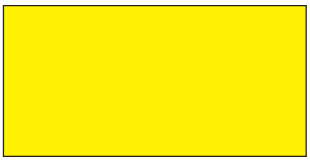
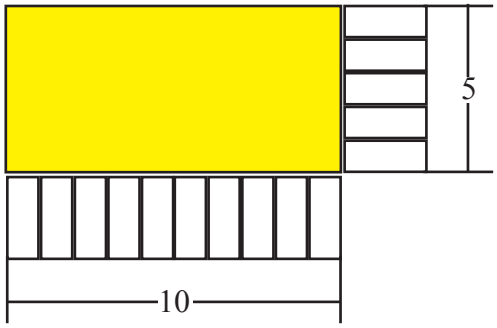
Table A

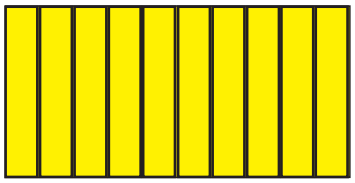


Rectangle.
- Quadrilateral
- 2 sets of parallel sides
- 4 right angles.

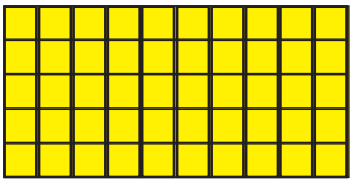


To determine the amount of the sides we make a device and count how many times it goes along the sides.

Now we divide the surface into 5 rectangles.

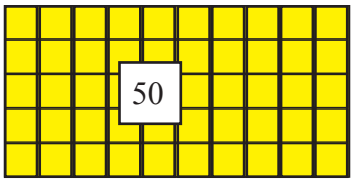


Now we divide the surface into 10 rectangles.



Now combine the 2 to get the surface area. When we count the squares we have **50 SQUARE UNITS**

Table B



5

10

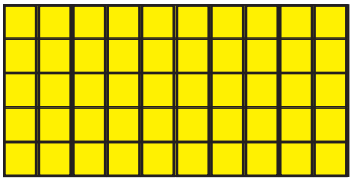
Now label the different areas.

You can write this as 5 x 10 = 50.
On back of the cards have b for base and h for height.

5 x 10 = 50.
h x b = A

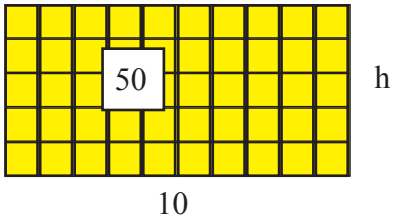
Formula or algorithm - An expression used to find an answer.
Possible Combinations. -
A = b x h
A = bh
A = b(h)
A = (b)h
A = (bh)

Inverse Formulas.



Area of rectangle is equal to bh or (A = bh).

If we know the base is 10 and the answer is 50 we can fiugure it out the height by the following steps.



$50 = 10h$

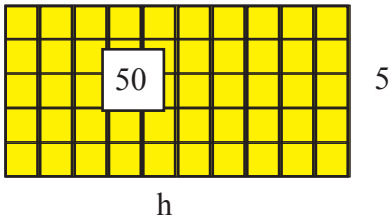
$\frac{50}{10} = h$

If the area is 50 and teh equation is 10 x h. How can we write it as a formula to find h (what is the opposite of multiplication?).

We can find teh height(h) by dividing the area of the rectangle (50) by the base(10).

We know that 50 divided by 10 is 5 and we know that 10 x 5 is 50.

If we know the height is 5 and the answer is 50 we can fiugure out the base by the following steps.



$50 = 5b$

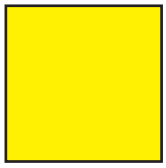
$\frac{50}{5} = b$

If the area is 50 and teh equation is 5 x b. How can we write it as a formula to find b (what is the opposite of multiplication?).

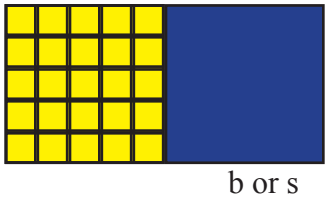
We can find teh base(b) by dividing the area(50) by the height(5).

We know that 50 divided by 10 is 5 and we know that 10 x 5 is 50.

Area of a Square



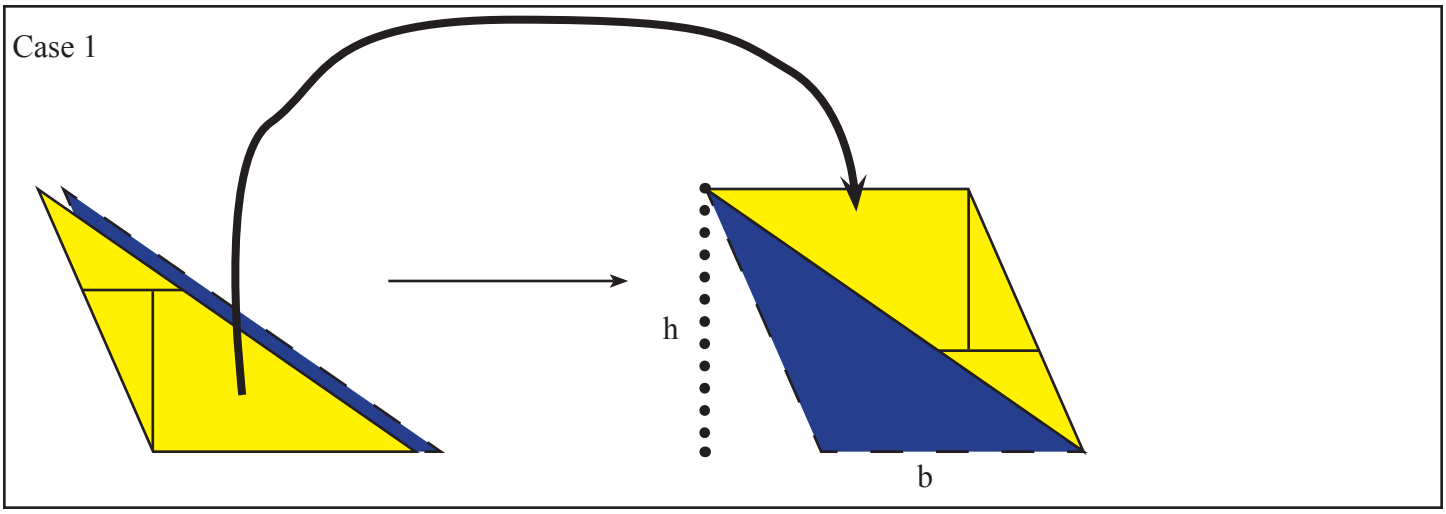
Square
- Quadrilateral
- 2 sets of parallel sides
- 4 right angles.
- All sides are equal

