How do we operate with exponents?

Do Now

Evaluate

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

$8 \cdot 4 = 32$

Rules of exponents.

1) $x^a \cdot x^b = x^{a+b}$

2) $x^a \div x^b = x^{a-b}$

3) $(x^a)^b = x^{ab}$

4) $x^0 = 1$, if $x \neq 0$.

$1 = \frac{x^3}{x^3} = x^{3-3} = x^0$

* 0^0 = indetermined.

Evaluate.

1) $(x^3)(2x^5) = 2x^8$

2) $(x^6y^3) \div (x^3y) = x^3y^2$

3) $(2x^3)^3 = 2^3x^9 = 8x^9$

$(2x^3)^2$

$= 2^2 \cdot x^{3 \cdot 2}$

$= 4x^6$

$2x^{3^2}$

$= 2x^9$

$(x^3)^2 = x^6$

$x^{3^2} = x^9$

$* \quad x \neq 0.$

$4x^0$

$= 4 \cdot 1$

$= 4$

$(4x)^0$

$= 1$

20. $\dfrac{3(x^3)^4 y^5}{3x^7}$

$= x^5 y^5$

25. $\dfrac{4(ab)^2c^5}{abc}$

$\dfrac{4(ab)^2c^5}{abc}$ $\dfrac{4a^2b^2c^5}{abc}$

$4abc^4$