Skill Drill Formula Sheet

Perimeter
- Triangle: add all sides
- Square: \( p = 4s \)
- Rectangle: \( p = 2l + 2w \)
- Circle: \( c = 2\pi r = \pi d \)
- Regular Polygon: \( p = ns \)

Area
- Rhombus: \( A = \frac{d_1d_2}{2} \)
- Square: \( A = s^2 \)
- Rectangle: \( A = lw = bh \)
- Parallelogram: \( A = bh \)
- Trapezoid: \( A = \frac{1}{2}(b_1 + b_2)h / 2 \)
- Circle: \( A = \pi r^2 \)
- Regular Polygon: \( A = \frac{1}{2}ap \)
- Triangle: \( A = \frac{1}{2}bh \)
- Equilateral Triangle: \( A = \frac{\sqrt{3}}{4}s^2 \)

Lateral Surface Area
- Rectangular Prism: \( L = (2l + 2w)h \)
- Circular Cylinder: \( L = 2\pi rh \)
- Cone: \( L = \pi rl \)
- Pyramid: \( L = pl / 2 \)

Total Surface Area
- Cube: \( T = 6e^2 \)
- Rectangular Prism: \( T = 2lw + 2lh + 2wh \)
- Circular Cylinder: \( T = 2\pi r^2 + 2\pi rh \)
- Cone: \( T = \pi r^2 + \pi rl \)
- Sphere: \( T = 4\pi r^2 \)
- Pyramid: \( T = B + pl / 2, B = \text{area of base} \)

Volume
- Cube: \( V = e^3 \)
- Rectangular Prism: \( V = lwh = Bh, B = \text{area of base} \)
- Circular Cylinder: \( V = Bh, B = \text{area of base} \)
- Circular Cone: \( V = \frac{1}{3}Bh \)
- Sphere: \( V = \frac{4}{3}\pi r^3 \)
- Pyramid: \( V = \frac{1}{3}Bh / 3, B = \text{area of base} \)

Pythagorean Theorem
- Right Triangle: \( a^2 + b^2 = c^2 \)

Interest
- Annual Compound Interest: \( A = P(1 + r)^t \)
- Compound Interest (n times/year): \( A = P\left[1 +\left(\frac{r}{n}\right)\right]^{nt} \)
- Compound Continuous: \( A = Pe^{rt} \)
- Simple Interest: \( I = Prt \)

Heron Area Formula
- Oblique Triangle: \( s = \frac{(a + b + c) / 2}{A = \sqrt{s(s-a)(s-b)(s-c)}} \)

Geometry
- Number of Diagonals: \( n(n-3)/2 \)
- Sum of Exterior Angles: 360
- Each Exterior Angle: \( 360 / n \)
- Sum of Interior Angles: \( (n - 2)\times 180 \)
- Each Interior Angle: \( (n - 2)\times 180 / n \)

Sum of Numbers
- \( n(n + 1)/2 \)
- \( (n + m)(m - n + 1)/2 \)

Statistics
- Mean: average
- Median: middle number
- Mode: most often
- Range: big - small
- Probability of an Event: good/total
- Odds in Favor: good : bad
- Odds Against: bad : good
- Percent Increase/Decrease: \((\text{change/original})\times 100\)
- n!

Distance
- Between Two Points: \( \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \)
- Vehicles: \( D = rt \)

Divisibility
- 2: even
- 3: sum of digits divisible by 3
- 4: last two digits divisible by 4
- 5: ends in 5 or 0
- 6: divisible by 2 and 3
- 8: last three digits divisible by 8
- 9: sum of digits divisible by 9
- 10: ends in 0

Geometric & Arithmetic Series
- Arithmetic Progression: \( a_n = a_1 + (n - 1)d \)
- Geometric Progression: \( a_n = a_1 \left(\frac{r}{r+1}\right)^{(n-1)} \)
- Infinite Geometric: \( S_n = a_1 \left(1 - r^n\right)/(1 - r) \)
- Conversions
  - 2000 lbs. = 1 ton
  - 5280 ft. = 1 mile
  - 454 g. = 1 lb.
  - 1000 mm = 1 m
  - 100 g. = 1 kg.
  - 1000 mm = 1 cm
  - 100 cm = 1 m

Right Triangles
- Common: 3, 4, 5
- 8, 15, 17
- 5, 12, 13
- 7, 24, 25
- 30-60-90
- 45-45-90

Algebra & Basics
- Quadratic Formula: \( x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \)
- Repeating Decimal to Fraction: \# of 9’s as places that repeat