Topic: Exponents (Day 5)

Zero and negative exponents

Powers of base 2

| Exponent | Power | = |
|---|---|---|
| 5 | $2^5$ | 32 |
| 4 | $2^4$ | 16 |
| 3 | $2^3$ | 8 |
| 2 | $2^2$ | 4 |
| 1 | $2^1$ | 2 |
| 0 | $2^0$ | 1 |
| -1 | $2^{-1} = \frac{1}{2^1}$ | $\frac{1}{2}$ |
| -2 | $2^{-2} = \frac{1}{2^2}$ | $\frac{1}{4}$ |
| -3 | $2^{-3} = \frac{1}{2^3}$ | $\frac{1}{8}$ |

* Any number raised to the power of zero = 1

ex $2^0 = 1$ ex $10^0 = 1$ ex $(-10)^0 = 1$ ex $-10^0 = -1$

ex $x^0 = 1$ ex $z^0 = 1$ ex $(3x^3y^4)^0 = 1$

* Negative exponents become positive when they switch sides of the fraction

ex $4^{-3} = \frac{1}{4^3}$ ex $\frac{(-4)^{-3}}{1} = \frac{1}{(-4)^3}$

ex $(-4)^3 = (-4)(-4)(-4) = -64$

ex $\frac{y^{-5}}{z^{-3}} = \frac{z^3}{y^5}$ ex $\frac{-2x^{-4}y^3}{z^{-2}w^0} = \frac{-2y^3z^2}{x^4 \cdot 1} =$

$$\boxed{\frac{-2y^3z^2}{x^4}}$$