Test Results

A

B XXXX

C X

D XX

F X XXX XXXXXXX

avg. 48

☹

$y = mx + b$

$y - y_1 = m(x - x_1)$ ←

solve for y

$(2, -3)$ $m = \frac{1}{2}$

$\frac{16}{8} = 2$

$y + 3 = \frac{1}{2}(x - 2)$ point-slope

$y + 3 = \frac{1}{2}x - 1$

$-3 \qquad -3$

$y = \frac{1}{2}x - 4$ ★

slope intercept

$y = mx + b$

$m = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$ $(2, 3), (7, -5)$

$m = \frac{-5-3}{7-2} = \frac{-8}{5}$ $\frac{\Delta y}{\Delta x}$.

Green (8) $(2, 3)$ and $(2, -4)$

$m = \frac{-4-3}{2-2} = \frac{-7}{0}$ undefined

$x = 2$

8 pink

$(2, -3)$ and $(1, 7)$

$$m = \frac{7+3}{1-2} = \frac{10}{-1} = -10$$ slope

$y - 7 = -10(x - 1)$ ← equation

$y - 7 = -10x + 10$

$+7 \qquad +7$

$y = -10x + 17$ ←

$$m = \frac{7+3}{1-2}$$

$$= \frac{10}{-1}$$

$m = -10$

5.1 Exponents

2^3 — exponent

$2^3 = 2 \cdot 2 \cdot 2 = 8$

base

$-2^4 = -16$

$(-2)^4 = (-2)(-2)(-2)(-2)$

$= 16$

$x^2 \cdot x^3 = (x \cdot x)(x \cdot x \cdot x)$

$= x \cdot x \cdot x \cdot x \cdot x$

$x^{2+3} = x^5$

$x^n x^m = x^{n+m}$

$a^m \cdot a^n = a^{m+n}$

$\frac{x^m}{x^n} = x^{m-n}$

$(ab)^m = a^m b^m$

$(a^m)^n = a^{m \cdot n}$

$$\frac{x^3}{x^2} = \frac{\overset{1}{\cancel{x}} \cdot \overset{1}{\cancel{x}} \cdot x}{\underset{1}{\cancel{x}} \cdot \underset{1}{\cancel{x}}} = x$$

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

$$x^{3-2} = x^1$$

$$= x$$

$$27 = 3^3$$

$$9 = 3^2$$

$$3 = 3^1$$

$$1 = 3^0$$

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

$$(\text{anything} \neq 0)^0 = 1$$

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

$$x^{-2} = \frac{1}{x^2}$$

$$\frac{x^5}{x^4} = x^5 x^{-4}$$

$$= x^{5-4}$$

$$= x$$

$$(ab)^m = a^m b^m$$

$$\left(\frac{a}{b}\right)^m = \left[a\left(\frac{1}{b}\right)\right]^m = a^m \left(\frac{1}{b}\right)^m = \frac{a^m}{b^m}$$

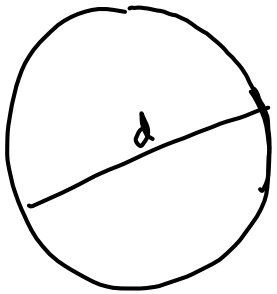
$$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$$

$$\left(\frac{a}{b}\right)^{-m} = \frac{a^{-m}}{b^{-m}}$$

$$= \frac{b^m}{a^m}$$

$$\left(\frac{b}{a}\right)^m = \frac{b^m}{a^m}$$

$$a^{-m} = \frac{1}{a^m}$$



$$\pi = 3.14159\ldots$$

$\frac{5^3}{5^3} = \frac{1}{1} = 5^0 = 1$

$(2432)^0 = 1$

$(x^2y^3z^4)^0 = 1$

$x^0 = 1$

$x^1 = x$

$x^{-2} = \frac{1}{x^2}$

$\frac{8^7}{8^6} = 8$ $\qquad 8^{7-6} = 8^1 = 8$

$\frac{8 \cdot 8 \cdot 8 \cdot 8 \cdot 8 \cdot 8 \cdot 8}{8 \cdot 8 \cdot 8 \cdot 8 \cdot 8 \cdot 8} = 8$

$\frac{8^7}{8^8} = \frac{1}{8}$ $\qquad 8^{7-8} = 8^{-1} = \frac{1}{8}$

$\frac{1}{8^{-5}} = 8^5$

$$\frac{x^{-5}}{x^{-2}} = x^{-3} = \frac{1}{x^3}$$

base

$$x^{-5+2} = x^{-3} = \frac{1}{x^3}$$

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

when you put exponential expression on other side of fraction bar it changes sign.

$$\frac{2^3}{2^5} = 2^{3-5}$$

$$2^{-2}$$

$$\frac{1}{2^2}$$

$$\frac{1}{4}$$

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

$$\frac{1}{2^5 2^{-3}}$$

$$\frac{1}{2^2}$$

$$\frac{1}{4}$$

$10^0 = 1$

$10^1 = 10$

$10^2 = 100$

$10^3 = 1000$

$10^4 = 10000$

1 and the number of zeros of exponent

$10^6 = 1{,}000{,}000$

Scientific notation

$4{,}290{,}000{,}000. \times 10^0$

$\rightarrow 4.29 \times 10^9$

smaller

larger

5,430,000,000,000. expanded

5.43×10^{12} scientific notation

2.35×10^{8}

235,000,000

2.350000000

235000000×10^{0}

$.0000.0.0.3.43$ in

3.43×10^{-7}

bigger

2.68×10^{-9}

$.000000000268$

is in 9th decimal places

4.36×10^{-6}

$.00000436$

$.00043 = 4.3 \times 10^{-4}$

$234{,}000 = 2.34 \times 10^{5}$

$10^{-1} = \frac{1}{10} = .1$

$10^{-2} = \frac{1}{100} = .01$

$10^{-3} = .001$

$10^{-5} = .00001$

$10^{-4} = .0001$

Multiply & Divide using scientific notation

2.31 E 5

2.31×10^{5}

$(4 \times 10^{6})(5 \times 10^{-3})$

$(4)(10^{6})(5)(10^{-3})$

$(4)(5)(10^{6})(10^{-3})$

$(20)(10^{3})$

$20. \times 10^{3}$

smaller ↓ bigger ↑

2.0×10^{4}

2×10^{4}

(4) $\dfrac{4.5 \times 10^{12}}{5 \times 10^{3}}$

$\left(\dfrac{4.5}{5}\right)\left(\dfrac{10^{12}}{10^{3}}\right)$

$.9 \times 10^{9}$

9.0×10^{8}

$$5\overline{)4.5} \quad 0.9$$