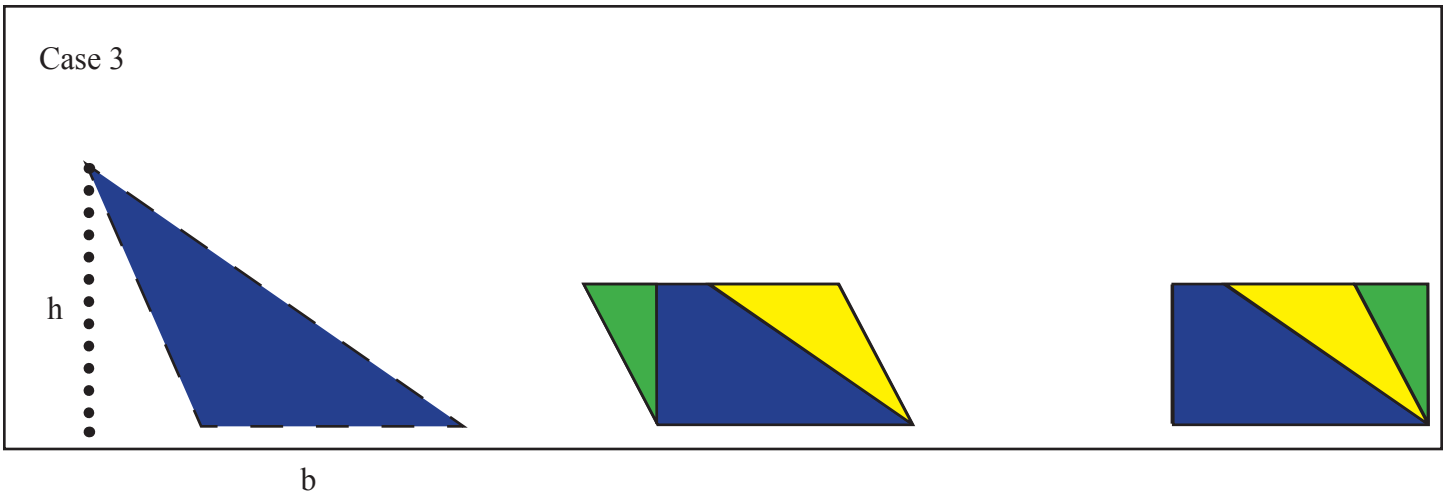


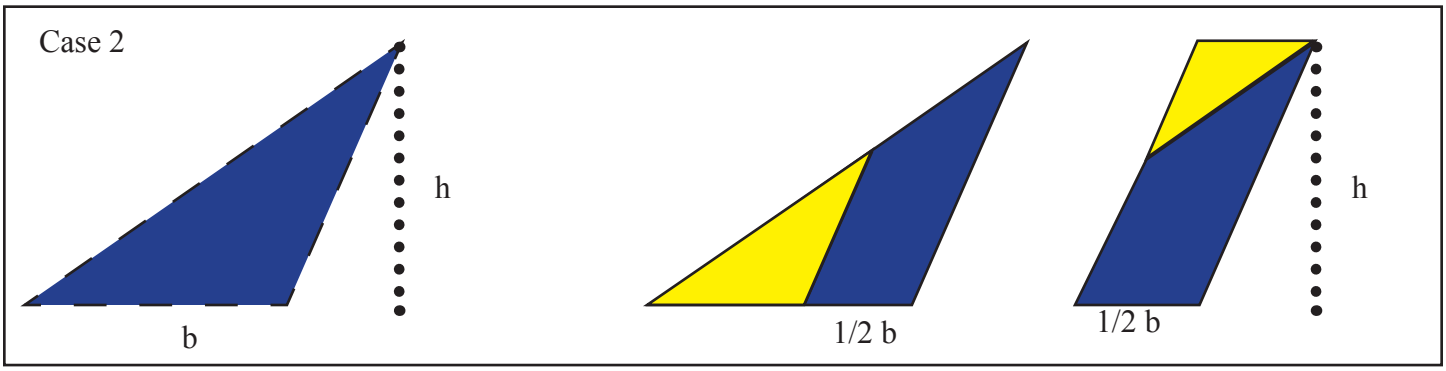
Since we know that the area of a rectangle is A = b h, we can replace the b and the h with an s (we do this because we know that a square is a special rectangle where all sides are equal).

$A = bh \longrightarrow A = s \times s$ or s^2

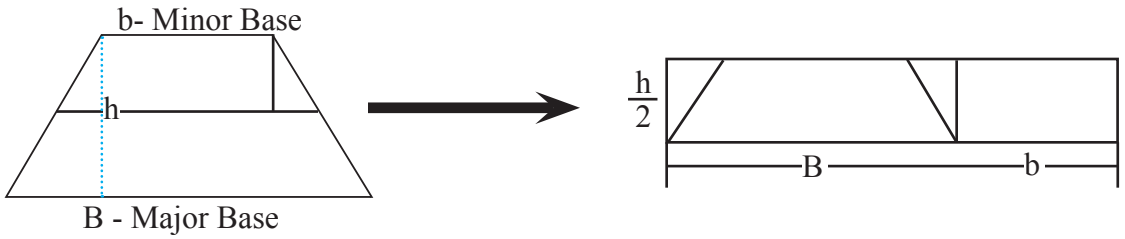
Area of a Obtuse Angle Triangle.



