Geometry

5.4 Use Medians and Altitudes

# Median

midpoint

vertex

Segment that connects a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ to a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of side of a triangle.

centroid

Point of concurrency is called the \_\_\_\_\_\_\_\_\_\_\_\_\_.

Balance point

The centroid is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

## Concurrency of Medians of a Triangle

vertex

distance

Two thirds

The medians of a triangle intersect at a point that is \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ from each \_\_\_\_\_\_\_\_\_\_\_ to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Opposite side

midpoints

Each path goes from the midpoint of one edge to the opposite corner. The paths meet at P.

If SC = 2100 ft, find PS and PC.

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If BT = 1000 ft, find TC and BC.

T is midpoint of . TC = 1000 ft, BC = 2000 ft

If PT = 800 ft, find PA and TA.

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# Altitudes

perpendicular

vertex

Segment from a \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the opposite side of a triangle.

orthocenter

Point of concurrency is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

## Concurrency of Altitudes of a Triangle

concurrent

altitudes

The lines containing the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a triangle are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

altitude

median

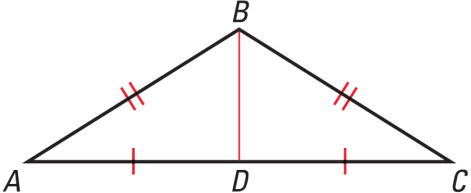
Angle bisector

Perpendicular bisector

isosceles

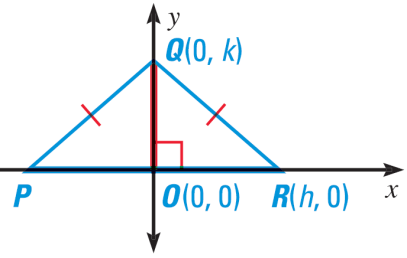
In an \_\_\_\_\_\_\_\_\_\_\_\_ triangle, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_ from the vertex angle are all the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Same segment

Find the orthocenter.

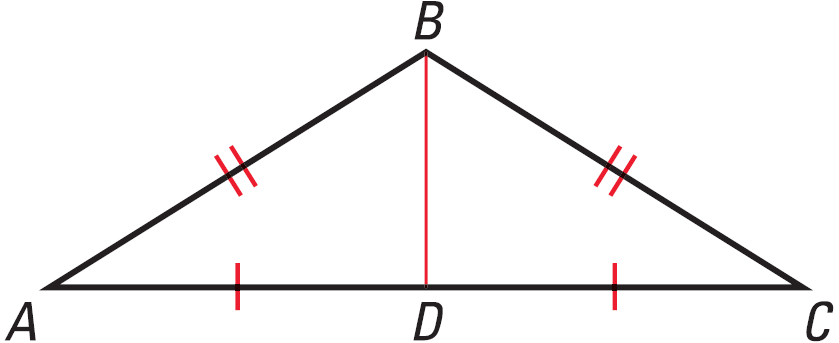
Draw the other two altitudes (from A and C). They will be outside the triangle.

ΔPQR is isosceles and segment is an altitude. What else do you know about ? What are the coordinates of P?



OQ is also the perpendicular bisector, angle bisector, and median.

P (-h, 0)



Given: is isosceles, is a median

Prove: is an angle bisector

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| Statements | Reasons |
| 1. is isosceles, is a median | 1. given |
| 2. | 2. def. Isosceles |
| 3. | 3. def. Median |
| 4. | 4. reflexive |
| 5. | 5. SSS |
| 6. | 6. CPCTC |
| 7. is an angle bisector | 7. def angle bisector |

Assignment: 322 #2-26 even, 34, 40, 42, 46-54 even = 20 total

Extra Credit: 325 #2, 4 = +2