

Similar Triangles

Angles: Congruent
Sides: In Proportion

Geometry

High School Math Reference Sheet

Scale Factor = $\frac{\text{image}}{\text{original}}$

$\frac{300}{n}$ / any multiple

- 1 inch = 2.54 centimeters
- 1 meter = 39.37 inches
- 1 mile = 5280 feet
- 1 mile = 1760 yards
- 1 mile = 1.609 kilometers
- 1 kilometer = 0.62 mile
- 1 pound = 16 ounces
- 1 pound = 0.454 kilogram
- 1 kilogram = 2.2 pounds
- 1 ton = 2000 pounds
- 1 cup = 8 fluid ounces
- 1 pint = 2 cups
- 1 quart = 2 pints
- 1 gallon = 4 quarts
- 1 gallon = 3.785 liters
- 1 liter = 0.264 gallon
- 1 liter = 1000 cubic centimeters



USE GRAPH PAPER

| | |
|----------------|--|
| Triangle | $A = \frac{1}{2}bh$ |
| Parallelogram | $A = bh$ |
| Circle | $A = \pi r^2$ |
| Circle | $C = \pi d$ or $C = 2\pi r$ |
| General Prisms | $V = (\text{area base}) \text{height}$ $V = Bh$ |
| Cylinder | $V = \pi r^2 h$ |
| Sphere | $V = \frac{4}{3}\pi r^3$ |
| Cone | $V = \frac{1}{3}\pi r^2 h$ |
| Pyramid | $V = \frac{1}{3}Bh$ $V = \frac{1}{3}lwh$ |

| | |
|--------------------------|--|
| Pythagorean Theorem | $a^2 + b^2 = c^2$ |
| Quadratic Formula | $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ |
| Arithmetic Sequence | $a_n = a_1 + (n - 1)d$ |
| Geometric Sequence | $a_n = a_1 r^{n-1}$ |
| Geometric Series | $S_n = \frac{a_1 - a_1 r^n}{1 - r}$ where $r \neq 1$ |
| Radians | 1 radian = $\frac{180}{\pi}$ degrees |
| Degrees | 1 degree = $\frac{\pi}{180}$ radians |
| Exponential Growth/Decay | $A = A_0 e^{k(t - t_0)} + B_0$ |

PS

- 1
- 4
- 9
- 16
- 25
- 36
- 49
- 64
- 81
- 100

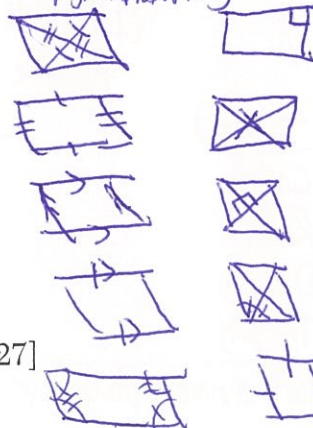
$R_{90}(x,y) \rightarrow (-y, x)$
 $R_{180}(x,y) \rightarrow (-x, -y)$
 $R_{270}(x,y) \rightarrow (y, -x)$
 Parallel: extend lines and transversals

Look for linear pairs/angles of a triangle

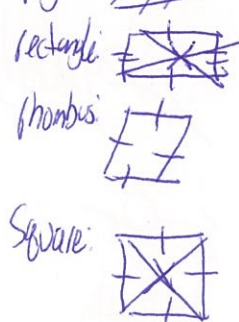
Coordinate Geometry Proof

Draw your own pictures

Parallelogram properties



Pyramid:



isosc tri
 equilateral tri
 right tri $a^2 + b^2 = c^2$

Rectangular Prism $V = lwh$

Unit analysis

complete the square $(\frac{b}{2})^2$

Partitions $\frac{\Delta x}{P}$ $\frac{\Delta y}{P}$

1) Identify the transformations
 Translate, rotate, reflect

Check for orientation

2) State that it's a rigid motion

3) A rigid motion preserves size and angle measure producing a congruent figure.

They are all congruent except dilation

Prove triangles
 Prove 3 things
 CPCTC for segments or angles

mini proofs
 additional tools

Pythag and circle theorems

Vertical angles

Reflexive Property

Isosceles Triangle Theorem

Addition

Subtraction

If you get stuck
 Make something up.

Candy Corn

bases: separate

no bases: $\frac{\text{top}}{\text{top}} = \frac{\text{side}}{\text{side}} = \frac{\text{bottom}}{\text{bottom}}$

Prove Similar

AA

Proportion multiply

CSSTIP

Cross products are equal

$\sin A = \cos B$
 $A + B = 90$

Parallel lines: same slope

Perpendicular lines: Negative Reciprocal slopes

(Flip and negate)

$d = \sqrt{\Delta x^2 + \Delta y^2}$

$m = \frac{\Delta y}{\Delta x}$

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

SOH CAH TOA

$SA = 2lw + 2lh + 2lh$

$2(EA) = \text{major-minor}$
 $2(VA) = \text{arc+tarc}$ } arc/angles

$P \cdot P = P \cdot P$
 $w \cdot e = w \cdot e$ } Segments

$A = \frac{\theta r^2}{360}$
 Area

$s = Or$
 Arc length

Inscribed
 Central
 Radii
 Diameter
 Tangents

"I can't remember doing this"

Equation of line given point

$y - y_1 = m(x - x_1)$

might have to distribute and isolate y

Line Dilation

Parallel / Same slope
 Center on the line? sub x and y

on the line: same b
 off the line: different b

origin: multiply scale factor and b

Cheer:
 origin: multiply scale factor and b
 not origin: same line.