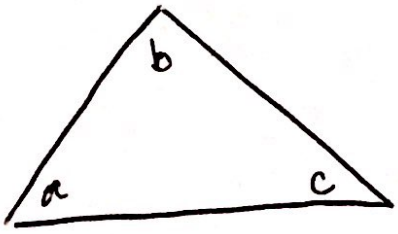
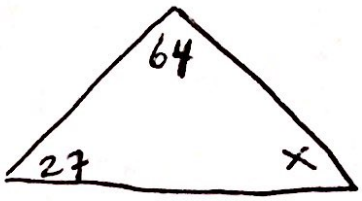
triangle angle relationships:



$m\angle a + m\angle b + m\angle c = 180^\circ$

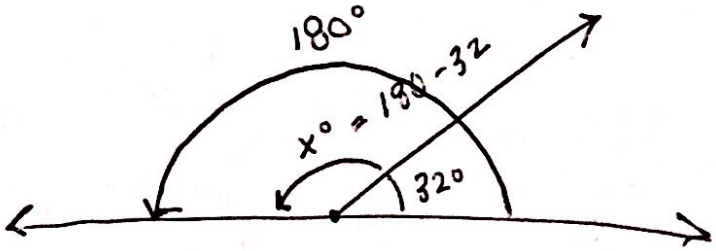
angles of a $\triangle$ add to 180°

ex:



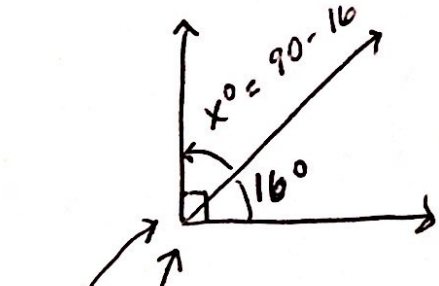
$180 - (64+27) = x$

$180 - 91 = 89^\circ$



Straight angle = 180°

Supplementary angles add to 180°



right angle = 90°

acute = $< 90^\circ$

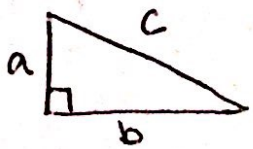
obtuse = $> 90^\circ$

Complementary angles (corner) add to 90°.

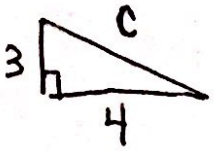
Pythagorean's Theorem:

$$a^2 + b^2 = c^2$$

* how to find the length of the sides of a right $\triangle$.



ex:



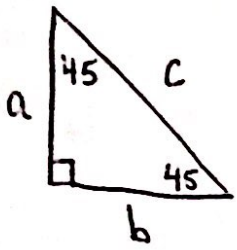
$3^2 + 4^2 = c^2$

$9 + 16 = c^2$

$\sqrt{25} = \sqrt{c^2}$

$5 = c$

Area



45-45-90 triangle

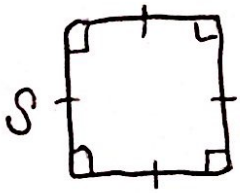
$a = b$

$A_\triangle = \frac{1}{2} b \cdot h$

$A_\square = b \cdot h$

$or = \ell \cdot w$

Squares:

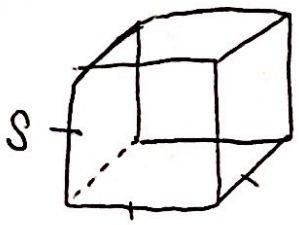


$A = b \cdot h$

$A_\square = s^2$

$P = s + s + s + s$

Cube:



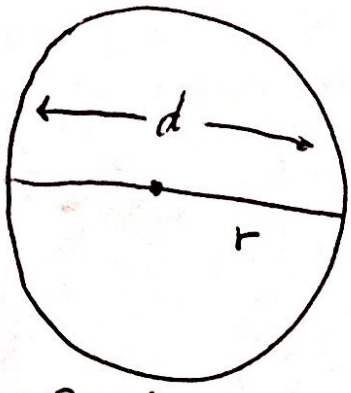
$V = b \cdot w \cdot h$

$V = \ell \cdot w \cdot h$

$V = s^3$

↖ volume

Circles:



has 360°

$\pi = 3.14$

$d = 2r$

$r = \frac{1}{2} d$

$C = d\pi$

$C = 2r\pi$

$C = 2\pi r$

$A = \pi r^2$

$A = r^2 \pi$

Simplifying radicals

① $\sqrt{20}$

$\sqrt{4} \cdot \sqrt{5}$

$\boxed{2\sqrt{5}}$

② $\sqrt{72}$

$\sqrt{36} \cdot \sqrt{2}$

$\boxed{6\sqrt{2}}$

$\sqrt{72}$

$\sqrt{9} \cdot \sqrt{8}$

$3 \cdot \sqrt{4} \cdot \sqrt{2}$

$3 \cdot 2 \cdot \sqrt{2}$

$\boxed{6\sqrt{2}}$

③ $\sqrt{20} \cdot \sqrt{2}$

$\sqrt{40}$

$\sqrt{4} \cdot \sqrt{10}$

$\boxed{2\sqrt{10}}$

④ $\sqrt{12} \cdot \sqrt{3}$

$\sqrt{36} = \boxed{6}$

⑤ addition/ subtraction

$\sqrt{12} + \sqrt{3}$

$\sqrt{4} \cdot \sqrt{3} + \sqrt{3}$

$2\sqrt{3} + 1\sqrt{3} = \boxed{3\sqrt{3}}$

⑥ add:

$\boxed{2\sqrt{3} + 3\sqrt{5}}$

FOIL

F = First
O = Outside
I = Inside
L = Last

$(x+2)(x-7)$

$x \cdot x + (-7x) + 2x - 14$

$x^2 - 7x + 2x - 14$

$\boxed{x^2 - 5x - 14}$

$(a+3)(a+5)$

$a^2 + 5a + 3a + 15$

$\boxed{a^2 + 8a + 15}$

Un-foiling / factoring

$8x^2 + 4$

$4(2x^2 + 1)$

$36x^3 + 6x^2$

$6x^2(6x^1 + 1)$

$36x^3 + 6x^2$