MPM 1DI Unit 6
Geometric Relationships

Examples Day

7.4 Midpoints and Medians in Triangles

Terminology:

Midpoint: A point that divides a line segment into two equal segments.

Median: The line segment joining a vertex of a triangle to the midpoint of the opposite side.

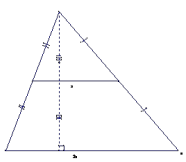
Bisect: Divide into 2 equal parts

Right Bisector: A line perpendicular to a line segment passing through its midpoint.

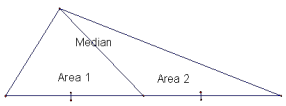
SUMMARY of Key Concepts:

1. A line segment joining the midpoints of two sides of a triangle is _____ to the third side and is _____ as long

2. The height of a triangle formed by joining the midpoints of two sides of a triangle is _____ the height of the original triangle.



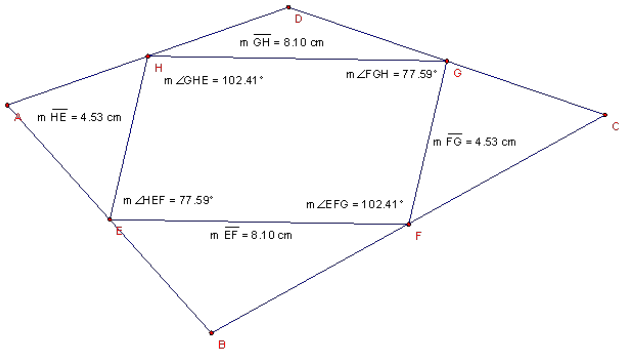
3. The _____ of a triangle bisects its area.



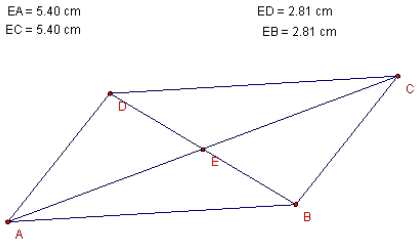
7.5 Midpoints and Diagonals in Quadrilaterals

SUMMARY:

1. Joining the midpoints of the sides of any quadrilateral produces a _____.

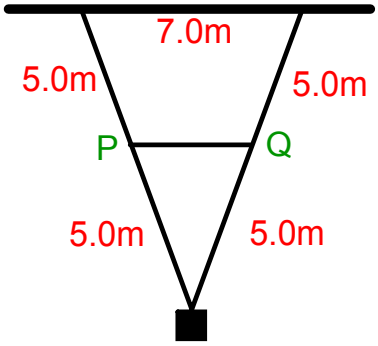


2. The diagonals of a parallelogram _____ each other.



1. Construct a triangle with vertices A, B, and C, with AB = AC. Let D be the midpoint of BC. Will the right bisector through D pass through the vertex A? Why or why not?

2. Calculate the length of the cross-brace PQ in this bridge support.



3a.) Investigate whether the lines that bisect the angles of a triangle always intersect at a single point. Describe your findings.

b.) Draw a triangle in which the angle bisectors intersect at a single point. Can you draw a circle that has this point as its centre and intersects the triangle at exactly three points? If so, describe the properties of the circle.

4a.) Draw a quadrilateral STUV with ST = SV and UT = UV. (A Kite)

b.) At what angle do the diagonals of the quadrilateral intersect.

c.) Join the midpoints of the sides of the quadrilateral to form a smaller quadrilateral WXYZ. What type of quadrilateral is WXYZ?

d.) Make a conjecture about how the area of WXYZ is related to the area of STUV.

Assigned Work

Pg 398 # 8 – 11, 13, 15

Pg 405 # 7, 8, 9abc, 10, 14