# 11.1

# Areas of Polygons

**Area of a Square** = _____

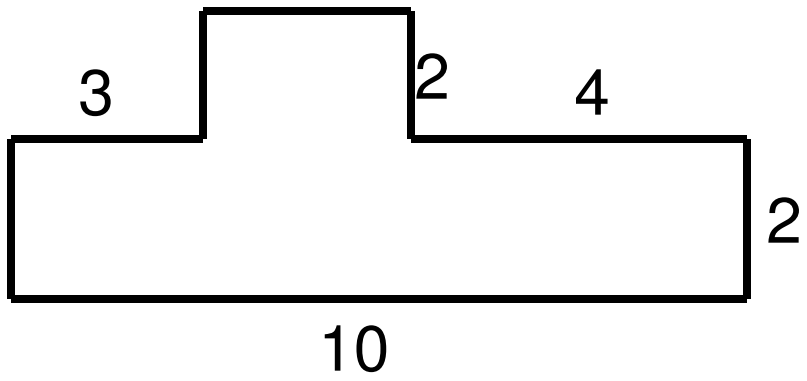
**Area of a Rectangel** = _____

Postulate 18: _____

_____

If we are finding the area of a shape we do not know:

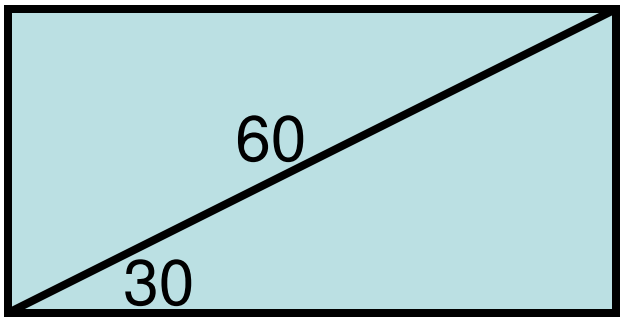
- _____
- _____
- _____



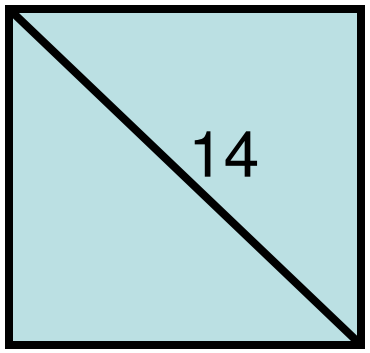
Classify as True or False:

1. If 2 figures have the same area then they must be congruent.
2. If 2 fingures have the same perimeter, they have same area.
3. If two figures are congruent they have same area.
4. Every square is a rectangle.
5. Every rectangle is a square.
6. The base of a rectangle can be any side.

Examples:




Find the Area of the rectangle.




Find the Area of the square.

# 11.3

# Areas of Parallelograms Triangles and Rhombuses

# Formulas

**Area of a Parallelogram**= _____

**Area of a Triangle** = _____

**Area of a Rhombus** = _____

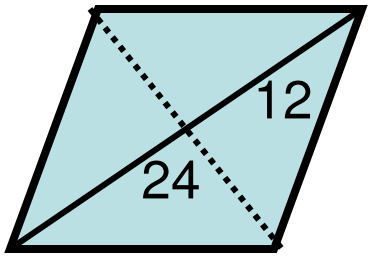
Hint : file this one away.

Examples:  Find the Area

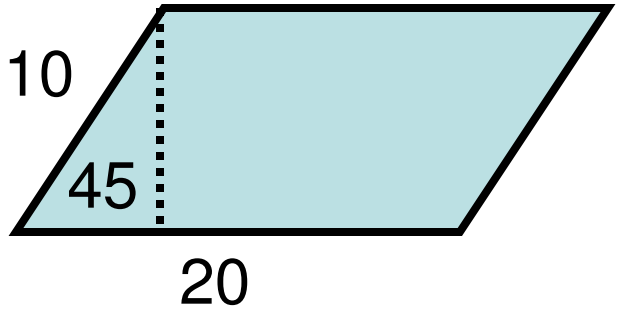
1. Rhombus with Diagonals of 6 & 8.

