EULER'S FORMULA: $E+2=F+V$

Geometry/Instructional Strategies/

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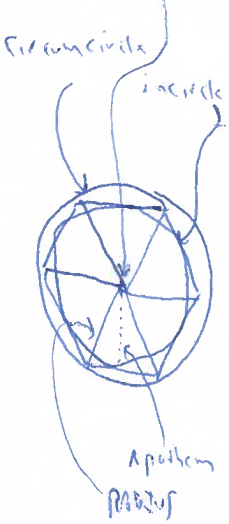
FORMULA REFERENCE SHEET

Shape	Formulas for Area (*A*) and Circumference (*C*)
Triangle	$A = \frac{1}{2}bh = \frac{1}{2}$ x base x height
Rectangle	$A = lw$ = length x width
Trapezoid	$A = \frac{1}{2}(b_1 + b_2)h = \frac{1}{2}$ x sum of bases x height
Parallelogram	$A = bh$ = base x height
Circle	$A = \pi r^2 = \pi \times$ square of radius $C = 2\pi r = 2 \times \pi \times$ radius $C = \pi d = \pi \times$ diameter

Figure	Formulas for Volume (*V*) and Surface Area (*SA*)
Rectangular Prism	$V = lwh$ = length x width x height $SA = 2lw + 2hw + 2lh$ = 2(length x width) + 2(height x width) + 2(length x height)
General Prisms	$V = Bh$ = area of base x height SA = sum of the areas of the faces
Right Circular Cylinder	$V = Bh$ = area of base x height $SA = 2B + Ch$ = (2 x area of base) + (circumference x height)
Square Pyramid	$V = \frac{1}{3}Bh = \frac{1}{3} \times$ area of base $\times$ height $SA = B + \frac{1}{2}P\ell$ = area of base + ($\frac{1}{2} \times$ perimeter of base $\times$ slant height)
Right Circular Cone	$V = \frac{1}{3}Bh = \frac{1}{3} \times$ area of base $\times$ height $SA = B + \frac{1}{2}C\ell$ = area of base + ($\frac{1}{2} \times$ circumference $\times$ slant height)
Sphere	$V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times \pi \times$ cube of radius $SA = 4\pi r^2 = 4 \times \pi \times$ square of radius

Equations of a Line
Standard Form: $Ax + By = C$ where A and B are not both zero
Slope-Intercept Form: $y = mx + b$ or $y = b + mx$ where m = slope and b = y-intercept
Point-Slope Formula: $y - y_1 = m(x - x_1)$ where m = slope, (x_1, y_1) = point on line

Coordinate Geometry Formulas
Let (x_1,y_1) and (x_2,y_2) be two points in the plane. slope = $\frac{y_2 - y_1}{x_2 - x_1}$ where $x_2 \neq x_1$ midpoint = $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$ distance = $\sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$



AREA OF REGULAR POLYGON

$A = \frac{1}{2}aP$

apothem, perimeter

OR

$A = \frac{1}{2}a \cdot ns$

n-sum, side length

DIAGONALS

$D = \frac{n(n-3)}{2}$

AREA OF KITE

$A = \frac{(D_1)(D_2)}{2}$

PRISM → $SA = (P)(H) + 2B$ (Units = Weight)

P = perimeter of BASE

B = AREA of BASE

N = weight of Prism

PYRAMID → $SA = \frac{1}{2}P\ell + B$

Distance Traveled
$d = rt$
distance = rate x time

Simple Interest
$I = prt$
interest = principal x interest rate x time

Polygon Angle Formulas

Sum of degree measures of the interior angles of a polygon:

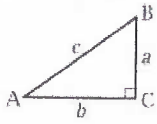
$180\ (n - 2)$

Degree measure of an interior angle of a regular polygon:

$$\frac{180(n-2)}{n}$$

where n is the number of sides of the polygon

Formulas for Right Triangles



Pythagorean Theorem:

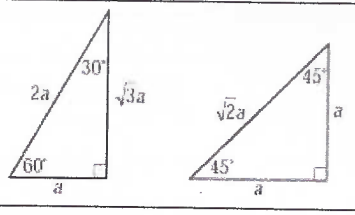
$a^2 + b^2 = c^2$

$$\sin A = \frac{a}{c} = \left(\frac{\text{opposite}}{\text{hypotenuse}}\right)$$

$$\cos A = \frac{b}{c} = \left(\frac{\text{adjacent}}{\text{hypotenuse}}\right)$$

$$\tan A = \frac{a}{b} = \left(\frac{\text{opposite}}{\text{adjacent}}\right)$$

Special Triangles



equilateral triangle = $(1/4)\sqrt{3}\ a^2$

A = triangle given SAS = (1/2) a b sin C

A = triangle given a,b,c = $\sqrt{[s(s-a)(s-b)(s-c)]}$ when s = (a+b+c)/2 (Heron's formula)

regular polygon = (1/2) n sin(360°/n) S^2
when n = # of sides and S = length from center to a corner

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