

Grade 6 · Exponents and Order of Operations · Worksheet

Common Core 6.EE.A.1, 6.EE.A.2c · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

These 20 problems practice whole-number exponents, powers of 10, and the order of operations from Common Core 6.EE.A.1 and 6.EE.A.2c. They begin with writing and evaluating powers, then add grouping symbols and mixed expressions.

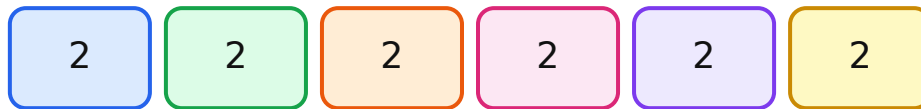
The last six problems are word problems about a school store, error analysis, picture frames, a patio, and a growing chain message. Show every step and rewrite the expression after each operation.

Grade 6 Common Core: 6.EE.A.1 · 6.EE.A.2c

Problem 1: Writing Products as Powers

Write each product using an exponent.

- a. $5 \times 5 \times 5$
- b. $7 \times 7 \times 7 \times 7 \times 7$
- c. 9×9
- d. $2 \times 2 \times 2 \times 2 \times 2 \times 2$



Six factors of 2.

Problem 2: Base and Exponent

Name the base and the exponent of each power. Then write each power as a product of repeated factors. Do not evaluate.

- a. 6^3
- b. 9^4
- c. 12^2

$$6^3 = 6 \times 6 \times 6$$

The base is the repeated factor; the exponent counts the factors.

Problem 3: Evaluating Powers

Evaluate each power.

- a. 3^4
- b. 2^6
- c. 5^3
- d. 8^2



Four factors of 3 make the power in part (a).

Problem 4: Squares, Cubes, and More

Evaluate each power.

- a. 11^2
- b. 6^3
- c. 2^8
- d. 7^3

Problem 5: Powers of 10

Write each number as a power of 10 or in standard form.

- a. 100,000
- b. 10,000,000
- c. 10^4
- d. 10^6

Power	Zeros
10^4	4
10^5	5
10^6	6
10^7	7

The exponent counts the zeros.

Problem 6: Powers of 10 in Two Forms

Complete each item.

- Write 1,000,000,000 as a power of 10.
- Write 10^5 in standard form.
- Write $10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10$ as a power of 10 and in standard form.
- How many zeros does 10^8 have when written in standard form?

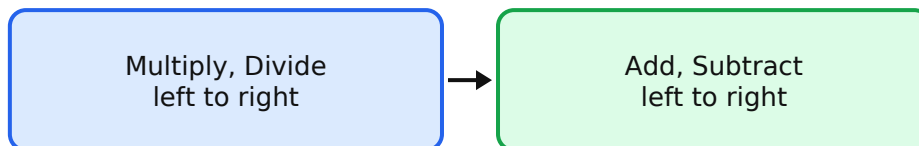
10^1 10	10^2 100	10^3 1,000	10^4 10,000	10^5 100,000	10^6 1,000,000
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Each power of 10 has as many zeros as its exponent.

Problem 7: Order of Operations Without Exponents

Evaluate each expression.

- $5 + 4 \times 3$
- $30 - 4 \times 5$
- $24 \div 4 \times 3$
- $18 - 6 \div 3 + 2$



Order for expressions with no parentheses or exponents.

Problem 8: Left to Right Practice

Evaluate each expression.

- a. $45-12+8$
- b. $8\times 6\div 4$
- c. $56\div 7\times 3$
- d. $20-18\div 3\times 2$

Problem 9: Grouping Symbols

Evaluate each expression.

- a. $(9+3)\times 2$
- b. $40\div (2+3)$
- c. $5\times (12-7)$
- d. $36\div (3\times 2)+1$

Problem 10: Nested Grouping Symbols

Evaluate each expression. Work inside the innermost parentheses first.

- a. $(14-6)\times (3+2)$
- b. $72\div (4\times 3)$
- c. $5+(18-9)\div 3$
- d. $2\times (3+(10-4))$

Problem 11: Exponents in Expressions

Evaluate each expression.

- a. 2×3^2
- b. $(2\times 3)^2$
- c. $50-4^2$
- d. 5^2+3^3

Problem 12: Squares in Expressions

Evaluate each expression.

- a. 4^2+3^2
- b. 10^2-6^2
- c. $2\times 5^2-8$
- d. $(10-4)^2\div 3$

Problem 13: Mixed Expressions

Evaluate each expression.

- a. $6+2^3\times 4-10$
- b. $100\div 5^2+7$
- c. $3\times(4+2)^2$
- d. $(20-2^2)\div 4$

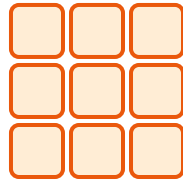
Problem 14: Exponent Challenge

Evaluate each expression.

- a. $3^2\times 2^3$
- b. $100-2\times 4^2$
- c. $(9-5)^3\div 8$
- d. $6+18\div 3^2\times 5$

Problem 15: School Store Folders

The school store sells folders for \$4 each. Jamal buys 3^2 folders and uses a \$6 coupon. Write one expression for the amount he pays, then evaluate it.



The folders Jamal buys: 3^2 is 3 rows of 3.

Problem 16: Finding an Error

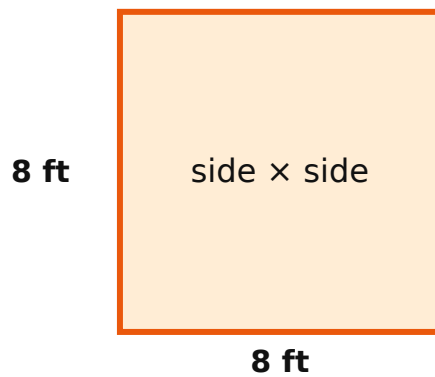
Maya evaluated $3+2\times 5^2$ and got 125. Explain her error and find the correct value.

Problem 17: Another Error to Fix

Liam evaluated $40-2\times 3^2$ and got 342. Explain his error and find the correct value.

Problem 18: Patio Cost

A square patio has sides of 8 ft. Paving costs \$3 per square foot, and delivery costs a flat \$10. Write one expression with an exponent for the total cost, then evaluate it.

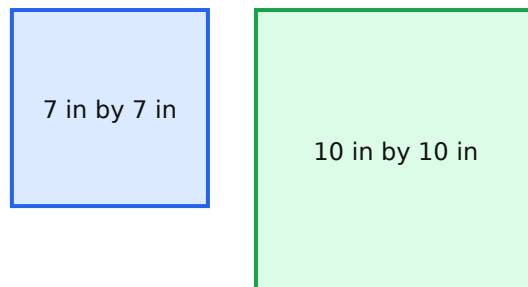


The patio is 8 ft by 8 ft.

Problem 19: Picture Frames

Mei is framing two square pictures. One has sides of 7 in and the other has sides of 10 in.

- Write each picture's area as a power and evaluate it.
- Write and evaluate an expression for how many more square inches the larger picture covers.
- Write and evaluate an expression for the total area of both pictures.



The two square pictures.

Problem 20: Chain Message

Mei starts a chain message. On day 1, 3 classmates receive it. Each day after that, every new receiver sends it to 3 people who have not seen it, so the number of new receivers on day n is 3^n .

- Write the number of new receivers on day 4 as a power and evaluate it.
- Find the number of new receivers on day 5.
- Write and evaluate an expression for how many more people receive the message on day 5 than on day 4.