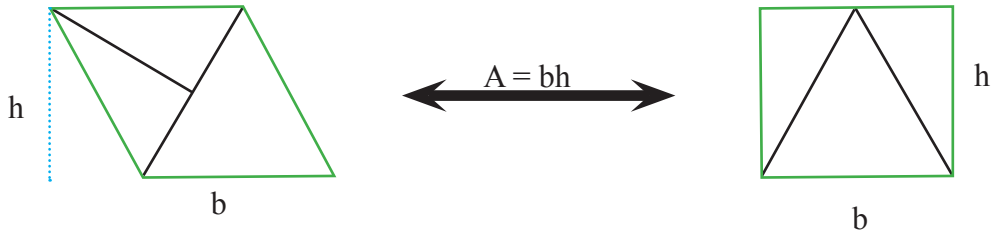




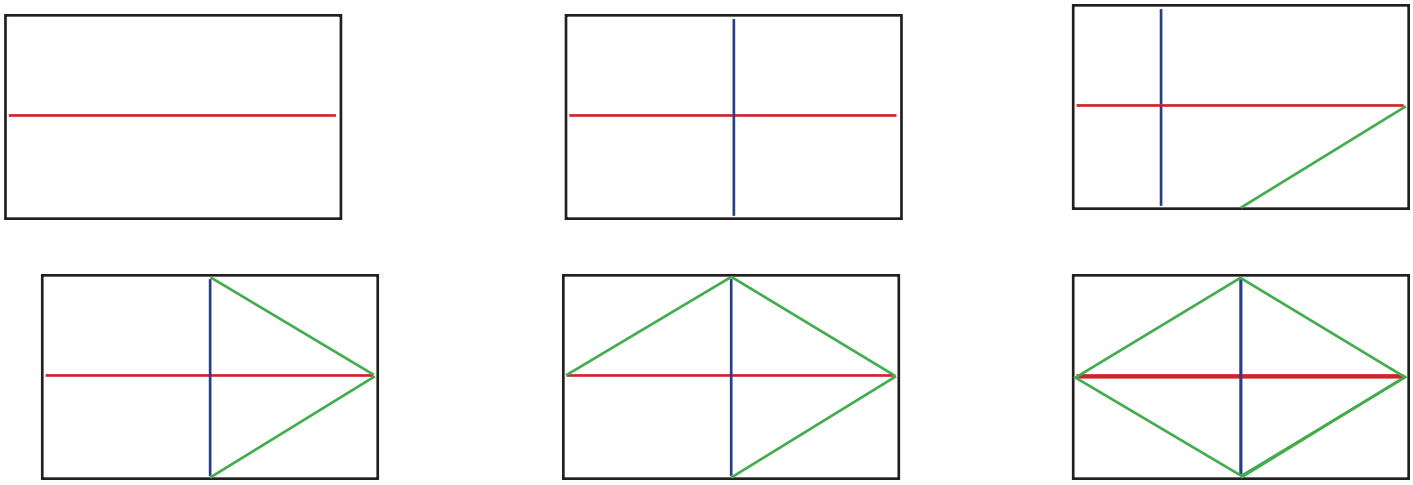
$$A = (B + b) \frac{h}{2}$$

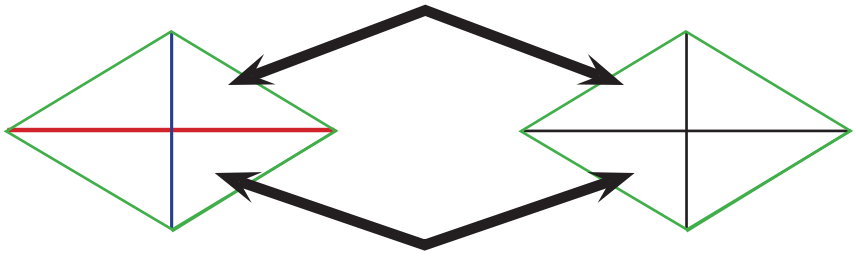


Area of a Rhombus

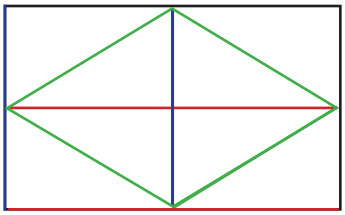


Creating Rhombus.



