

Warm Up

• **PLEASE GET: Calculator, Scissors, Ruler**

1. How many sides does a polygon with an interior angle sum of 4140 degrees have?
2. What is the measure of the exterior angle of a regular dodecagon?

GO OVER HOMEWORK

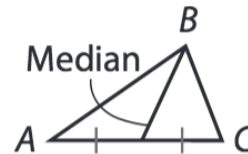
Quiz Tomorrow

- Interior Angles
- Exterior Angles
- Isosceles and Equilateral Triangle Theorems and their Converses
- Triangle Inequalities
- Special Segments of Triangles-
- Median, Midsegments, Altitude

Median

pg. 1151

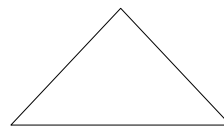
- A **median** of a triangle is a segment whose endpoints are a vertex of a triangle and the midpoint of the opposite side.



Fun Fact!

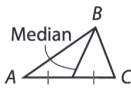
- The intersection of the three medians of a triangle is called the *centroid*. It is the balancing point of a triangle.

Drawing Medians



Activity with the Centroid

- Draw a triangle. Cut out your triangle. Try to balance it at one point.
- Draw the three medians of the triangle
- Poke a hole with your pencil through the point at which your three medians meet
- Balance your triangle at the centroid. Does it seem to be the balancing point?

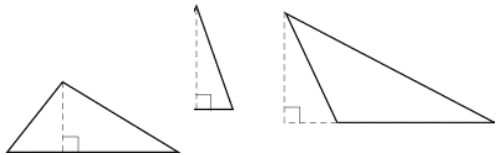


The diagram shows a triangle with vertices labeled A, B, and C. Three lines, labeled 'Median', connect each vertex to the midpoint of the opposite side. These three medians intersect at a single point, the centroid.

Altitudes

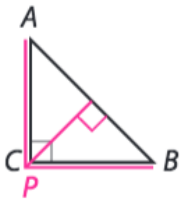
pg. 1157

- An **altitude** of a triangle is a perpendicular segment from a vertex to the line containing the opposite side. **Every triangle has three altitudes.** An altitude can be inside, outside or on the triangle. <http://www.mathopenref.com/trianglearea.html>



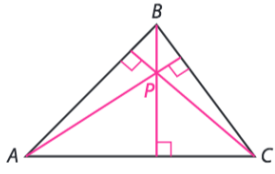
The diagrams illustrate altitudes in three cases: 1) An acute triangle where the altitude from the top vertex falls inside the triangle. 2) A right-angled triangle where the altitude from the right-angle vertex is the side of the triangle. 3) An obtuse triangle where the altitude from the top vertex falls outside the triangle, extending from the base line.

I need a volunteer...
Draw the three altitudes!



The diagram shows a triangle with vertices A, B, and C. A pink line segment is drawn from vertex C perpendicular to side AB, meeting it at point P. Right-angle symbols are shown at both C and P.

I need a volunteer...
Draw the three altitudes!

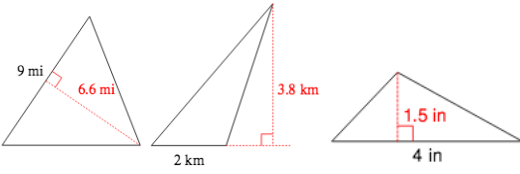


The diagram shows a triangle with vertices A, B, and C. Three pink lines represent altitudes: one from A to BC, one from B to AC, and one from C to AB. They all intersect at a point labeled P. Right-angle symbols are shown at each intersection point.

Helpful Hint

The height of a triangle is the length of an altitude.

Find the area of each triangle
 $A = \frac{1}{2} bh$



The first triangle has a base of 9 mi and a height of 6.6 mi. The second triangle has a base of 2 km and a height of 3.8 km. The third triangle has a base of 4 in and a height of 1.5 in.

29.7 mi^2
 3.8 km^2
 3 in^2

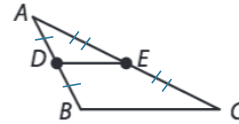
Fun Fact!

- The intersection of the three altitudes of a triangle is called the *orthocenter*.

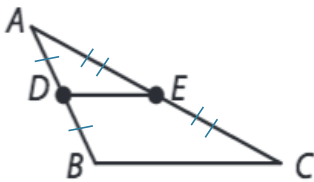
<http://www.mathopenref.com/triangleorthocenter.html>

Midsegments of Triangles pg. 1165

- The **midsegment** of a triangle is a line segment that connects the midpoints of two sides of the triangle. Every triangle has three midsegments.



Draw a Triangle with a Midsegment!



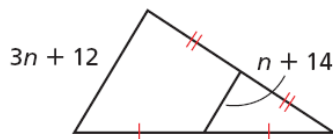
Find DE and BC . How do they compare?
What else do you notice about DE and BC ?

Triangle Midsegment Theorem

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The segment joining the midpoints of two sides of a triangle is **parallel to the third side**, and **its length is half the length of that side**

Find the value of n .



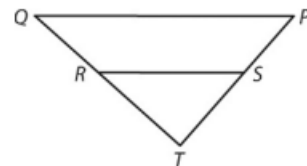
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In the figure, R and S are the midpoints of \overline{QT} and \overline{PT} .

\overline{RS} is parallel to _____.

If $QP = 16$, then $RS =$ _____.

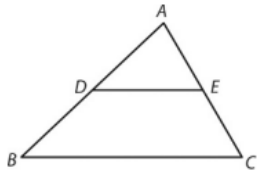
If $RS = 9$, then $QP =$ _____.



In the figure, $\overline{DE} \parallel \overline{BC}$ and $BC = 2 DE$.

If $AB = 8$, then $AD = \underline{\hspace{2cm}}$.

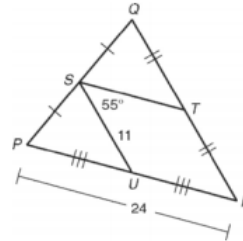
If $CE = 4$, then $CA = \underline{\hspace{2cm}}$.



$QR = \underline{\hspace{2cm}}$

$m\angle SUP = \underline{\hspace{2cm}}$

$m\angle PRQ = \underline{\hspace{2cm}}$



Summarize in your Notes

- What is the difference between a median, an altitude, and a midsegment?

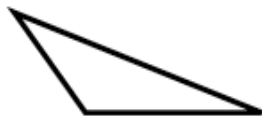
Cool Down 1

- Draw a median.



Cool Down 2

- Draw all three altitudes.



Cool Down 3

- Draw a midsegment.



Homework

- Review Worksheet II