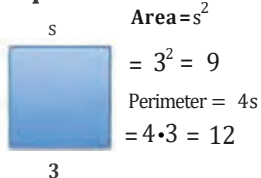


AFOQT Formula Sheet

Square



Circle



$$A = \pi r^2$$

$$C = 2\pi r$$

Estimate pi as 3.
 360 degrees in a circle

Rectangle



$$\text{Area} = 1 \cdot w = 4 \cdot 2 = 8$$

$$\text{Perimeter} = 2(w) + 2(l) = 2(2) + 2(4) = 12$$

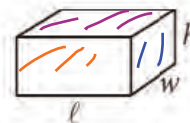
Triangle



$$A = \frac{1}{2}bh$$

Area = $1/2 \cdot \text{base} \cdot \text{height}$
 Perimeter = sum of three sides
 The sum of the angles = 180°

Volume of a box (prism)



$$V = \ell wh$$

$$SA_{\text{box}} = 2 \cdot l \cdot w + 2 \cdot w \cdot h + 2 \cdot h \cdot l$$

Volume of a cylinder

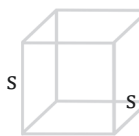


$$V = \pi r^2 h$$

$$SA_{\text{cyl}} = 2 \cdot \pi \cdot r^2 + 2 \cdot \pi \cdot r \cdot h$$

(top/bottom) (side)

Surface Area



$$SA_{\text{cube}} = 6 \cdot s^2$$

$$V_{\text{cube}} = s^3$$

Sum of Interior angles for any shape increases by 180 degrees per number of sides.
 Quadrilateral = 360 degrees, Pentagon = 540 degrees, etc.
 Complementary angles add up to 90 degrees.
 Supplementary angles add up to 180 degrees.
 Vertical Angles share a vertex and are equal.

Midpoint formula:

$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

Equation of a Line

$$y = mx + b$$

where (x, y) is any point on the line,
 m is the slope and b is the y-intercept

Parallel lines have the same slope.

Slope of a Line

$$m = \frac{Y_2 - Y_1}{X_2 - X_1}$$

slope means how much y changes for every 1 unit increase in x

Factoring: X method if coefficient of x^2 term = 1

Multiplying binomials:

$$(x + 1)(x + 2)$$

FOIL (First, Outside, Inside, Last)
 $= x^2 + 2x + 1x + 2 = x^2 + 3x + 2$

Conversions:

- 1 kg = 2.2 pounds
- 1 pound = 16 ounces
- 1 meter = 1 yard+ (approx)
- 1 meter = 39 inches
- 1 yard = 3 feet
- 1 ft = 12 inches
- 1 in = 2.54 centimeters
- 4 quarts = 1 gallon

Exponent rules:

- $a^0 = 1$ (One zero to rule them all)
- $a^m \cdot a^n = a^{m+n}$ (Helper exponents)
- $(a^m)^n = a^{m \cdot n}$ (Double team the a)
- $\frac{a^m}{a^n} = a^{m-n}$ (m looks down on n (second class citizen))
- $(ab)^n = a^n b^n$ (Distribution rule)
- $a^{-1} = \frac{1}{a}$ (flip me over rule)

Percents:

- % * retail price = discount
- 10% means move decimal point one smaller
- 5% is half of 10%
- 1% means move decimal point two smaller

$$\text{Percent Change (error)} = \frac{(\text{New} - \text{Old}) \cdot 100\%}{\text{Old (NOO)}}$$

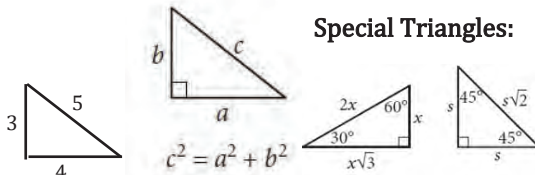
$$\text{Distance} = \text{Rate} \cdot \text{Time} (D = r \cdot t)$$

$$\text{Average Rate} = \frac{\text{Total Dist}}{\text{Total Time}}$$

$$\text{Wall thickness} = \frac{(\text{Outer Diameter} - \text{Inner Diameter})}{2}$$

$$\text{Work Problems: } \frac{1}{\text{rate}_1} + \frac{1}{\text{rate}_2} = \frac{1}{\text{rate}_{\text{together}}}$$

Special Triangles:



Pythagorean Theorem

$$c^2 = a^2 + b^2$$

Order of Operations: PEMDAS

Please Excuse My Dear Aunt Sally
 Parentheses, Exponents, Multiplication, Division, Addition, Subtraction

Inequalities:

Solve just like equalities unless you divide/multiply by a negative number. If so, flip the inequality sign.

$$I = P \cdot r \cdot t$$

P = Principal (initial deposit/loan)
 r = Annual Interest Rate (converted to a decimal)
 t = time (must be in years, convert if needed)

Fraction Operations:

Addition and Subtraction:

- 1) Get common denominators
- 2) Add/subtract the tops, leave the bottoms alone
- 3) Simplify

Multiplication:

- 1) Multiply tops, multiply bottoms, simplify

Division:

- 1) Flip bottom fraction over, then multiply, simplify

$$\text{Factorial: } 4! = 4 \cdot 3 \cdot 2 \cdot 1$$

Scientific Notation:

negative exponents are SMALL (viruses)
 positive exponents are BIG (money)

$$\text{Probability} = \frac{\text{number of things YOU want}}{\text{total number of possibilities}}$$

$$\text{Mean} = \text{Average} = \frac{\text{add up the numbers}}{\text{number of numbers}}$$

Median = Middle number when numbers listed smallest to largest

Mode = most repeated number

Range = Maximum - Minimum

Simplifying Radicals:

Look for the biggest possible perfect square under the radical and bring it out of "square root jail" as the square root

"Up and Up" Method for comparing fractions