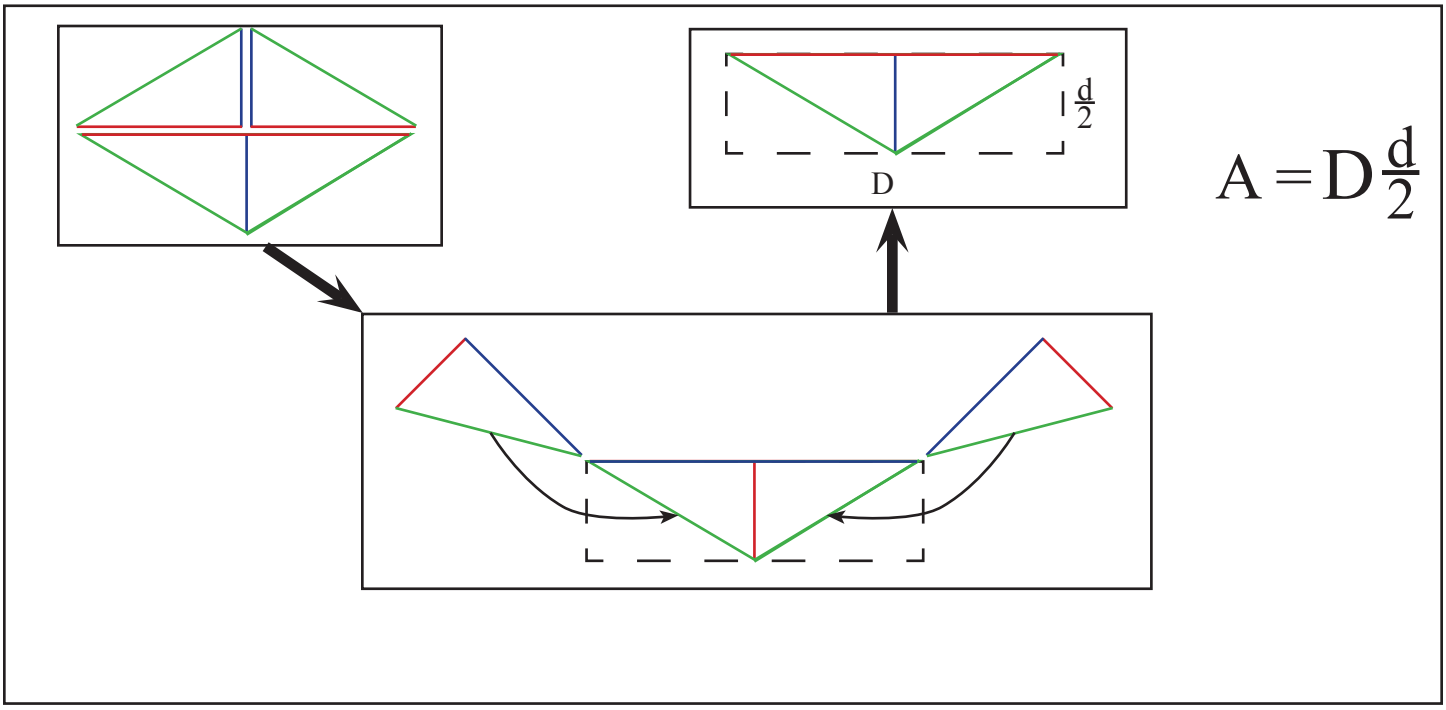


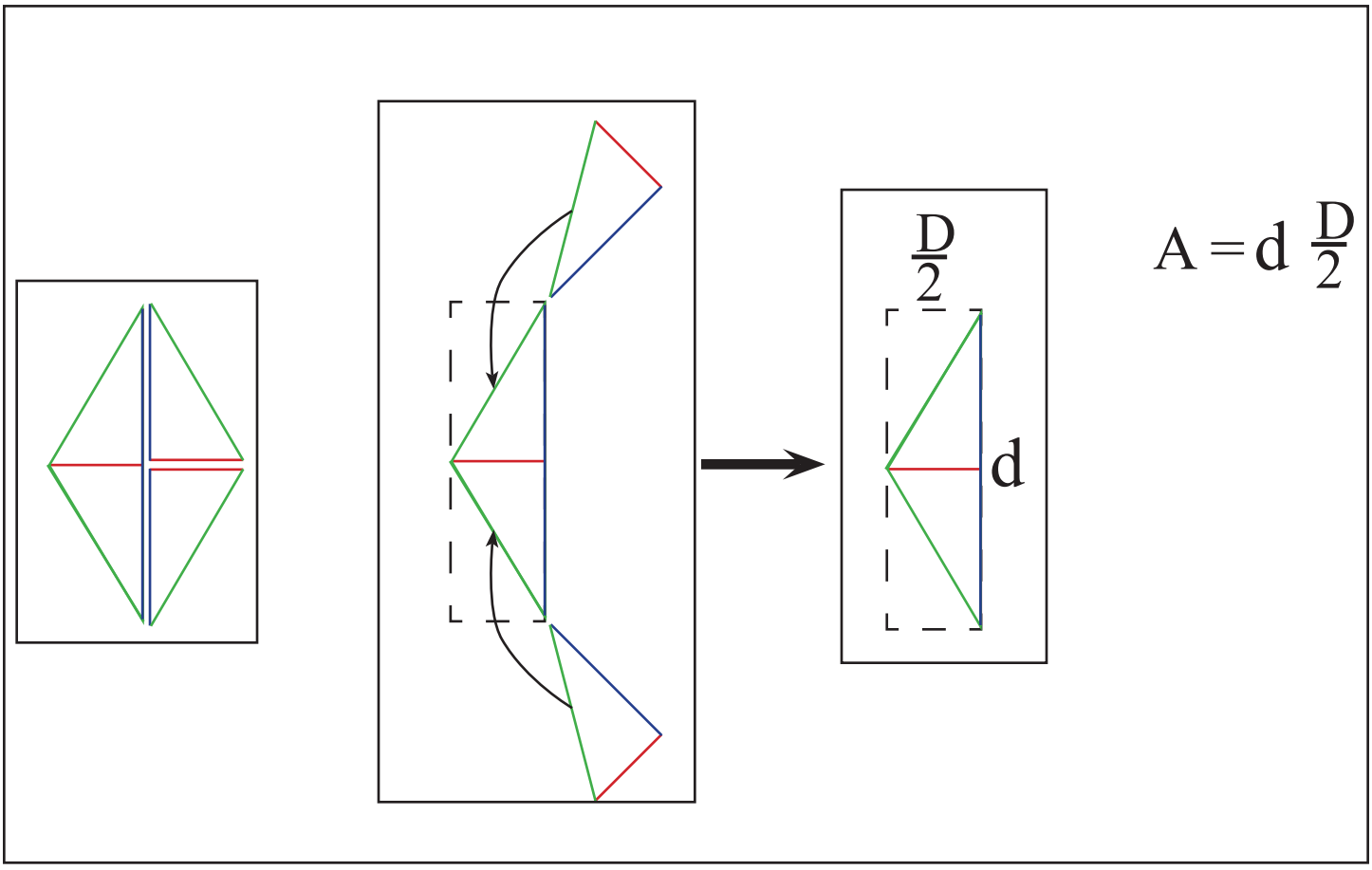
b = Minor Diagonal
(d)



b = Major Diagonal
(D)

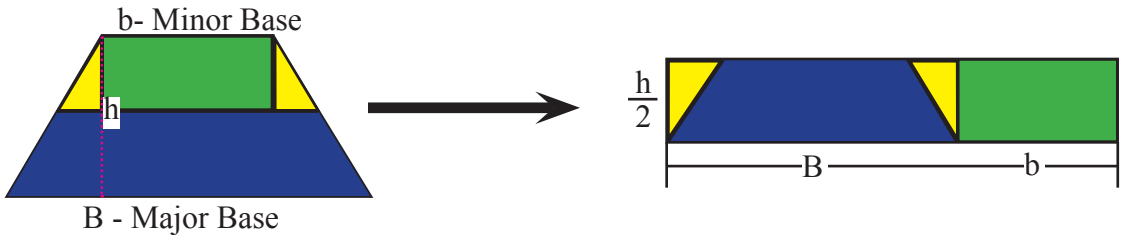
$$A = \frac{Dd}{2}$$


d/2
D
A = D d/2


D/2
d
A = d D/2

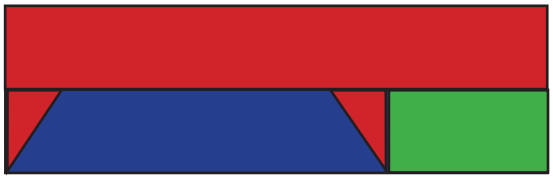
Case 3

$A = (B + b) \frac{h}{2}$

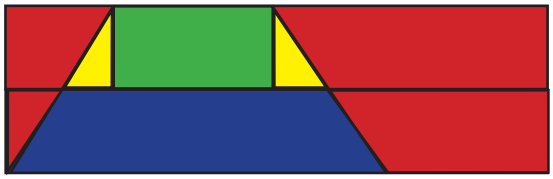


Case 1

Multiply the red triangle in inset #10 by 2. Create as paper rectangle.



Base equals the Major Base and Minor Base added together.



Area of the trapezoid is equal to the Major base + Minor Base x the height. All of that divided by 2.

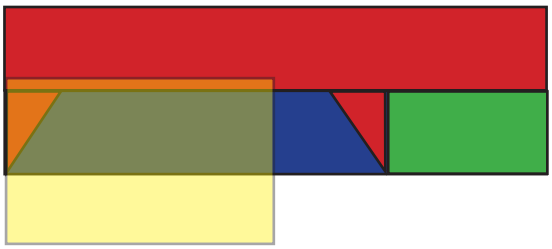
$A = \frac{(B + b)h}{2}$

Case 2

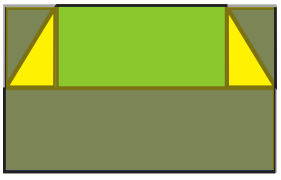
$A = \frac{(B + b)}{2} h$

*Note: The Trapezoid fits inside the  them equivalent. thus making

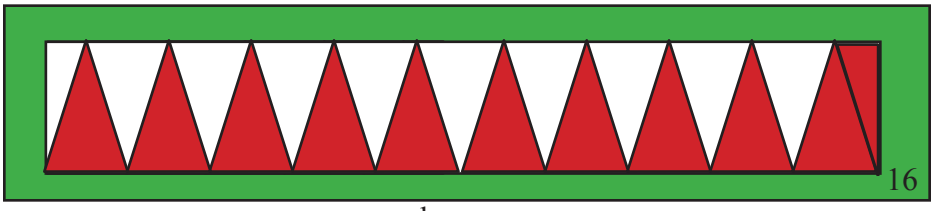
**Note: The square is the rectangle from case1 folded in 1/2 horizontally.



1/2 the area of the larger rectangle so B + b = the base of the rectangle divided by 2.



The height of the smaller rectangle is equal to the height of the trapezoid.

