

List 5 expressions that are equivalent to 10

1. _____

2. _____

3. _____

4. _____

5. _____

Properties of Exponents

Essential Question: Compare multiplying exponents with the same base and raising a power to a power. What is the same? What is different?

Multiplying Powers with the Same Base:

To multiply powers with the same base, keep the base the same and add the exponents.

ex 1 $5^4 \cdot 5^3$



$$2^3 \cdot 2^5$$

$$5^3 \times 5^4$$

Dividing Powers with the Same Base:

To divide powers with the same base, keep the base the same and subtract the exponents.

ex 2

$$\frac{3^3 \ 2^5 \ 5^2}{3^2 \ 2^5 \ 5^4}$$

$$\frac{7^5}{7^3}$$

$$\frac{5^3}{5^6}$$

$$\frac{4^2 \times 5^3 \times 6^7}{4 \times 5^6 \times 6^2}$$

Raising a Power to a Power:

To raise a power to a power, keep the base the same, and multiply the exponents

ex 3 $(7^5)^3$

$$(5^3)^4$$

$$(2^2)^4$$

$$(4^3)^2$$

LEVELED QUESTIONS

Summary:

When raising a power to power you _____ the exponents and keep the base the _____; however, when you multiply powers you _____ the exponents and keep the base the _____. In both cases the bases must be the _____ in order to do the operation.