

Mathematics Reference Sheet

Conversions

U.S. Customary

1 foot = 12 inches
1 yard = 3 feet
1 mile = 5280 feet
1 acre $\approx$ 43,560 square feet
1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts
1 gallon = 231 cubic inches
1 pound = 16 ounces
1 ton = 2000 pounds
1 cubic foot $\approx$ 7.5 gallons

U.S. Customary to Metric

1 inch = 2.54 centimeters
1 foot $\approx$ 0.3 meter
1 mile $\approx$ 1.61 kilometers
1 quart $\approx$ 0.95 liter
1 gallon $\approx$ 3.79 liters
1 cup $\approx$ 237 milliliters
1 pound $\approx$ 0.45 kilogram
1 ounce $\approx$ 28.3 grams
1 gallon $\approx$ 3785 cubic centimeters

Time

1 minute = 60 seconds
1 hour = 60 minutes
1 hour = 3600 seconds
1 year = 52 weeks

Temperature

$$C = \frac{5}{9}(F - 32)$$

$$F = \frac{9}{5}C + 32$$

Metric

1 centimeter = 10 millimeters
1 meter = 100 centimeters
1 kilometer = 1000 meters
1 liter = 1000 milliliters
1 kiloliter = 1000 liters
1 milliliter = 1 cubic centimeter
1 liter = 1000 cubic centimeters
1 cubic millimeter = 0.001 milliliter
1 gram = 1000 milligrams
1 kilogram = 1000 grams

Metric to U.S. Customary

1 centimeter $\approx$ 0.39 inch
1 meter $\approx$ 3.28 feet
1 kilometer $\approx$ 0.62 mile
1 liter $\approx$ 1.06 quarts
1 liter $\approx$ 0.26 gallon
1 kilogram $\approx$ 2.2 pounds
1 gram $\approx$ 0.035 ounce
1 cubic meter $\approx$ 264 gallons

Number Properties

Commutative Properties of Addition and Multiplication

$$a + b = b + a$$

$$a \cdot b = b \cdot a$$

Associative Properties of Addition and Multiplication

$$(a + b) + c = a + (b + c)$$

$$(a \cdot b) \cdot c = a \cdot (b \cdot c)$$

Addition Property of Zero

$$a + 0 = a$$

Multiplication Properties of Zero and One

$$a \cdot 0 = 0$$

$$a \cdot 1 = a$$

Distributive Property:

$$a(b + c) = ab + ac$$

$$a(b - c) = ab - ac$$

Properties of Equality

Addition Property of Equality

$$\text{If } a = b, \text{ then } a + c = b + c.$$

Subtraction Property of Equality

$$\text{If } a = b, \text{ then } a - c = b - c.$$

Multiplication Property of Equality

$$\text{If } a = b, \text{ then } a \cdot c = b \cdot c.$$

Multiplicative Inverse Property

$$n \cdot \frac{1}{n} = \frac{1}{n} \cdot n = 1, n \neq 0$$

Division Property of Equality

$$\text{If } a = b, \text{ then } a \div c = b \div c, c \neq 0.$$

Properties of Inequality

Addition Property of Inequality

If $a > b$, then $a + c > b + c$.

Subtraction Property of Inequality

If $a > b$, then $a - c > b - c$.

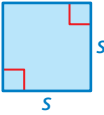
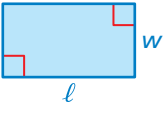
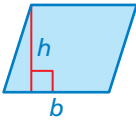
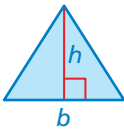
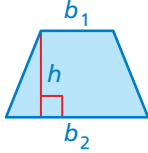
Multiplication Property of Inequality

If $a > b$ and c is positive, then $a \cdot c > b \cdot c$.

Division Property of Inequality

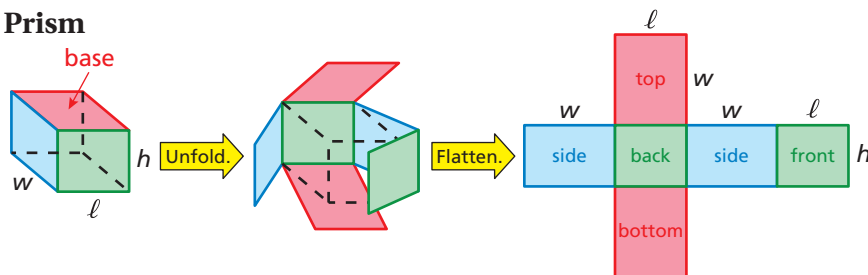
If $a > b$ and c is positive, then $a \div c > b \div c$.

Perimeter and Area

Square	Rectangle	Parallelogram	Triangle	Trapezoid
				
$P = 4s$ $A = s^2$	$P = 2\ell + 2w$ $A = \ell w$	$A = bh$	$A = \frac{1}{2}bh$	$A = \frac{1}{2}h(b_1 + b_2)$

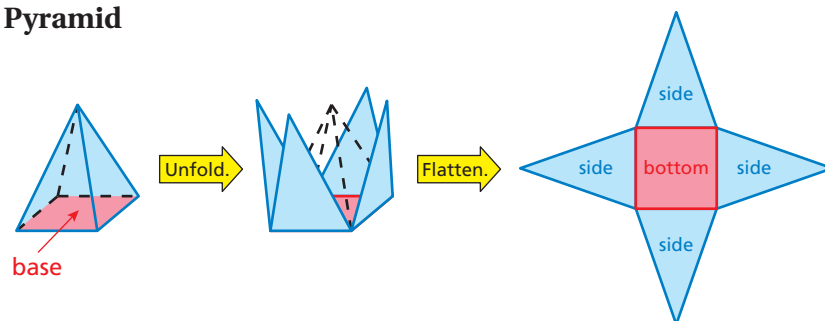
Surface Area

Prism



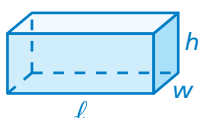
$S = \text{areas of bases} + \text{areas of lateral faces}$

Pyramid



$S = \text{area of base} + \text{areas of lateral faces}$

Volume of a Rectangular Prism



$$V = Bh = \ell wh$$

The Coordinate Plane