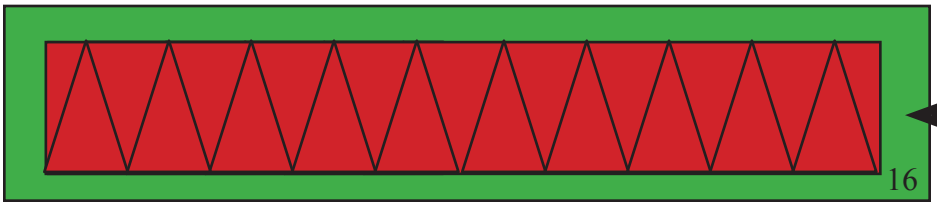


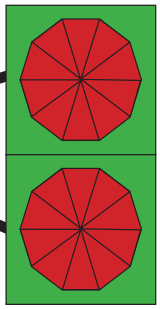
h = a

Height of the rectangle is equal to the apothem.

b = p

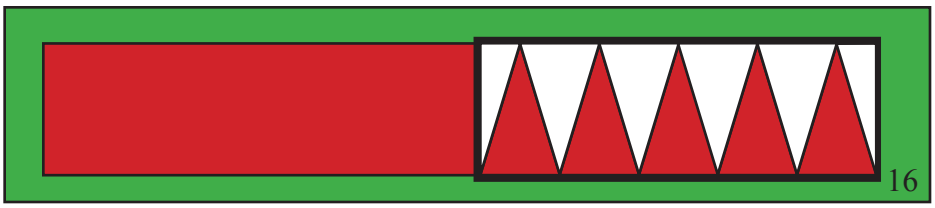
Base of 10 triangles (perimeter of the regular polygon) is equal to the base of rectangle.

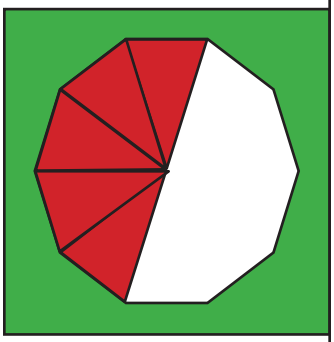




Triangles of both regular polygons make the area of the rectangle.

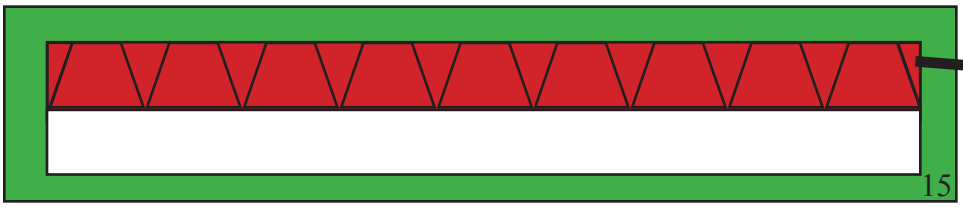
Area of the Regular Polygon is : $A = \frac{p\,a}{2}$

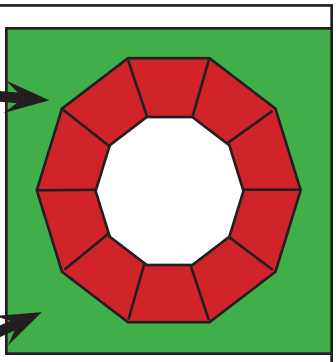




Base of 1/2 the rectangle is equal to 1/2 the perimeter of the Regular Polygon. Height is equal to the apothem of the Regular Polygon.

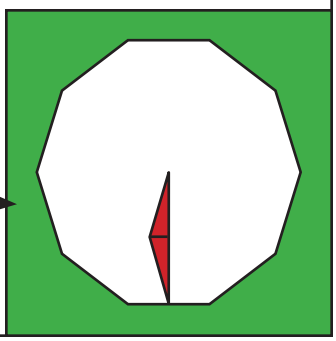
Area of the Regular Polygon is : $A = \frac{p}{2}a$





h=a

b = p

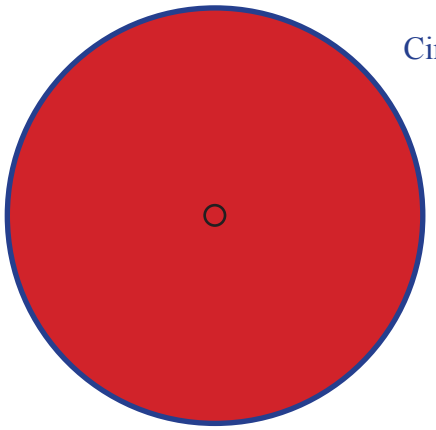


Perimeter of regular polygon is equal to base of rectangle.

Height of the rectangle is equal to 1/2 of the apothem.

Area of the Regular Polygon is : $A = p\,\frac{a}{2}$

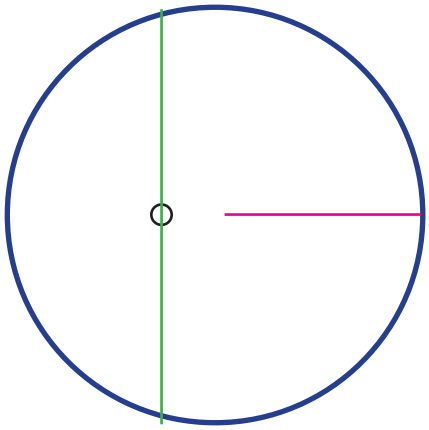
Explain each key word so the child understands what each word means.



Circumference - curved line that bounds the circle.

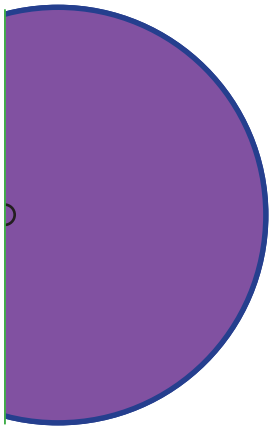
Surface: area within the circumference (contains the center)

Center - exact middle of the circle.



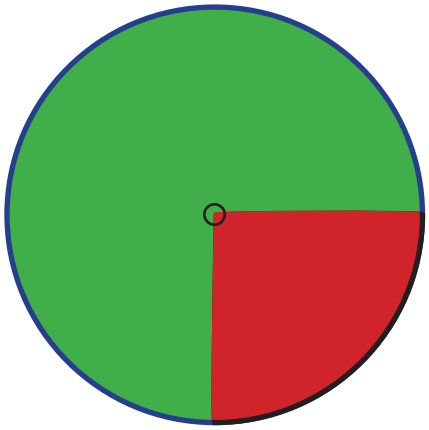
Radius, Radii - the line that connects the center to any point on the circumference

Diameter - When you have 2 radii back to back with one another. Goes from 1 point of the circumference thru the center to another.



Semi Circumference - the part of the circumference the diameter cuts in 1/2.

Semi Circle - 1/2 of the interior space.

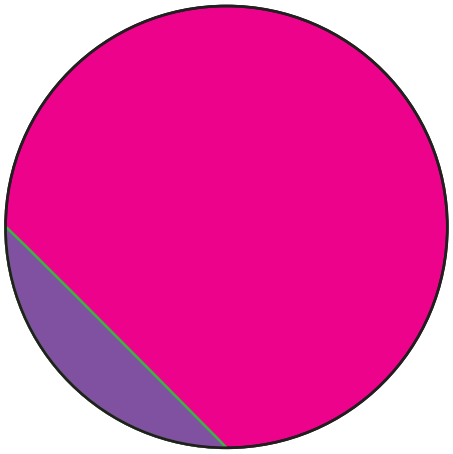


Major Sector - The outer part of the surface area excluding the Minor sector.

