two-dimensional: perimeter & area

area = L·W
perimeter = 2(L+W)

area = ½(L·W)
perimeter = L + W + $\sqrt{L^2 + W^2}$
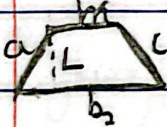
area = $\frac{b_1 + b_2}{2}$·L
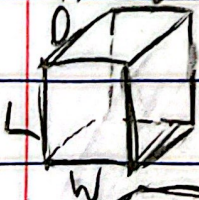perimeter = a + c + b_1 + b_2

area = πR^2
perimeter = $2R^2\pi$

in two straight lines the opposite angles are equal

two similar triangles have the same ratio regarding their sides.

$\frac{a}{b} = \frac{c}{d}$
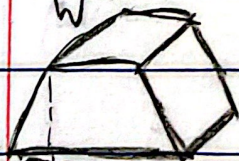
three-dimensional: Volume & surface area

Volume = L·W·D
surface area = (LW + WD + LD)2

Volume = face · Depth
surface area = (face + face + face)2
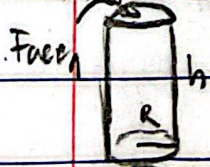
Volume = $2\pi r^2 + 2\pi Rh$
surface area = $2\pi R(R+h)$

V = $4\pi R^3 \div 3$

1.6 Exponential & Logarithmic functions   8/27/24

Exponential | $y = b^x$ | $b > 1$ = Growth $\}$ Y Intercept = 1
| | $0 < b < 1$ = Decay

a^x exponential
x^a polynomial
x^x transcendental

Exponential rules: $b^x \cdot b^y = b^{x+y}$

$$(b^x)^y = b^{x \cdot y}$$

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

$$b^{\frac{x}{y}} = \sqrt[y]{b^x} \quad or \left(\sqrt[y]{b}\right)^x$$

$$\sqrt{b} = b^{\frac{1}{2}}$$

Logarithm: $y = \log_b(x)$ = Inverse Exponential
D: $x > 0$

log is amplitude/magnitude
$\log_{10}(x) \cong \log(x)$
$\log_e(x) = \ln(x)$
$\log(x) + \log(y) = \log(xy)$
$\log(x^y) = y \log(x)$
$\log_a(b) = \frac{\log_x(b)}{\log_x(a)}$
$\log_a(b) = x \Big)$
$a^x = b$