Appendix 6: Geometric Formulas

REGULAR POLYGON OF n SIDES INSCRIBED IN CIRCLE OF RADIUS r

$$AREA = \tfrac{1}{2}nr^2 \sin \tfrac{360°}{n}$$

$$PERIMETER = 2nr \sin \tfrac{360°}{n}$$

SEGMENT OF CIRCLE OF RADIUS r

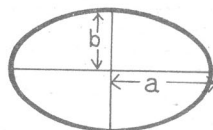$$AREA \ OF \ SHADED \ PART = \tfrac{1}{2}r^2(\theta - \sin\theta)$$
(θ IN RADIANS !)

ELLIPSE OF HALF-AXES a AND b

$$AREA = \pi a \cdot b$$
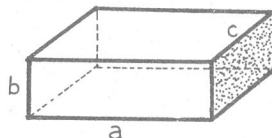$$PERIMETER \approx 2\pi\sqrt{\tfrac{1}{2}(a^2 + b^2)}$$

RECTANGULAR PARALLELEPIPED
OF LENGTH a HEIGHT b, WIDTH c.

$$VOLUME = a \cdot b \cdot c$$

$$SURFACE \ AREA = 2 \cdot (ab + ac + bc)$$

$$LENGTH \ OF \ DIAGONAL = \sqrt{a^2 + b^2 + c^2}$$

SPHERE OF RADIUS r
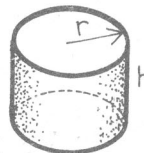
$$VOLUME = \tfrac{4}{3}\pi r^3$$

$$SURFACE \ AREA = 4\pi r^2$$

RIGHT CIRCULAR CYLINDER OF RADIUS r AND HEIGHT h

$$VOLUME = \pi r^2 \cdot h$$

$$LATERAL \ SURFACE \ AREA = 2\pi r \cdot h$$

GENERAL CYLINDER OF BASE AREA A AND HEIGHT h

$$VOLUME = A \cdot h$$