Minor Sector - The small section that is inside the arc and 2 radii.

Major Arc - The remainder of the circumference.

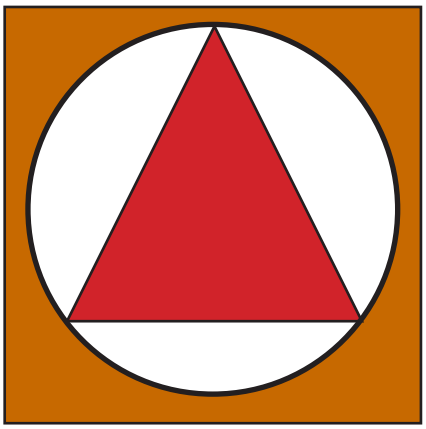
Minor Arc. - a closed segment of a differentiable curve in the two-dimensional plane.



Major Segment - The large surface area that does not include the Minor Segment.

Minor Segment - The small area in between the chord and the circumference.

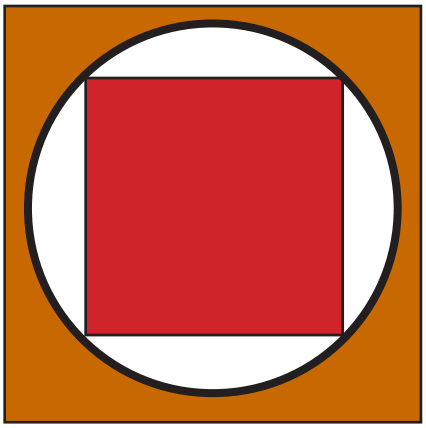
Chord - a line segment joining two points on a curve.

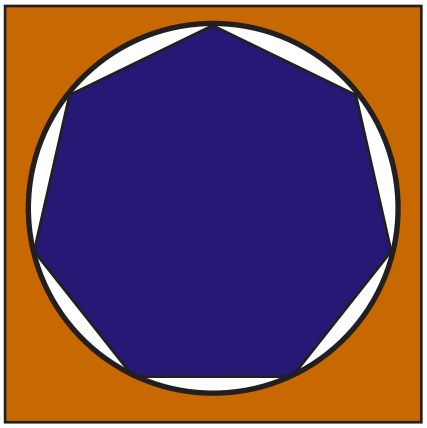


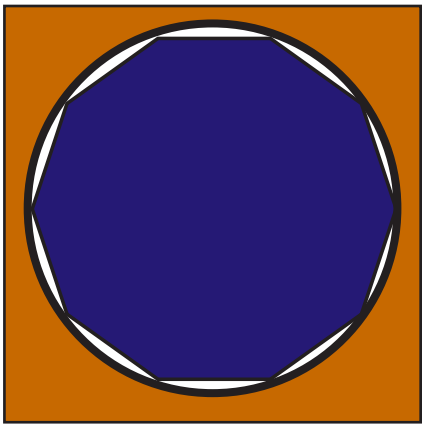
Inscribed - triangle fitting inside the circle.

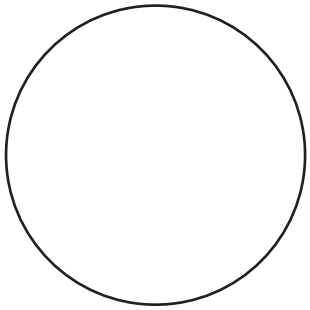
Segment - the space that is formed from a line that goes from the outsides of the circle (but not through the center).
The sides of segments is determined on the number of sides the shape has.

As the sides increase, the segments increase but the area of the segments decrease.



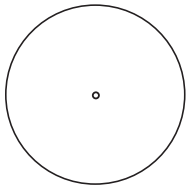
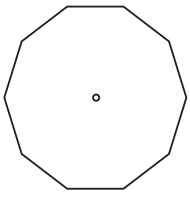


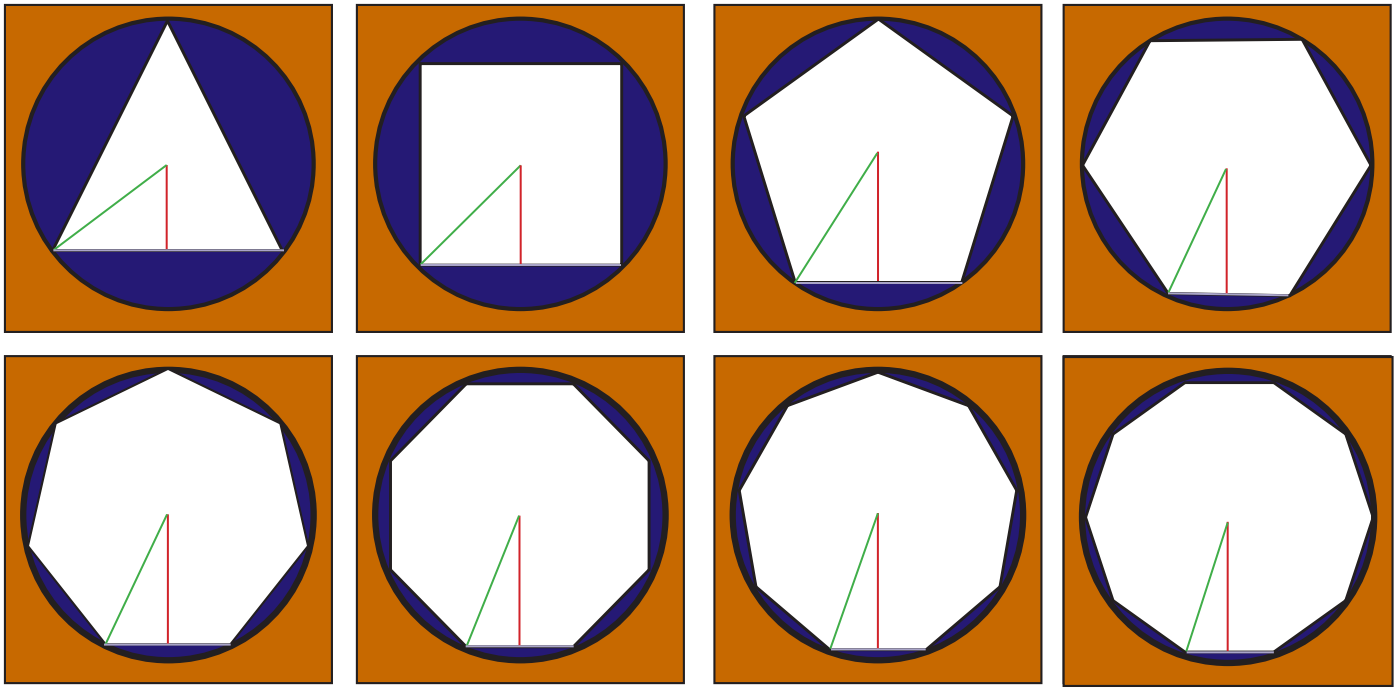




The circumference is created by the number of points along the outside.