2.  Triangle with a base of 6 and height of 10.

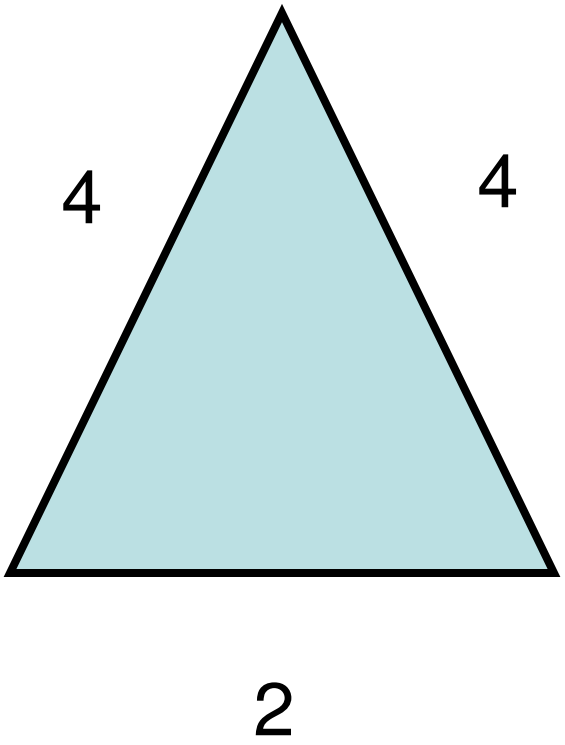
3. Rhombus with a Perimeter of 52 and a diagonal of 24.

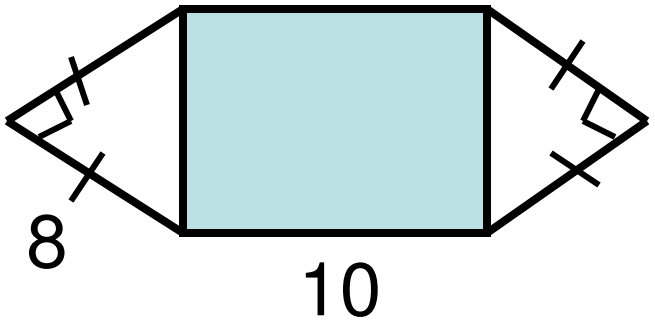



4. Parallelogram with sides of 10 and 20

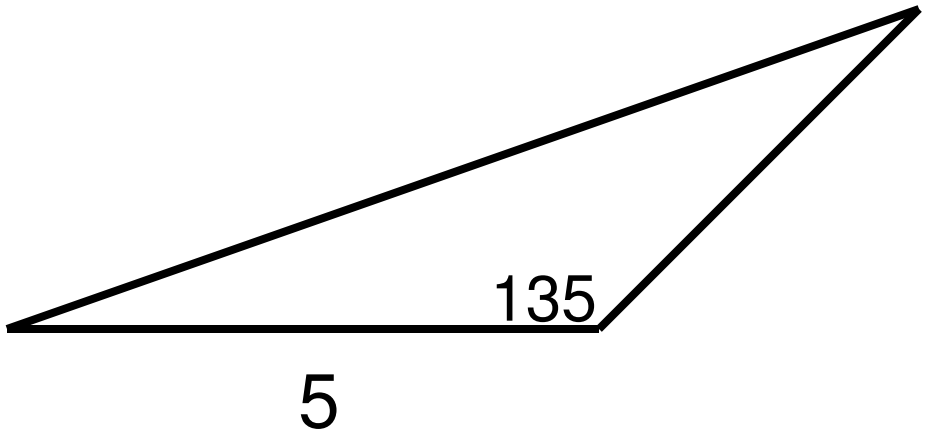


5. Find the area of an isosceles triangle with congruent sides of 4 and a base of 2.






Find the Area:




Find the Area:

# 11.3

# Areas of Trapezoids

What was a Trapezoid?

