LESSON MAKER PRO

Square Power Patterns

See squares and powers of 10.

GRADE 6 · 6.NS.3

6.NS.3 "The student will recognize and represent patterns with whole number exponents and perfect squares. Recognize and represent patterns with bases and exponents that are whole numbers..."

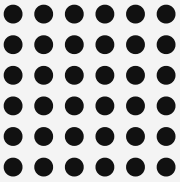
NAME _____ DATE _____

SPOT THE PATTERN

A square array has the same number of rows and columns, so write its base with an exponent of 2. In powers of 10, each new exponent multiplies the value by 10 and adds one zero.

WORKED EXAMPLE

What power and total does this square array show?

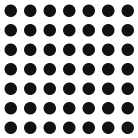


1. Count 6 rows and 6 columns.
2. The equal sides show a square.
3. Write 6^2.
4. Multiply $6 \times 6 = 36$.

Answer: $6^2 = 36$

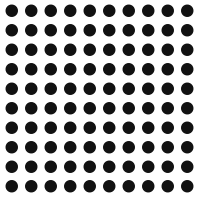
PRACTICE 4 problems

1 Write the power and total shown by the array.



ANSWER _____

2 Write the power and total shown by the array.



ANSWER _____

3 Is 144 a perfect square? Show it as a power to prove your answer.

ANSWER _____

4 Complete the pattern: $10^3 = 1{,}000$; 10^4 = ___; 10^5 = ___.

ANSWER _____

APPLY IT Show your work

1 A game artist makes a square badge that is 14 pixels wide and 14 pixels tall. How many pixels are in the badge? Write a power and the total.

WORK SPACE

ANSWER _____

2 An esports club video gets 10^4 views. How many views is that?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Is 323 a perfect square? Explain by using the two nearest perfect squares.

WORK SPACE AND ANSWER

ANSWER KEY

Square Power Patterns

GRADE 6 · 6.NS.3

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Write the power and total shown by the array.	**$7^2 = 49$**
2	Write the power and total shown by the array.	**$10^2 = 100$**
3	Is 144 a perfect square? Show it as a power to prove your answer.	**Yes. $144 = 12^2$.**
4	Complete the pattern: $10^3 = 1{,}000$; $10^4 =$ ___; $10^5 =$ ___.	**10,000; 100,000**

PART 2 · APPLY IT

1. **$14^2 = 196$ pixels** Multiply 14×14, or write the square as 14^2.
2. **10,000 views** The exponent 4 means multiply 1 by 10 four times, making 10,000.

CHALLENGE

No. $17^2 = 289$ and $18^2 = 324$, so 323 is between consecutive perfect squares.

Accept equivalent multiplication statements, such as $7 \times 7 = 49$, with the correct power. For the challenge, accept any clear reasoning that places 323 between 289 and 324.