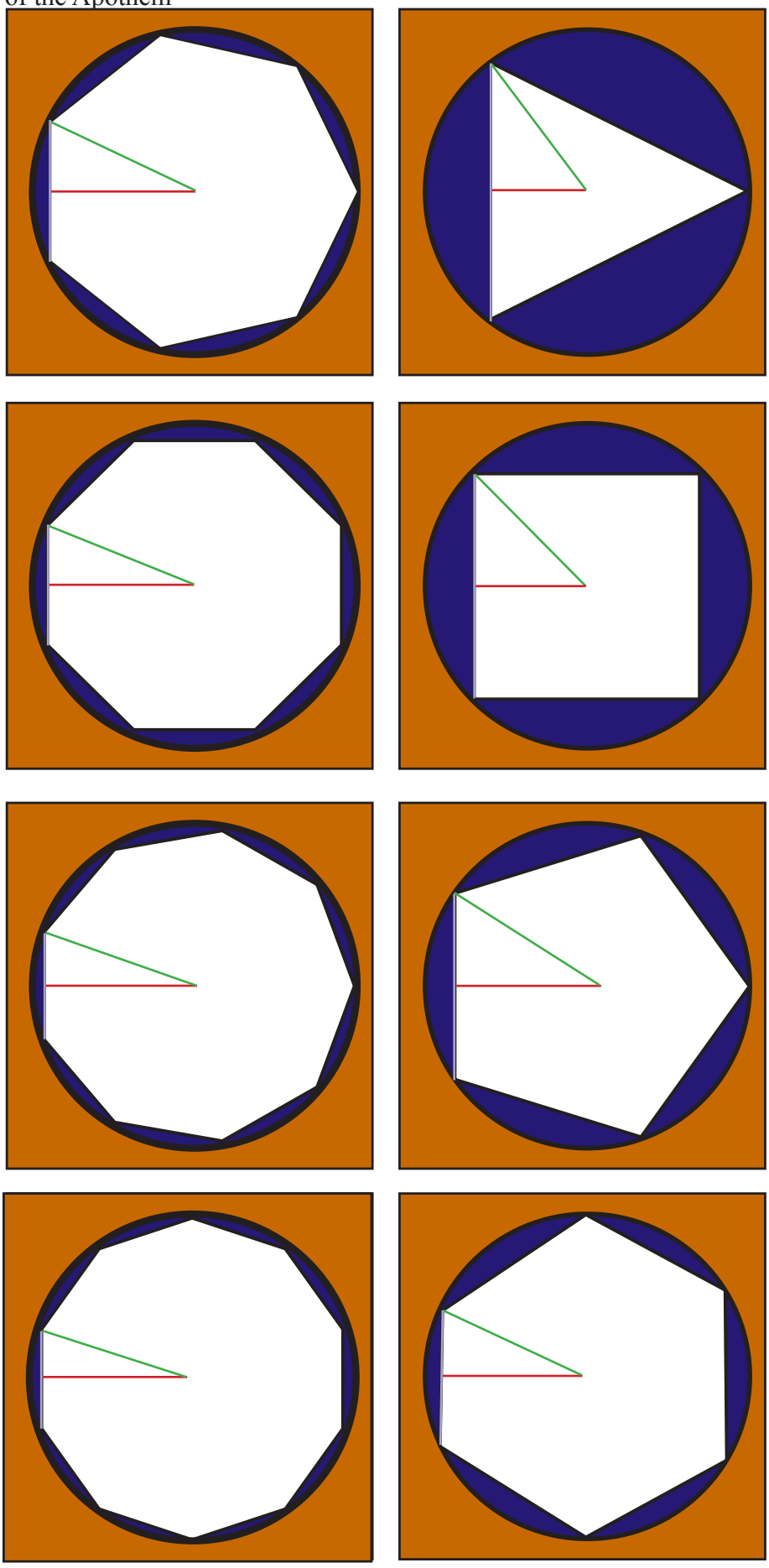
Aka THE ULTIMATE POLYGON!

	Center	Circumference	Points	Diameter
	Center	Perimeter	Side	Diagonals



Name of Polygon	Length of base (side)	Length of Apothem	Length of Radius
Triangle	8.6cm	2.5cm	5
Square	7	3.5	5
Pentagon	6	4	5
Hexagon	5	4.3	5
Heptagon	4	4.5	5
Octagon	4	4.5	5
Nonagon	3.4	4.5	5
Decagon	3.25	4.5	5

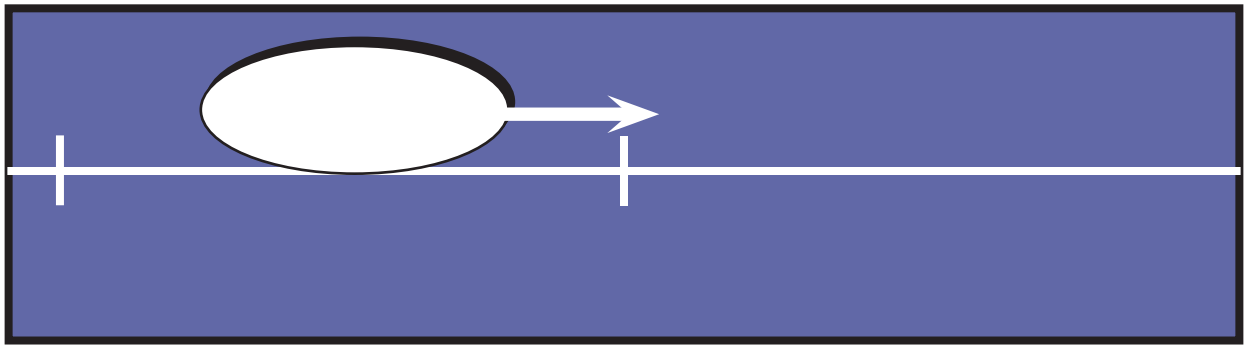
Decrease Increase Consistent



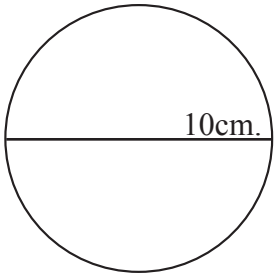
What happens to the base as the sides increase?

What happens to the Apothem as the sides increase?

