expression using a power for the number of cells after 6 hours, then evaluate it.

Problem 17 Stadium seats (hard)

A stadium has 10^5 seats. A new arena holds 10 times as many seats. Write both capacities as powers of 10 and in standard form.

Problem 18 Food truck bill (hard)

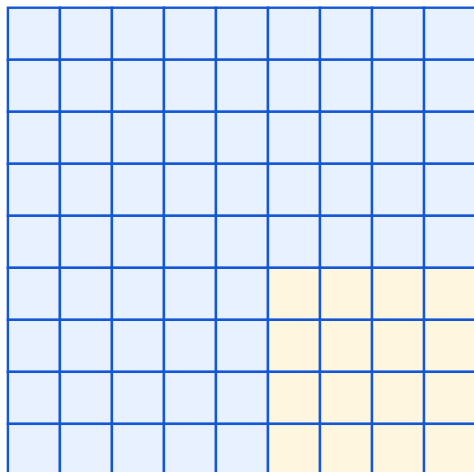
A food truck sells 8 tacos at \$3 each and 5 drinks at \$2 each. A \$4 coupon is used, and two friends split the final cost equally. Write one expression with parentheses for what each friend pays, then evaluate it.

Problem 19 Two-part expressions (hard)

(a) Evaluate $4 + (3^2 - 1)^2 \div 8$. (b) Insert one pair of parentheses so that $3 + 4 \times 5 - 2 = 33$.

Problem 20 Tiles with a rug (hard)

A square room has 9 tiles along each side. A square rug covers 4 tiles along each side. Write an expression with powers for the number of uncovered tiles and evaluate it.



9 tiles per side

A 9×9 floor with a 4×4 rug area (shaded).