Mathematics Formula Sheet & Explanation

The 2014 GED® Mathematical Reasoning test contains a formula sheet, which displays formulas relating to geometric measurement and certain algebra concepts. Formulas are provided to test-takers so that they may focus on application, rather than the memorization, of formulas.

### Area of a:

- **square**: $A = s^2$
- **rectangle**: $A = lw$
- **parallelogram**: $A = bh$
- **triangle**: $A = \frac{1}{2}bh$
- **trapezoid**: $A = \frac{1}{2}h(b_1 + b_2)$
- **circle**: $A = \pi r^2$

### Perimeter of a:

- **square**: $P = 4s$
- **rectangle**: $P = 2l + 2w$
- **triangle**: $P = a_1 + a_2 + a_3$
- **Circumference of a circle**: $C = 2\pi r$ OR $C = \pi d$; $\pi = 3.14$

### Surface area and volume of a:

- **rectangular prism**: $SA = 2lw + 2lh + 2wh$ $V = lwh$
- **right prism**: $SA = ph + 2B$ $V = Bh$
- **cylinder**: $SA = 2\pi rh + 2\pi r^2$ $V = \pi r^2h$
- **pyramid**: $SA = \frac{1}{2}ps + B$ $V = \frac{1}{3}Bh$
- **cone**: $SA = \pi rs + \pi r^2$ $V = \frac{1}{3}\pi r^2h$
- **sphere**: $SA = 4\pi r^2$ $V = \frac{4}{3}\pi r^3$

**Note:** ($p = \text{perimeter of base with area } B; \pi = 3.14$)

### Data

- **mean**: mean is equal to the total of the values of a data set, divided by the number of elements in the data set
- **median**: median is the middle value in an odd number of ordered values of a data set, or the mean of the two middle values in an even number of ordered values in a data set

### Algebra

- **slope of a line**: $m = \frac{y_2 - y_1}{x_2 - x_1}$
- **slope-intercept form of the equation of a line**: $y = mx + b$
- **point-slope form of the equation of a line**: $y - y_1 = m(x - x_1)$
- **standard form of a quadratic equation**: $y = ax^2 + bx + c$
- **quadratic formula**: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
- **Pythagorean theorem**: $a^2 + b^2 = c^2$
- **simple interest**: $I = Prt$ ($I =$ interest, $P =$ principal, $r =$ rate, $t =$ time)
- **distance formula**: $d = rt$
- **total cost**: total cost = (number of units) × (price per unit)