_____

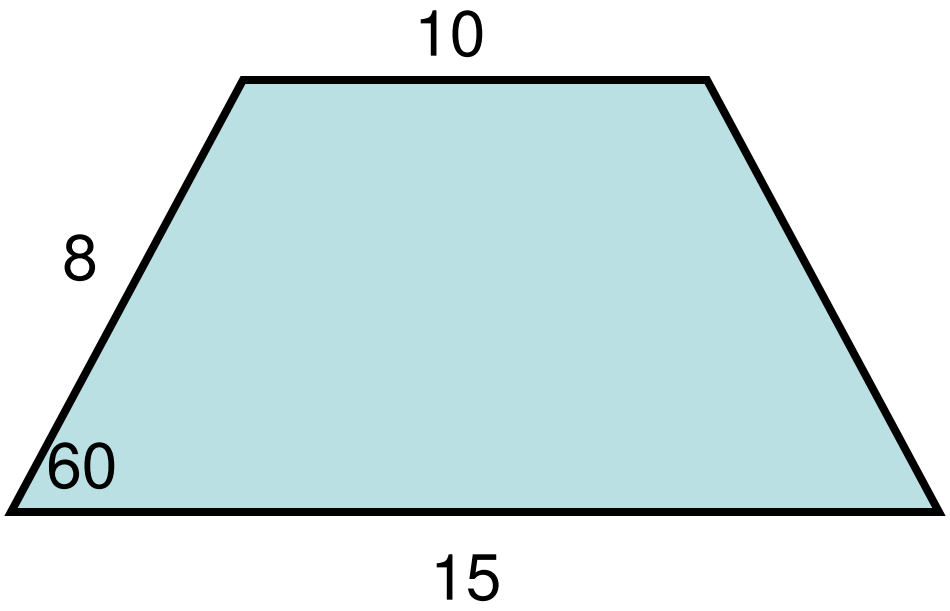
What was the median?

_____

**Area Trapezoid:** _____

_____

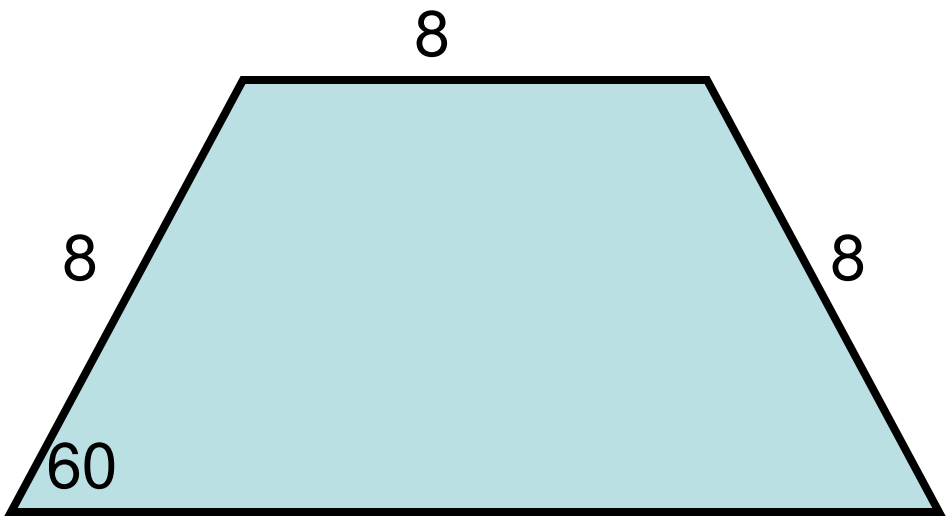
Examples:

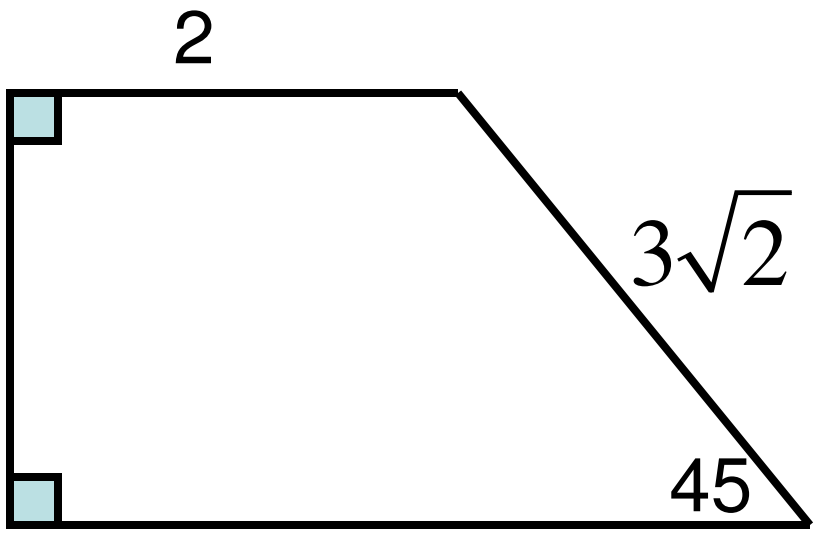


A trapezoid has an area of 75 and a height of 5. How long is the median?

Which formula?

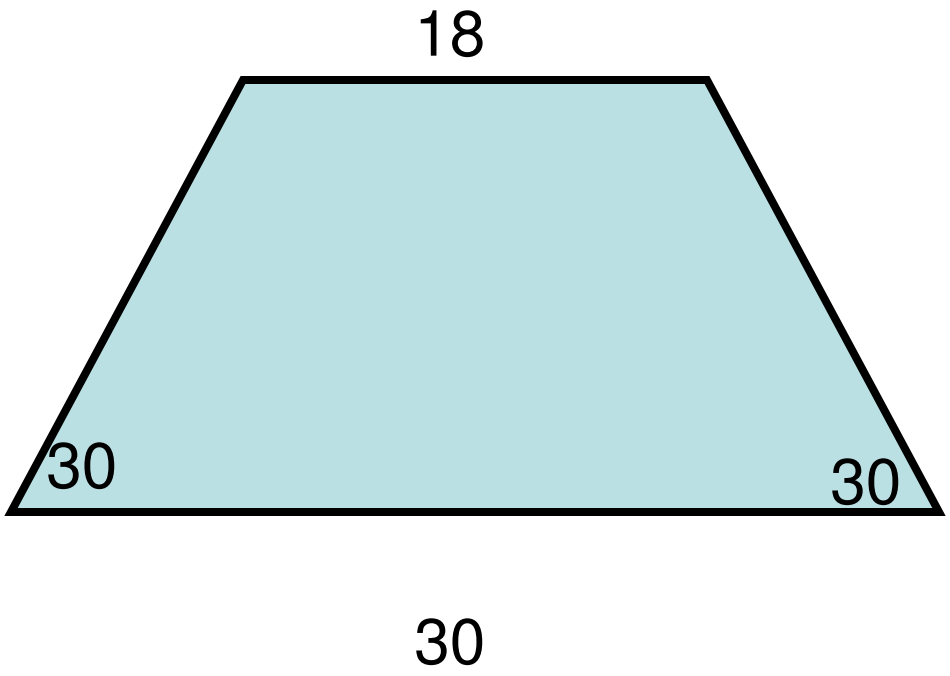
Examples:






Find the Area:

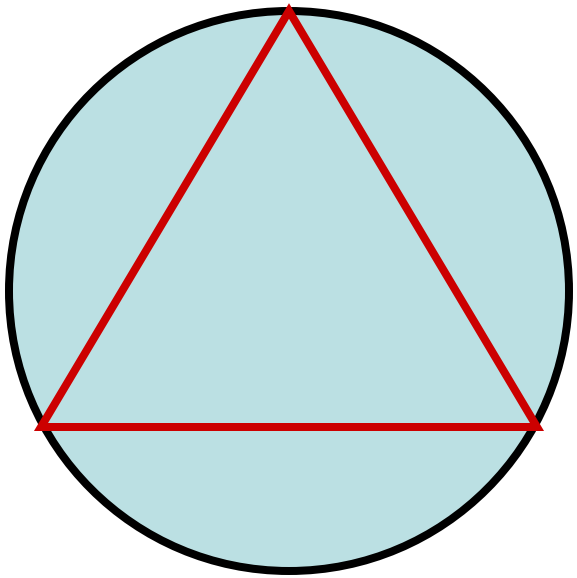
Examples:



# 11.4

# Areas of REGULAR Polygons

Think of all REGULAR polygons as being inscribed in a circle.



Definitions:

**Center**: _____

**Radius** : _____

_____

**Central Angle** : _____

**Central Angle** : _____

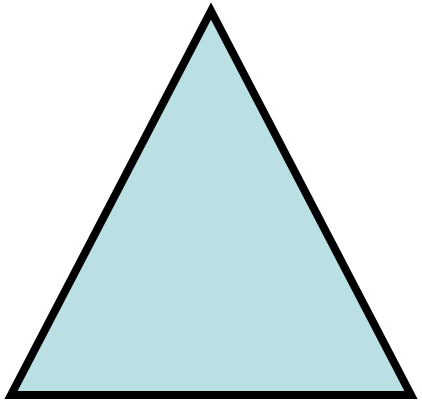
_____

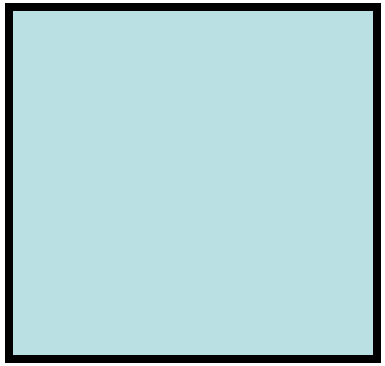
**Area of Regular Polygon=** _____

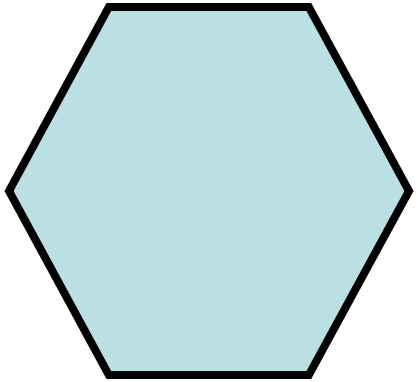
What Shapes can we use this for?

Finding the Central Angle is important because in some polygons it will form special triangles with the Radius and Apothem (ie 45-45-90 or 30-60-90)

