Area

Perimeter—distance around a figure

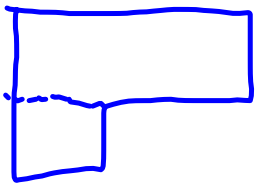
- Measured in units of length: in, ft, yd, cm, m
- Polygons: add up all of the side lengths

Area—amount of surface covered by a figure

- Measured in square units: in^2, ft^2, yd^2, cm^2, m^2

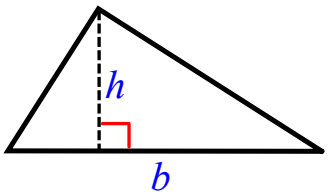
Area Addition Postulate

The area of a region is the sum of the areas of its nonoverlapping parts.

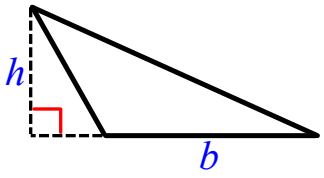


Area of a Triangle

$$A = \frac{1}{2} b \cdot h$$



remember: $b \perp h$

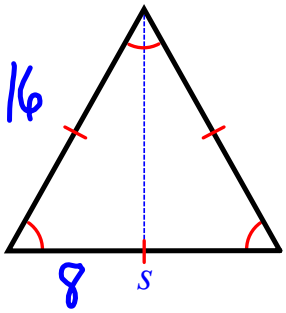


Area of a Regular Triangle

$$A = \frac{1}{4} s^2 \sqrt{3}$$

$\frac{1}{4}(16)^2\sqrt{3}$

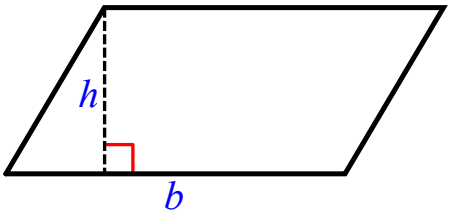
$64\sqrt{3}$

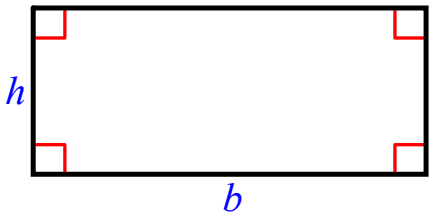


Area of a Parallelogram/Rectangle

$$A = b \cdot h$$

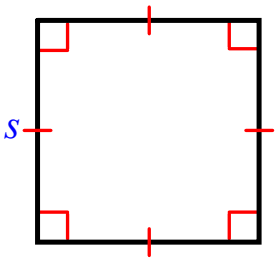
remember: $b \perp h$





Area of a Square

$$A = s^2$$

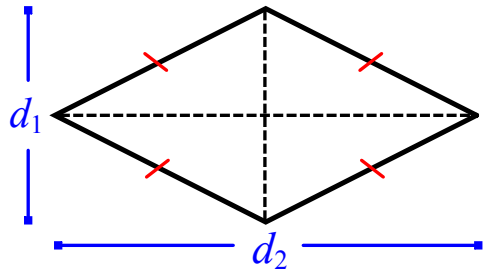


Area of a Rhombus

A rhombus is a type of parallelogram, so you can use
***A* = *b*·h**

OR

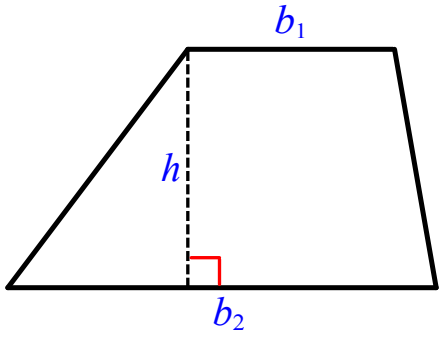
$$A=\frac{1}{2}d_1\cdot d_2$$



Height of a trapezoid—the perpendicular distance between its bases

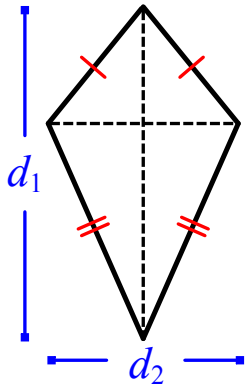
Area of a Trapezoid

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



Area of a Kite

$$A = \frac{1}{2} d_1 \cdot d_2$$

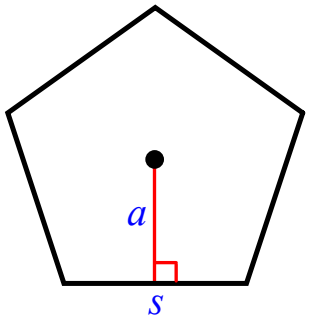


Apothem of a polygon—the perpendicular distance from the center to the midpoint of any side of a regular polygon

