

Given to you on test day: the reference sheet

Shape	Formula	Shape	Formula
Circle	$A = \pi r^2, C = 2\pi r$	Rectangular prism	$V = lwh$
Rectangle	$A = lw$	Cylinder	$V = \pi r^2 h$
Triangle	$A = \frac{1}{2}bh$	Sphere	$V = \frac{4}{3}\pi r^3$
Right triangle	$c^2 = a^2 + b^2$	Cone	$V = \frac{1}{3}\pi r^2 h$
Special right triangles	$x, x\sqrt{3}, 2x; s, s, s\sqrt{2}$	Rectangular pyramid	$V = \frac{1}{3}lwh$

Also stated: a circle has 360° of arc, or 2π radians; a triangle's angles add to 180° .

Not given: memorize these

- ✓ **Lines:**
 - slope $\frac{y_2 - y_1}{x_2 - x_1}$; $y = mx + b$; $Ax + By = C$ has slope $-\frac{A}{B}$
 - parallel: equal slopes; perpendicular: negative reciprocals
- ✓ **Quadratics:**
 - vertex $x = -\frac{b}{2a}$; vertex form $a(x - h)^2 + k$
 - $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$; discriminant $b^2 - 4ac$
 - sum of roots $-\frac{b}{a}$, product $\frac{c}{a}$
- ✓ **Exponents and growth:**
 - the exponent rules; $y = ab^x$; $A = P(1 + r)^t$
- ✓ **Circles:**
 - $(x - h)^2 + (y - k)^2 = r^2$
 - arc $\frac{\theta}{360} \cdot 2\pi r$; sector $\frac{\theta}{360} \cdot \pi r^2$
- ✓ **Triangles and polygons:**
 - SOHCAHTOA; triples 3-4-5, 5-12-13
 - equilateral $\frac{s^2\sqrt{3}}{4}$; polygon angles $(n - 2) \cdot 180^\circ$
 - distance and midpoint; $\pi \text{ rad} = 180^\circ$
- ✓ **Data:**
 - mean, median, mode, range; percent and percent change
 - probability = desired $\div$ total

Desmos: use it often

- ✓ Built into the test for **every** Math question; for skilled students it is often the **fastest** way to solve
- ✓ If Desmos can solve a problem, it is **almost always the best way** to do it
- ✓ **Systems:** graph both equations and click the **intersection**
- ✓ **How many solutions?** Lines that cross: one; parallel: none; one line on top of the other: infinitely many
- ✓ **Quadratics:** click the **vertex** for a maximum or minimum, the **x-intercepts** for the roots
- ✓ **Inequalities:** graph them and read the region shaded by **all** of them
- ✓ Lines that only **look** parallel? Check the slopes by hand
- ✓ Practice before test day: knowing Desmos well is what makes it fast

Using the reference sheet

- ✓ **Know it anyway:** opening it costs time, so learn its formulas as well as the rest
- ✓ The formulas marked (*provided*) on the geometry sheet are the ones it gives
- ✓ It gives volume, never **surface area**: build that from the faces