

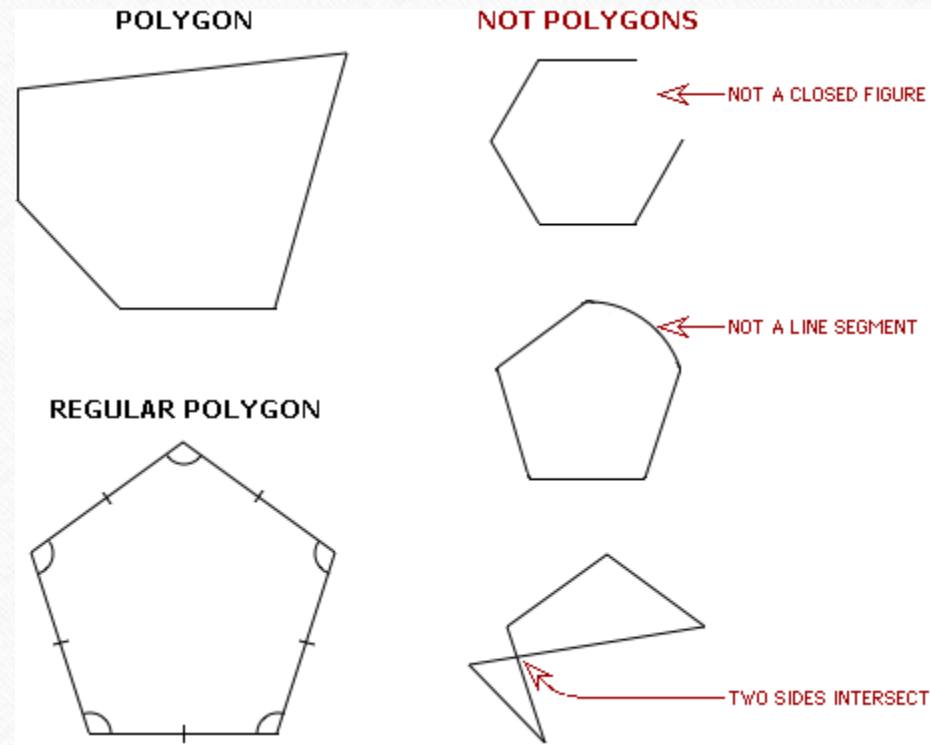
# 2-D Geometry

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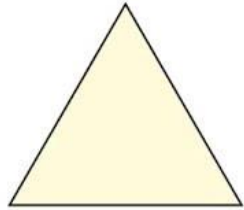
# Polygon

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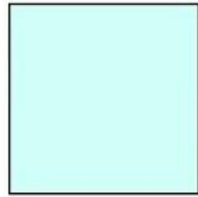
1. Enclosed figure
2. Made up of line segments
3. Does not intersect
4. **Regular** Polygons has all sides and angles congruent.