Area of a Regular Polygon

$$A=\frac{1}{2}a\cdot P$$

a–apothem, P–perimeter

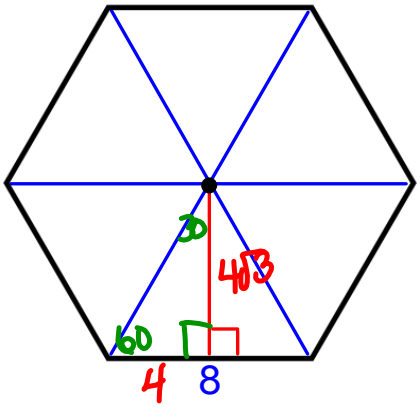


For a regular n-gon:

perimeter = number of sides × side length

$$P=n\cdot s$$

Area of a Regular Hexagon



A hexagon can be divided into 6 regular triangles

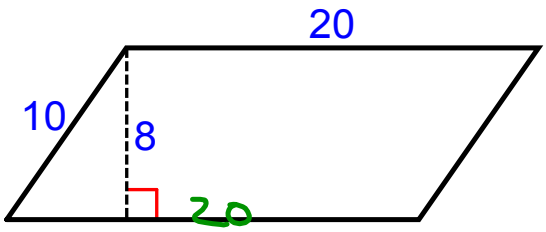
$\frac{1}{2} \cdot 8 \cdot 4\sqrt{3} \cdot 6$

$96\sqrt{3}$ units^2

Finding the area of a hexagon without using $A = \frac{1}{2} a \cdot P$

1. Find the area of one regular triangle.
2. Then multiply by 6.

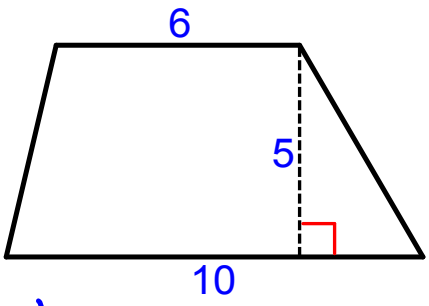
Find the area of the polygon.



$A = b \cdot h$

$A = 20 \cdot 8$

$= 160 \text{ units}^2$



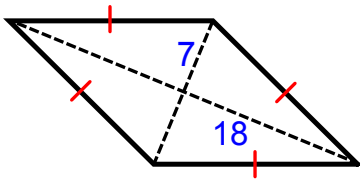
$A = \frac{1}{2}h(b_1 + b_2)$

$= \frac{1}{2}(5)(10+6)$

$= \frac{1}{2}(5)(16)$

$= 40 \text{ units}^2$

Find the area of the polygon.

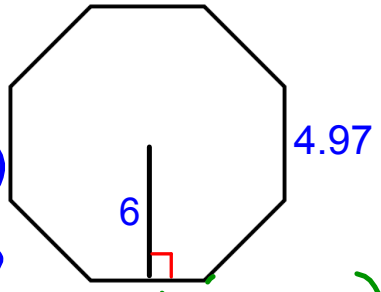


$A = \frac{1}{2} d_1 \cdot d_2$

$= \frac{1}{2}(18)(7)$

$= 63 \text{ units}^2$

$A = \frac{1}{2} a P$



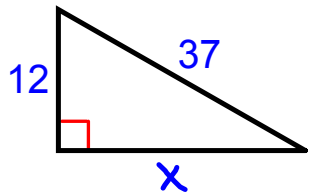
$P = 4.97(8)$

$= 39.76$

$A = \frac{1}{2}(6)(39.76)$

$= 119.28 \text{ units}^2$

Find the area of the polygon.

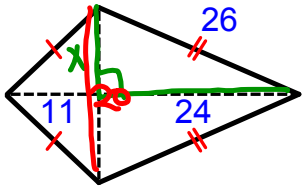


$x^2+12^2=37^2$

$x=35$

$A=\frac{1}{2}(12)(35)$

$=210 \text{ units}^2$



$x^2+24^2=26^2$

$x=10$

$A=\frac{1}{2}(20)(35)$

$=350 \text{ units}^2$

Conclusion

1. Name a Perimeter Formula and explain it to your partner.

2. Name an Area Formula and explain it to your partner.

3. Questions????

Assignment

Area Wkst #1