Combination :

111. Number of combinations of n different things taken at a time r is denoted by ^nC_r, is given by,

$$^nC_r = n! \, / \, r!(n-r)!, \text{ where } 0 \le r \le n.$$

Note:

$$^nC_0 = 1 = {}^nC_n$$

$$^nC_r = {}^nC_{n-r} \text{ when } 0 \le r \le n.$$
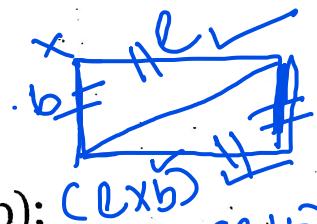
$$^nC_{r-1} + {}^nC_r = {}^{n+1}C_r$$

$$^nC_p = {}^nC_q \text{ if either } p=q \text{ or } p+q=n$$

Mensuration
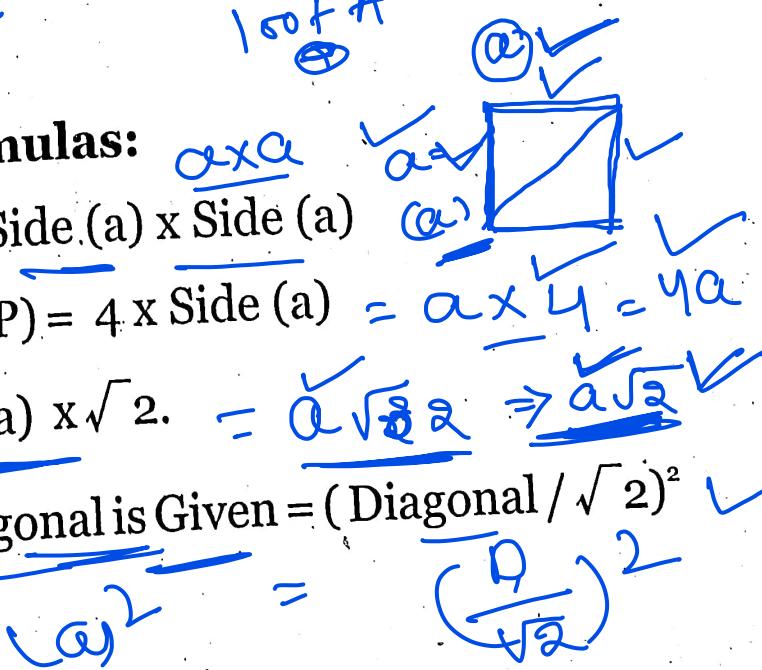
Rectangle – Basic Formulas:

112. Area of a Rectangle (A) = length(l) x Breath(b);

113. Perimeter of a Rectangle (P) = 2 x (Length(l) + Breath(b))

114. Diagonal (d) = $\sqrt{(\text{length}(l)^2 + \text{breadth}(b)^2)}$

115. Percentage Decrease in Width (if Area Remains Constant) = (100 x Area) / (100 + Area)
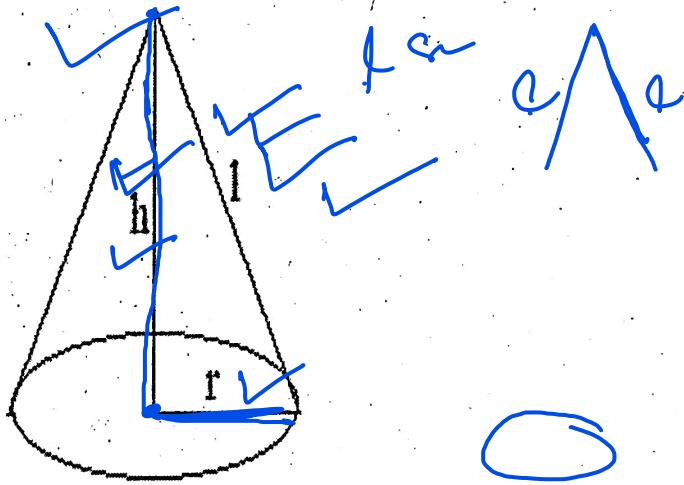
Square – Basic Formulas:

116. Area of a square (A) = Side (a) x Side (a)

117. Perimeter of a square (P) = 4 x Side (a)

118. Diagonal (d) = Side (a) x $\sqrt{2}$.

119. Area of a Square if Diagonal is Given = (Diagonal / $\sqrt{2}$)^2

Cone – Basic Formulas:

120. Bare Area = πr^2 (Since base of the cone is circle)
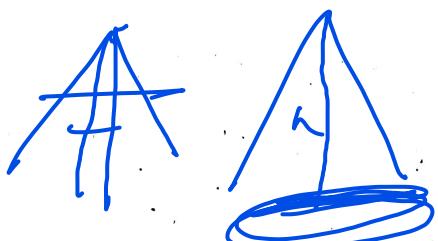
121. Slant height = $l = \sqrt{(r^2 + h^2)}$

122. Curved surface area = $\pi r l$ where , r = radius of base , l = slanting height of cone
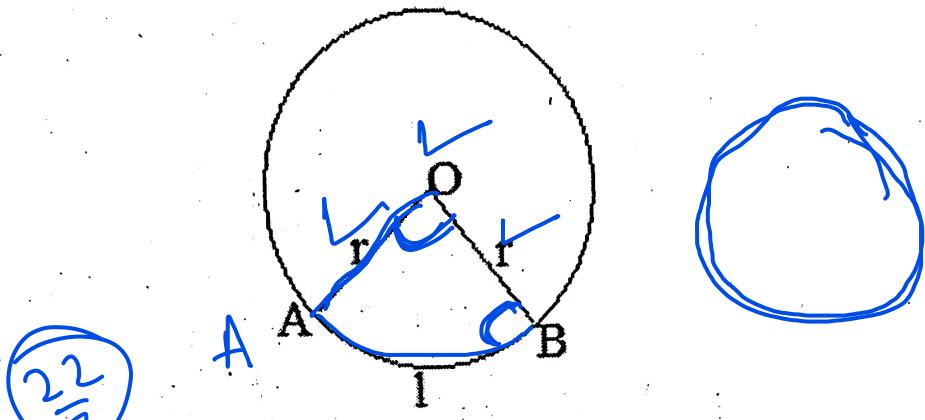
123. Total surface area = Bare area + curved surface area
$$= \pi r^2 + \pi r l = \pi r(r+l)$$