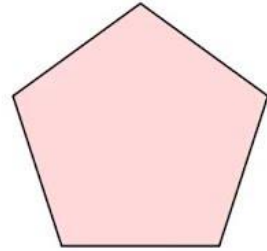
# Types of Polygons



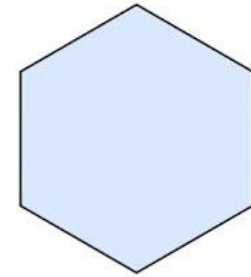
**triangle**



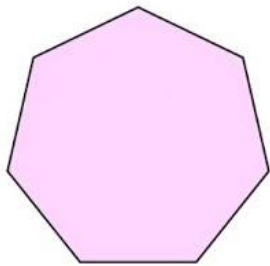
**quadrilateral**



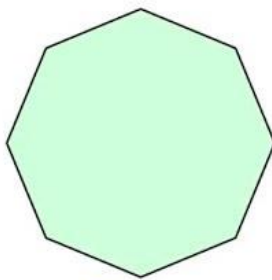
**pentagon**



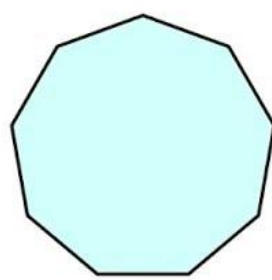
**hexagon**



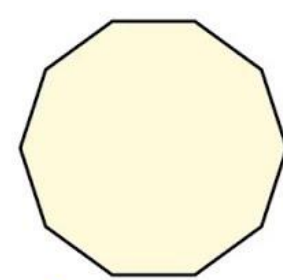
**heptagon**



**octagon**



**nonagon**



**decagon**

## Quadrilateral Family Tree

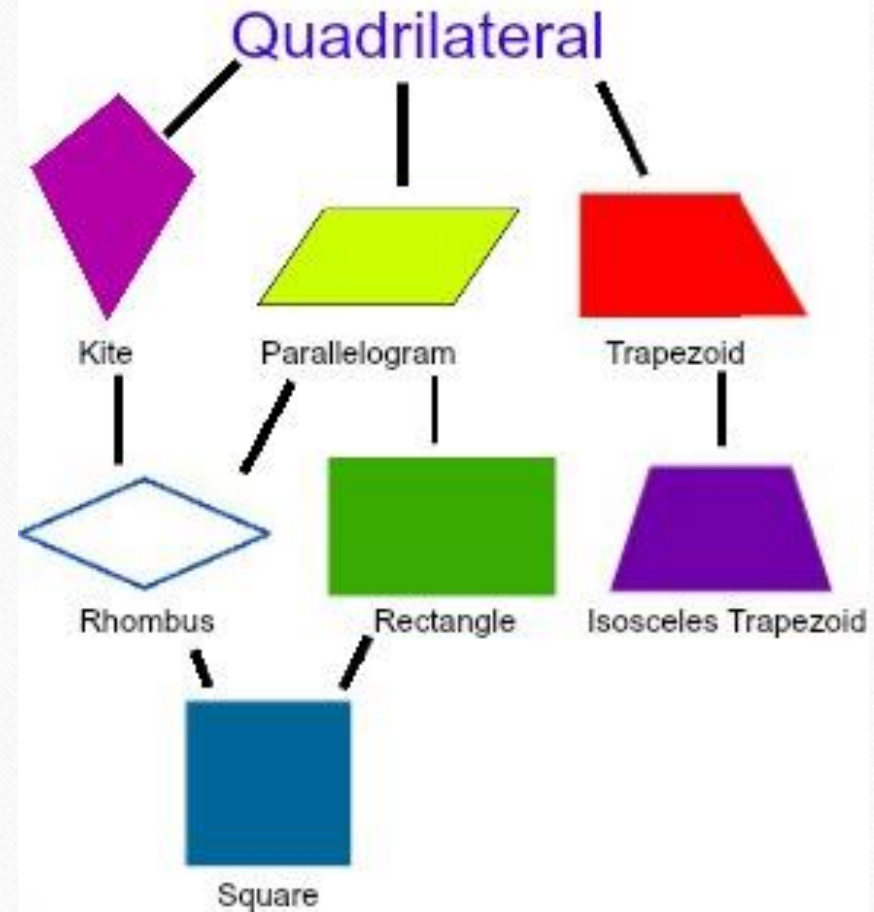
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Kite – no parallel sides

Parallelogram – 2 sets of parallel sides

Trapezoid – 1 set of parallel sides

## Hierarchy of Quadrilaterals



# AREA VS. PERIMETER

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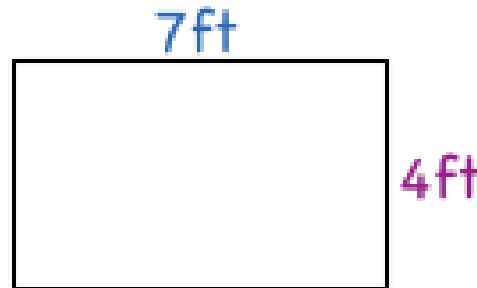
- [https://youtu.be/rSVMrPu0\\_U](https://youtu.be/rSVMrPu0_U)

## AREA FORMULA FOR SQUARES AND RECTANGLES

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LEARNING TO WRITE THE AREA  
FORMULA PROPERLY WILL ALLOW  
YOU TO USE ALGEBRA TO ALSO  
FIND MISSING SIDES OF  
RECTANGLES WHEN GIVEN THE  
AREA.

### Find the Area



$$L=7 \text{ ft}$$

$$W=4 \text{ ft}$$

$$A=LW$$

$$A=7 \cdot 4$$

$$A=28$$

## AREA OF A RECTANGLE

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ANOTHER COMMON WAY OF FINDING  
AREA OF A RECTANGLE IS USING  
 $A=BH$

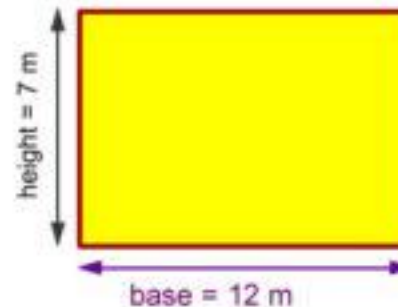
I LIKE THIS ONE BECAUSE IT ALSO  
WORKS FOR RHOMBUS AND  
PARALLELOGRAMS

(AS LONG AS YOU LEARN HOW TO  
MEASURE BASE AND HEIGHT)

## Area of Rectangle

The area of a Rectangle equals the  
base times the height.

$$A = b \times h$$



$$A = b \times h$$

$$A = 12 \times 7$$

$$A = 84 \text{ m}^2$$

# WHITE BOARD

## MUST WRITE FORMULA

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- FIND THE AREA OF A SQUARE WITH SIDE LENGTH OF 6CM.
- FIND THE AREA OF A RECTANGLE WITH A TOP OF 8 INCHES AND A SIDE OF 4 INCHES.
- FIND THE LENGTH OF A RECTANGLE WHEN THE BASE HEIGHT IS 8 FT AND THE AREA IS 72 FEET.



