Names (group) _____ Date _____

Powers: Puzzles and Review

1 IN A GROUP **Mistake detective.** Which equations are true? Correct the false ones.

equation		correction
$2^3 = 6$	**true** / **false**	
$5^0 = 0$	**true** / **false**	
$2^{-2} = -4$	**true** / **false**	
$-3^2 = 9$	**true** / **false**	
$2^3 \times 2^4 = 2^7$	**true** / **false**	
$(2^3)^2 = 2^5$	**true** / **false**	
$10^{-3} = 0.001$	**true** / **false**	
$(a+b)^2 = a^2 + b^2$	**true** / **false**	

2 IN A GROUP **Which is greater?** Estimate first, then check.

$2^{10} \square 10^3$ $3^4 \square 4^3$ $2^{-3} \square 3^{-2}$

$(-2)^5 \square (-5)^2$ $10^{-2} \square 10^{-3}$ $0^7 \square 7^0$

3 IN A GROUP **Guess my power.** Which number is it?

a) I am a power of 2 between 100 and 200. ☐

b) Multiply me by myself, and then by myself once more, and you get 64. ☐

c) I am a billion (a thousand million) written as a power of 10. ☐

d) I am $2^0 + 2^1 + 2^2 + 2^3$. What is $2^0 + 2^1 + \ldots + 2^9$? Find the pattern. ☐

Name _____ Date _____

4 ON YOUR OWN **Concept map.** For each term, write a short explanation and your own example.

power

Example:

square and cube

Example:

multiplying and dividing powers

Example:

0 raised

Example:

a negative number raised

Example:

scientific notation

Example:

5 ON YOUR OWN **Self-check.** Tick how far you agree.

I can...	confidently	mostly	need practice
I can tell adding the same number from multiplying by the same number.	☐	☐	☐
I can write, read and work out a power.	☐	☐	☐
I can multiply and divide powers and explain the rule with factors.	☐	☐	☐
I can explain why $a^0 = 1$ and $a^{-n} = \frac{1}{a^n}$.	☐	☐	☐
I can tell $(-3)^2$ and -3^2 apart.	☐	☐	☐
I can write very large and very small numbers in scientific notation.	☐	☐	☐

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The **True or false** game in **Practice** mode: go over all the typical mistakes from this sheet.