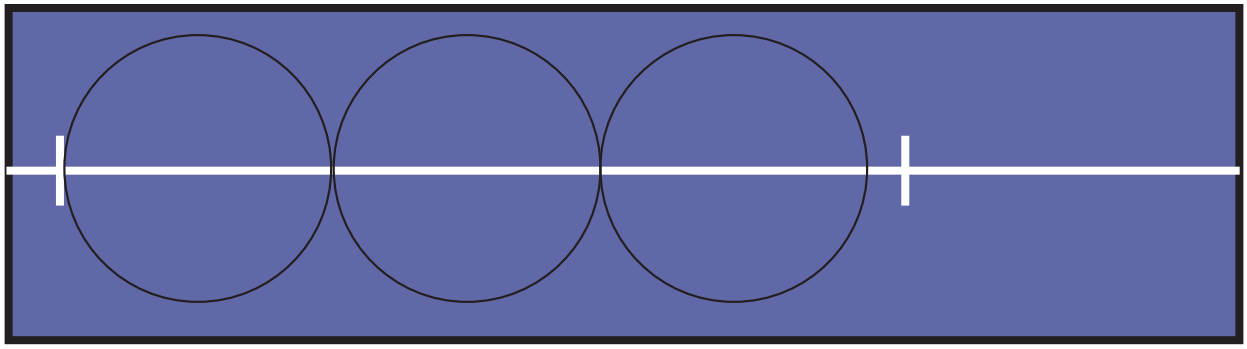
What happens to the radius as the sides increase?



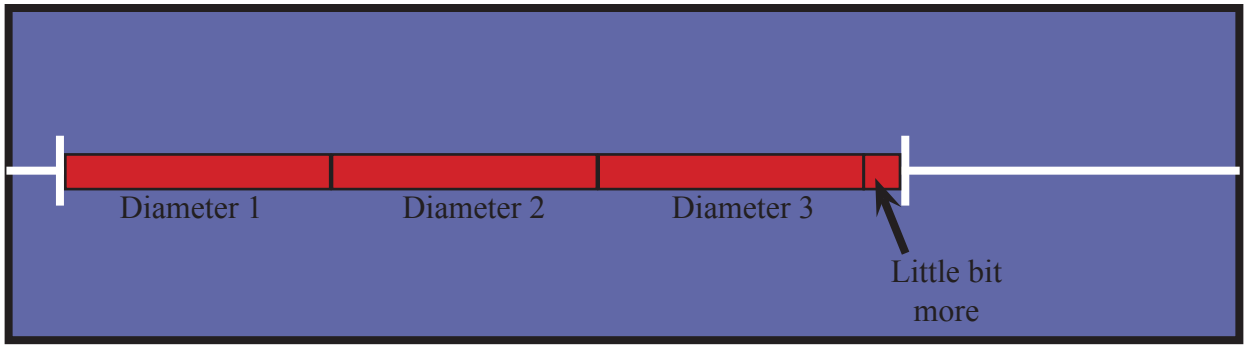
Roll circle along white line till you do 1 full rotation. Mark it.



Measure the diameter now.



Measure the diameter against circumference. MEASURE A LOT OF DIFFERENT CIRCLES.
Diameter fits in 3 time and a little bit more.



The little bit more is always one seventh of the circumference.

Take the little bit more and put onto diameter divided into 100th and we find out it take up 14.
From there we can say that the Circumference is the diameter x 3 and 14 hundredth.

Diameter divided into 100ths.

$$\text{Circumference} = d \cdot 3.14$$

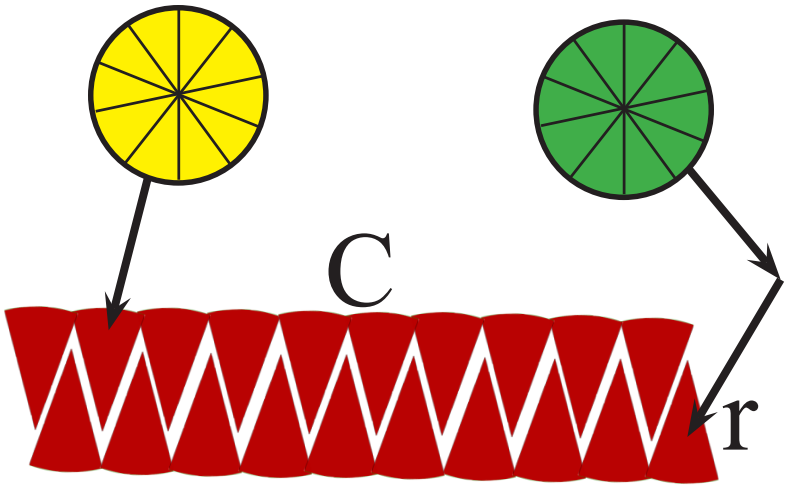
We now name the little bit more (3.14159 26535897932384626433832795028841971693993751O) or

$$\pi \quad \text{Pi}$$

$$\text{Circumference} = d \cdot 3.14 = \pi d$$

$$A = \frac{\pi d}{2} \quad \text{or} \quad A = \frac{cr}{2} \rightarrow A = \frac{\pi d(r)}{2} \rightarrow A = \frac{2\pi r(r)}{2}$$

$$A = \frac{2\pi r^2}{2} \rightarrow A = \pi r^2$$

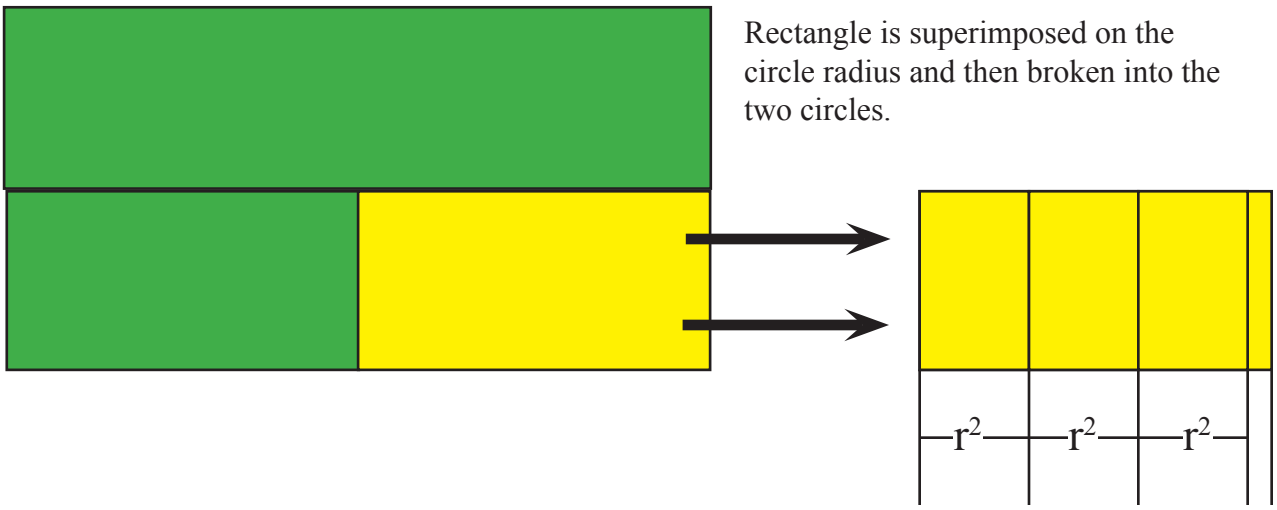


Area of the "rectangle" would then be broken into the formula of:

$$A = cr$$

Since it is made up of 2 circles combined we divide by 2.

$$A = \frac{cr}{2}$$



Rectangle is superimposed on the circle radius and then broken into the two circles.

Little bit more or π