124. Volume = $\pi r^2 h/3$

Where , r = radius of base of cone , h= height of the cone (perpendicular to base).
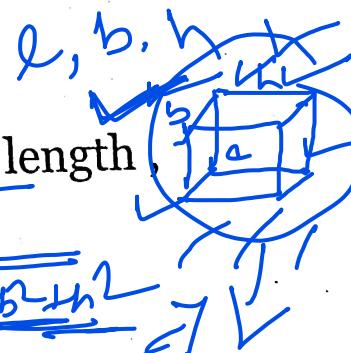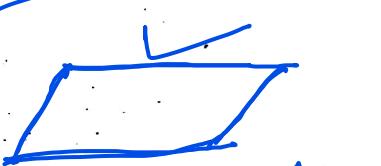
Circle – Basic Formulas:

125. Area = πr^2

126. Circumference (perimeter) = $2\pi r$

127. Length of the arc (l) = $(2\pi r\theta)/360°$
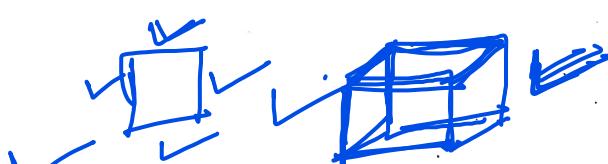
Parallelogram – Basic Formulas:

128. Area (A) = Length(l) x Height(h)

129. Perimeter (P) = 2 x (length(l) + Breadth(b))

Cuboid – Basic Formulas:

130. Total surface area = 2(lb+bh+lh), where, l = length, b=breadth, h=height

131. Length of diagonal = $\sqrt{(l^2 + b^2 + h^2)}$

132. Volume = l x b x h

Cube – Basic Formulas:
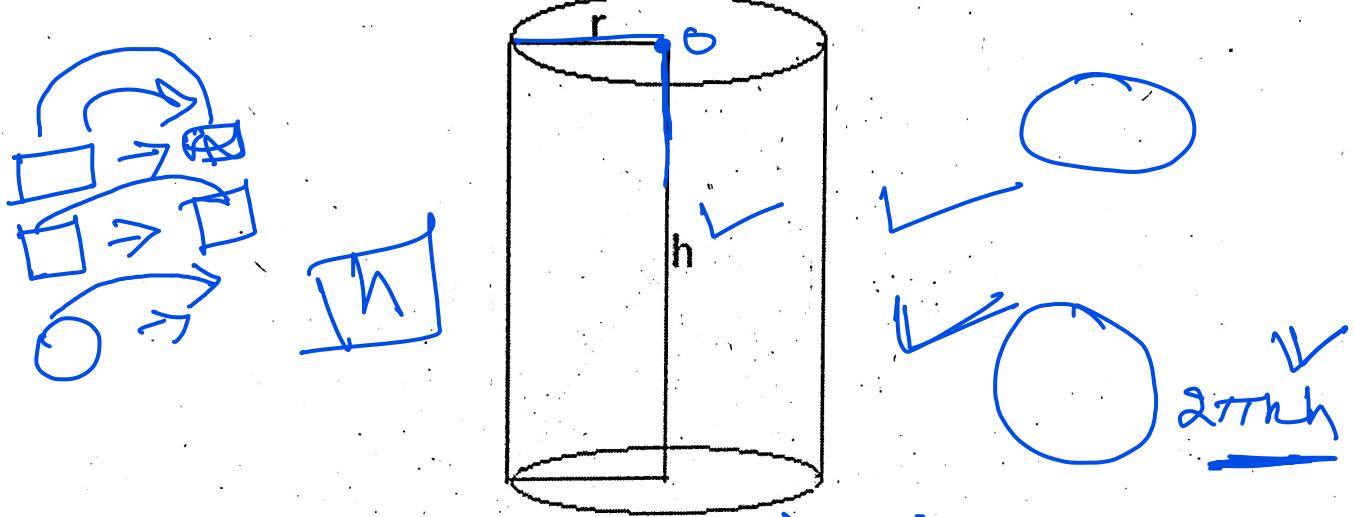
133. Total surface area = $6a^2$, where, a= side of the cube

134. Length of diagonal = $\sqrt{3}a$

135. Volume = a x a x a = a^3

Cylinder – Basic Formulas:

136. Curved surface area = $2\pi rh$

    Where , r = radius of base , h = height of cylinder.

137. Total surface area = $2\pi r(r + h)$

138. Volume of a cylinder = $\pi r^2 h$

139. Volume of hollow cylinder = $\pi rh(R^2 - r^2)$

Sphere – Basic Formulas:

140. Surface area = $4\pi r^2$

    where , r = radius of sphere ,d = diameter of sphere

141. Volume = $4/3\pi r^3 = 1/6\pi d^3$

Hemisphere – Basic Formulas:

142. Curved surface area = $2\pi r^2$

143. Total surface area = $3\pi r^2$

144. Volume = $2/3\pi r^3 = 1/12\,\pi d^3$