

Geometry basics

- ✓ Rectangles and squares:
 - Area = length $\times$ width, $A = lw$
 - Perimeter = the sum of all sides
- ✓ Triangles:
 - Area = $\frac{1}{2} \times \text{base} \times \text{height}$, $A = \frac{1}{2}bh$
 - Perimeter = the sum of all sides
- ✓ Circles:
 - Area: $A = \pi r^2$
 - Circumference: $C = 2\pi r$
- ✓ Polygons: the interior angles sum to $(n - 2) \times 180^\circ$
- ✓ Midpoint: $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

Algebra, statistics, and probability

- ✓ FOIL (first, outside, inside, last) multiplies two binomials
- ✓ Measures of center and spread:
 - **Mean:** add all the values and divide by how many there are
 - **Median:** put the values in order and find the middle
 - **Mode:** the value that occurs most
 - **Range:** highest value - lowest value
- ✓ Probability = favorable outcomes $\div$ possible outcomes

Volume and density

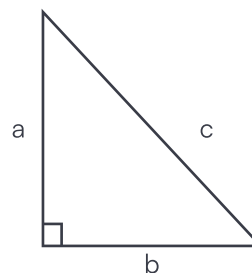
- ✓ Rectangular box: volume = length $\times$ width $\times$ height
- ✓ Cylinder: volume = $\pi r^2 h$
- ✓ Density = mass $\div$ volume

Lines and distance

- ✓ $y = mx + b$, where (x, y) is any point on the line
- ✓ m is the slope, $\frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$; the line's steepness and direction
- ✓ b is the y -intercept, where the line crosses the y -axis
- ✓ Distance formula: $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Right triangles

- ✓ **Pythagorean theorem**, for a right triangle only: $a^2 + b^2 = c^2$, with c the hypotenuse



- ✓ **30-60-90:** sides x , $x\sqrt{3}$, $2x$, opposite the 30° , 60° and 90° angles
- ✓ **45-45-90:** sides x , x , $x\sqrt{2}$