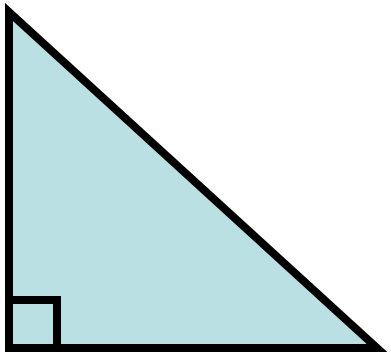
**Central Angle** = _____

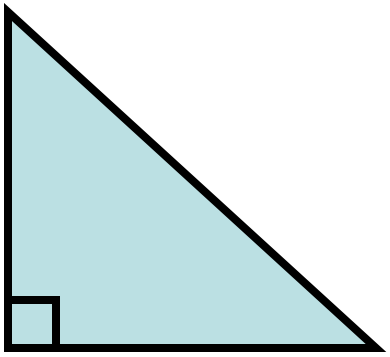


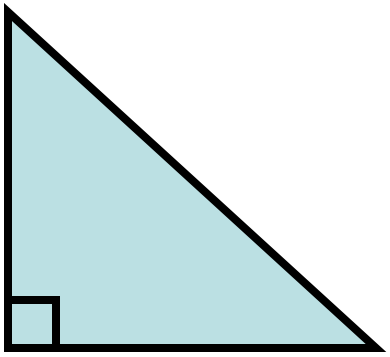




CA=_____ CA=_____ CA=_____





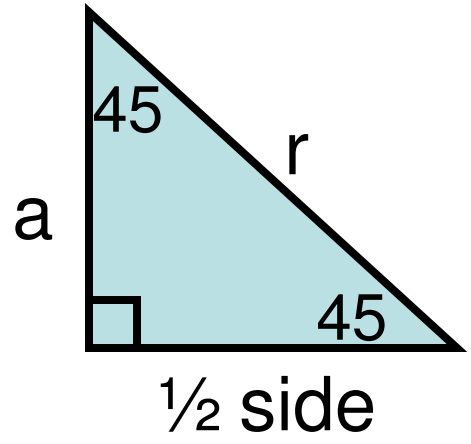


# Examples:

1. Find the Area of a Regular hexagon with an apothem of 6.

| | r | a | P | A |
|---|---|---|---|---|
| 1) | $5\sqrt{2}$ | | | |
| 2) | | $\sqrt{3}$ | | |

Complete the Chart for a Square:



Complete the Chart for a Triangle:

| | r | a | P | A |
|---|---|---|---|---|
| 1) | 8 | | | |
| 2) | | | $6\sqrt{3}$ | |

Complete the Chart for a Hexagon:

| | r | a | P | A |
|---|---|---|---|---|
| 1) | 8 | | | |
| 2) | | | $24\sqrt{3}$ | |

# 11.5

# Circumference and Areas of Circles

Formulas:

# Examples:

1. The radius of circle A is 3 times the radius of circle B. Compare the circumferences of circle A to circle B.

2. Now compare the Areas of A to B

Fill out the Chart for circle M.

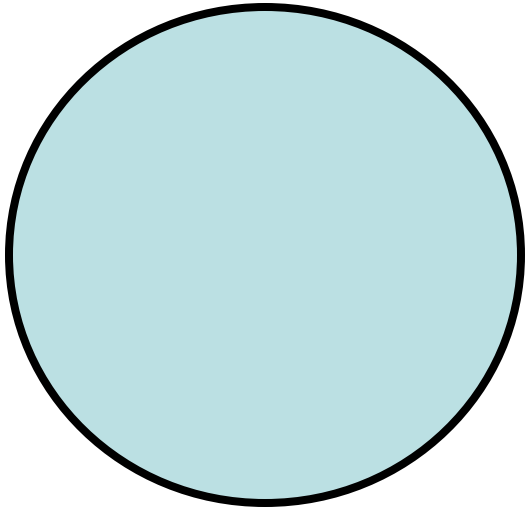
| | r | D | C | A |
|---|---|---|---|---|
| 1) | $15$ | | | |
| 2) | | $8$ | | |
| 3) | | | $26\pi$ | |
| 4) | | | | $100\pi$ |