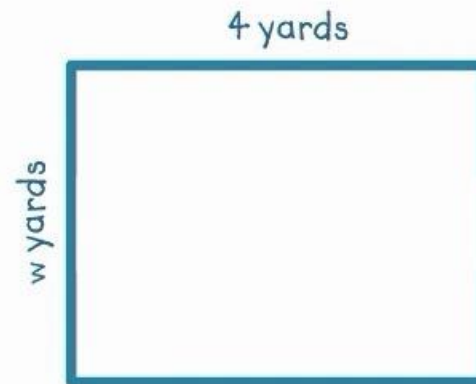
# PERIMETER

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PERIMETER CAN BE FOUND BY  
ADDING ALL OF THE SIDES  
TOGETHER.

BUT IT ALSO HELPS TO KNOW HOW  
TO WRITE IT AS A FORMULA

## Core Lesson



$$P = 14 \text{ yards}$$

$$P = 2(l) + 2(w)$$

$$14 = 2(4) + 2(w)$$

$$14 = 8 + 2(w)$$

$$14 = 8 + 2(3)$$

$$14 = 8 + 6$$

$$w = 3$$

# AREA VS PERIMETER

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- <https://youtu.be/nLY2bzRfQyo>

## Finding the area of a Parallelogram

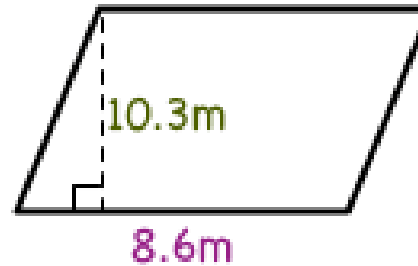
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You find the area of a parallelogram using the same formula that you can use for a rectangle. (not the length times width formula)

$$A=BH$$

HINT: remember that the height of a parallelogram is measured from the base to the opposite side at a 90 degree angle. It is not one of the sides.

Find the Area:



$$b=8.6m$$
$$h=10.3m$$

$$A=bh$$

$$A=8.6 \cdot 10.3$$

$$A=88.58$$

$$10.3$$

$$\times 8.6$$

$$\hline 88.58$$

# Video

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- <https://youtu.be/hm17lVaor0Q>

## FINDING THE AREA OF A TRIANGLE

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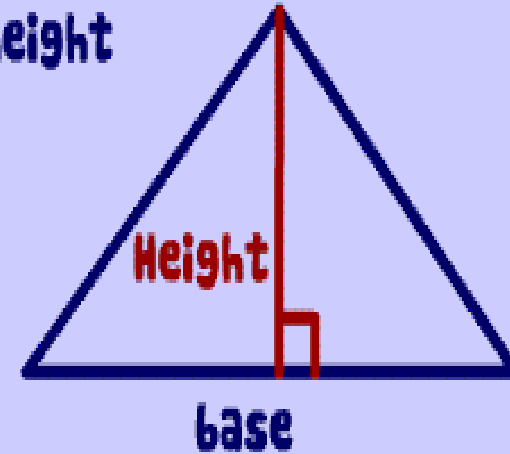
TO FIND THE AREA OF A TRIANGLE  
TAKE  $\frac{1}{2}$  OF THE BASE TIMES THE  
HEIGHT

$$A = \frac{1}{2} (B \times H)$$

Or in other words

$$A = (B \times H) / 2$$

$$\text{Area} = \frac{1}{2} \text{base} \cdot \text{height}$$



[www.mathwarehouse.com](http://www.mathwarehouse.com)

# Videos

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- <https://youtu.be/rRTXKQpblEc>

## AREA OF A TRAPEZOID

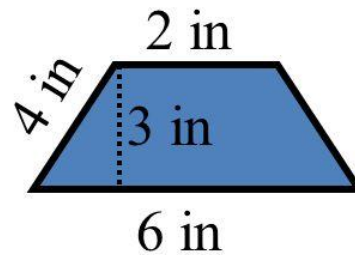
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Trapezoids have 2 bases. (sometimes people will call 1 of the bases A and the other B).

You are finding the average of the 2 bases by multiplying it by  $\frac{1}{2}$ .

Remember: multiplying by  $\frac{1}{2}$  is the same as dividing something by 2.

## Area of a Trapezoid



### Area of Trapezoid

$$A = \frac{1}{2} (b_1 + b_2) \cdot h$$

$$A = \frac{1}{2} (2 + 6) \cdot 3$$

$$A = \frac{1}{2} (8) \cdot 3$$

$$A = 4 \cdot 3$$

$$A = 12 \text{ in}^2$$

# AREA OF A TRAPEZOID

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- <https://youtu.be/ludxEuznIRs>
- <https://youtu.be/9hISqaDb6XE>



# FINDING AREA OF COMPOSITE SHAPES

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- <https://youtu.be/JTg8gyQ37pM>
- <https://youtu.be/loAA3TCNAvU>
- <https://youtu.be/Qx4c2xrmVO0>