LESSON MAKER PRO

# Power Up

*Find powers of integers, fractions, and decimals.*

**GRADE 7 · 7.N.2.4**

**7.N.2.4** "Raise rational numbers (integers, fractions, and decimals) to positive integer exponents."

NAME _____ DATE _____

## MULTIPLY THE BASE

A positive integer exponent tells you how many times to multiply a number by itself. If the base is negative, keep it in parentheses so you multiply the negative number each time.

## WORKED EXAMPLE

Find $(4/7)^2$.

1. $(4/7)^2 = (4/7) \times (4/7)$
2. $(4 \times 4)/(7 \times 7) = 16/49$

**Answer: 16/49**

## PRACTICE 6 problems

**1** Find $(-4)^3$.

**ANSWER** _____

**2** Find $(2/3)^3$.

**ANSWER** _____

**3** Find $(-1/2)^4$.

**ANSWER** _____

**4** Find $(0.6)^2$.

**ANSWER** _____

**5** Find $(-0.2)^3$.

**ANSWER** _____

**6** Find $(5/4)^2$.

**ANSWER** _____

## APPLY IT Show your work

**1** A phone has 100% battery. During each hour of gaming, it keeps 0.9 of the battery it had at the start of that hour. What percent battery remains after 3 hours?

WORK SPACE

**ANSWER** _____

**2** In a game, you start with 3 coins. At the end of each of 4 rounds, your coins double. How many coins do you have after 4 rounds?

WORK SPACE

**ANSWER** _____

## CHALLENGE One step up

A player claims $(-3/4)^2 = -9/16$ because the base is negative. Calculate the power, then explain the player's mistake in one sentence.

WORK SPACE AND ANSWER

# Power Up



## PART 1 · PRACTICE

| # | PROBLEM | ANSWER |
|---|---|---|
| 1 | Find $(-4)^3$. | **-64** |
| 2 | Find $(2/3)^3$. | **8/27** |
| 3 | Find $(-1/2)^4$. | **1/16** |
| 4 | Find $(0.6)^2$. | **0.36** |
| 5 | Find $(-0.2)^3$. | **-0.008** |
| 6 | Find $(5/4)^2$. | **25/16** |

## PART 2 · APPLY IT

1. **72.9%** Calculate $100\% \times (0.9)^3 = 100\% \times 0.729 = 72.9\%$.
2. **48 coins** Calculate $3 \times 2^4 = 3 \times 16 = 48$ coins.

## CHALLENGE

**$(-3/4)^2 = 9/16$. The product of two negative factors is positive.**

Accept equivalent simplified fractions or decimals for numerical answers. In the challenge, the explanation should identify why squaring the negative base gives a positive result.