**Harold’s Geometry Shape Formulas**

**Cheat Sheet**

25 April 2025

**Perimeter, Area, Surface Area, and Volume**

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| **2D Shapes** | **Perimeter****(P, C)** | **Area****(A)** | **3D Shapes** | **Surface Area****(SA)** | **Volume****(V)** |
| **Units** | Units | Units2 |  | Units2 | Units3 |
| **Example** | Fence | Pasture |  | Paint It | Fill It |
| **Triangle** | $$a+b+c$$ | $$\frac{1}{2}bh$$ | **Triangular Prism** | $$bh+la+lb+lc$$ | $$\frac{1}{2}bhl$$ |
| **Square** | $$4a$$ | $$a^{2}$$ | **Cube** | $$6a^{2}$$ | $$a^{3}$$ |
| **Rectangle** | $$2(l+w)$$ | $$lw$$ | **Rectangular Prism** | $$2(lw+lh+wh)$$ | $$lwh$$ |
| **Parallelogram** | $$2(a+b)$$ | $$bh$$ | **Pyramid** | $$lw+la$$$la$: lateral area | $$\frac{1}{3}lwh$$ |
| **Trapezoid** | $$a+b\_{1}+b\_{2}+c$$ | $$\frac{1}{2}\left(b\_{1}+b\_{2}\right)h$$ | **Cone** | $$πr^{2}+πrl$$ | $$\frac{1}{3}πr^{2}h$$ |
| **Rhombus** | $$4L$$ | $$\frac{1}{2}d\_{1}d\_{2}$$ | **Cylinder** | $$2πrh+2πr^{2}$$ | $$πr^{2}h$$ |
| **Regular Polygon** | $$ns$$ | $$n\left(\frac{1}{2}as\right)$$$a$*:* apothem$n$*:* number of sides | **Regular Prism** | $$nab+nbh$$ | $$\frac{n}{2}abh$$ |
| **Circle** | $$2πr$$$$=πd$$ | $$πr^{2}$$ | **Sphere** | $$4πr^{2}$$ | $$\frac{4}{3}πr^{3}$$ |
| **Circular Sector** | $$s+2r$$ | $$\frac{θ}{360^{∘}}πr^{2}$$ | **Spherical Segment** | $$π(a^{2}+b^{2}+2rh)$$$h$: height of segment | $$\frac{1}{6}πh(3a^{2}+3b^{2}+h^{2})$$ |
| **Ellipse** | $$≈π(a+b)$$ | $$πab$$ | **Ellipsoid**7: Geometric definition of an ellipsoid; a, b and c denote the three... |  Download Scientific Diagram | See [Knud Thomsen’s Formula](https://www.web-formulas.com/Math_Formulas/Geometry_Surface_of_Ellipsoid.aspx) | $$\frac{4}{3}πabc$$ |

**Sources:**

* TPT, <https://www.teacherspayteachers.com/Product/Perimeter-Area-Surface-Area-Volume-Cheat-Sheet-7377920>