3. The diameter of the world's largest circle is 16m. Find the circumferences of the crust.

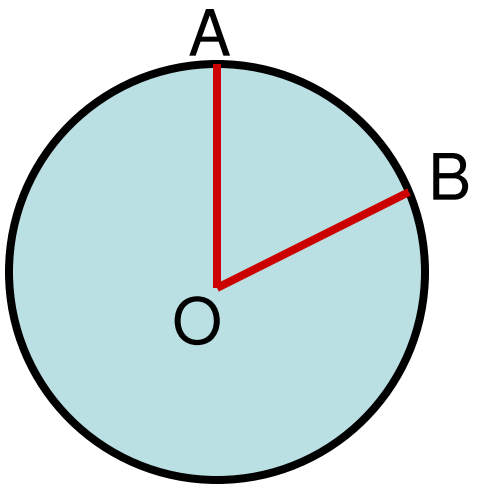
# 11.6

# Arc lengths and Areas of Sectors

**Sector**: _____



# Formulas:



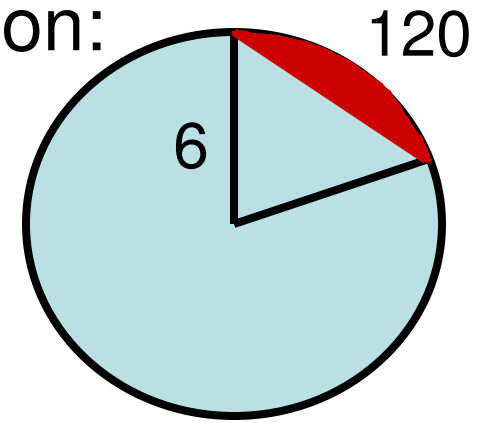
1. The radius of a circle is 3,  and the central angle is 50.

Find the length of the arc:

Find the area of the sector:

2. The area of a sector of a circle is $\frac{5}{8}\pi$ and the central angle is 9 degrees. Find the radius of the circle

Find the area of the shaded region:

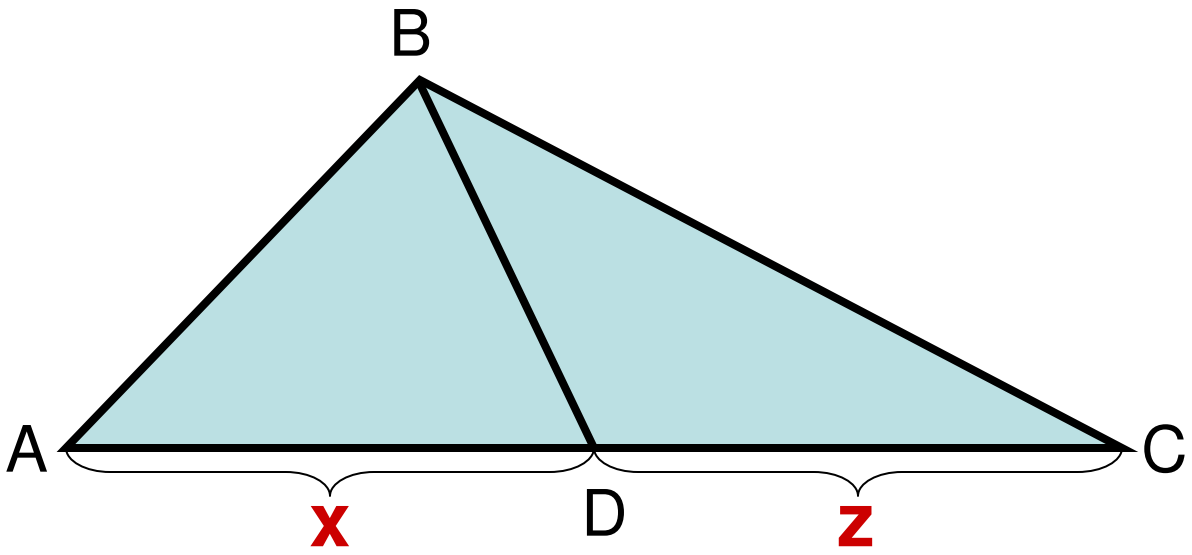


# 11.7

# Ratios of Areas

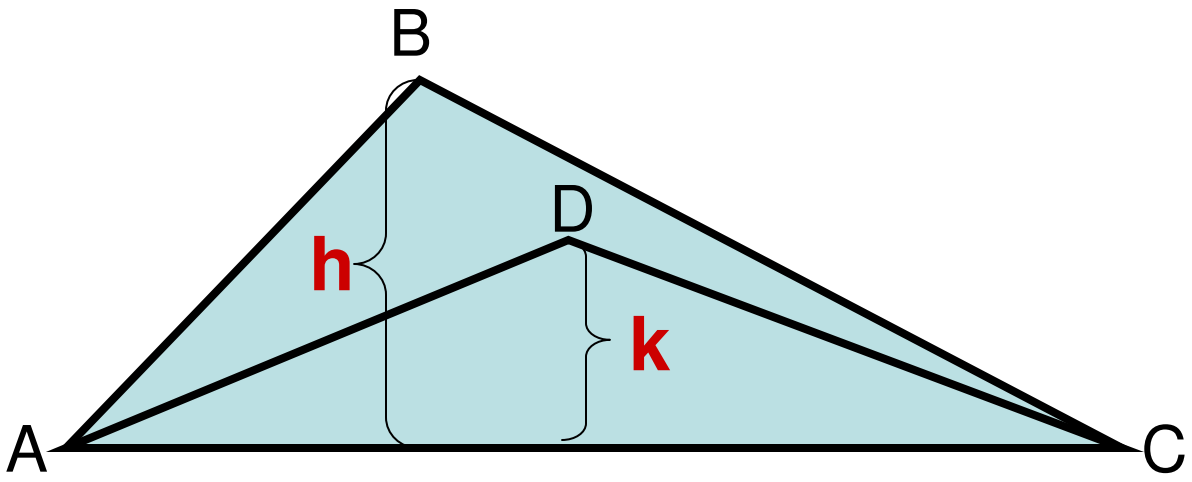
We will be comparing areas of figures by comparing ratios:

Case 1: *Compare* $\triangle ABD$ to $\triangle DBC$



We will be comparing areas of figures by comparing ratios:

Case 2: *Compare* $\triangle ABC$ to $\triangle ADC$



Case 3: If triangles are similar then:

---

Recap:

1. If **heights** the same then:

---

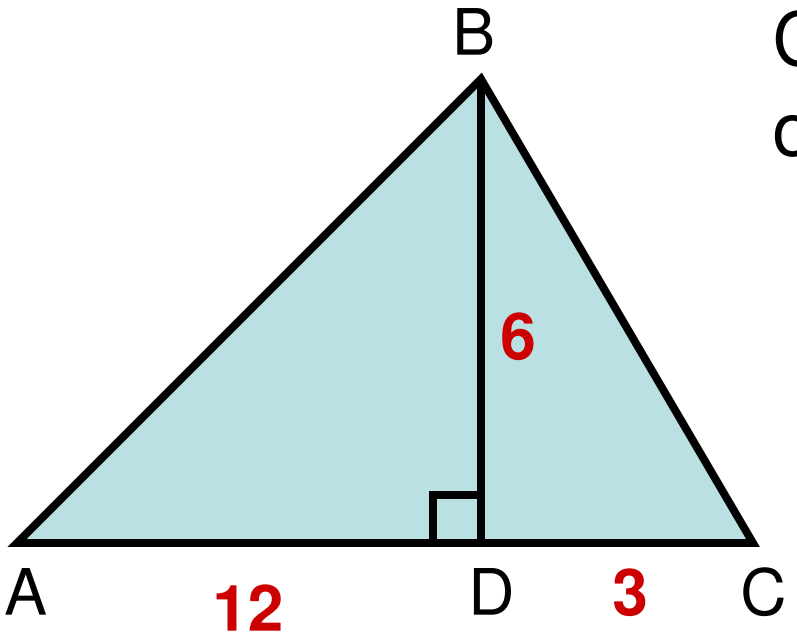
2. If **Bases** the same then:

---

3. If Triangles are similar then:

---

# Examples:




Compare the Ratios of areas between:

$$\frac{\triangle ABC}{\triangle ADB}$$

If the scale factor of 2 similar figures is a:b then:

1. the ratio of the perimeters is_____
2. The ratio of the areas is_____

If the scale factor of 2 similar figures is 3:5 then:

1. the ratio of the perimeters is_____
2. The ratio of the areas is_____

1. The diameters of 2 circles is 10 and 9. What is the ratio of their circumferences and Areas?

Ratio of Circumferences=_____

Ratio of Areas=_____

2. A pentagon with sides of 5,7,8,9 and 11 has an Area of 96. Find the perimeter of a similar pentagon whose Area is 24.