W4 – Geometric Properties of Shapes Unit 2

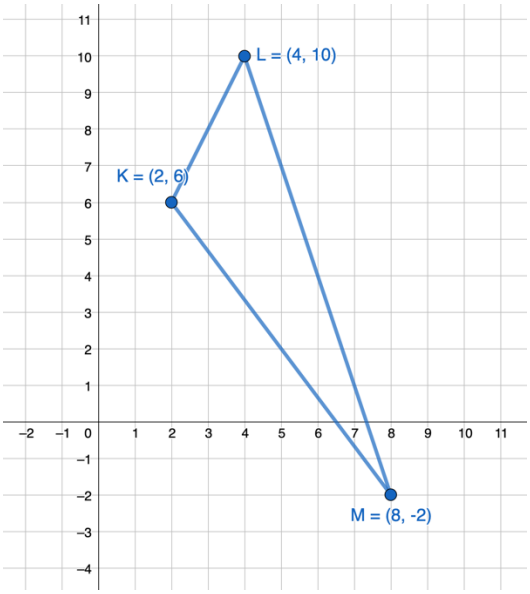
MPM2D

Jensen

1) A triangle has vertices $C(1,4)$, $D(-2,2)$, and $E(3,1)$. Determine if ΔCDE is a right triangle.

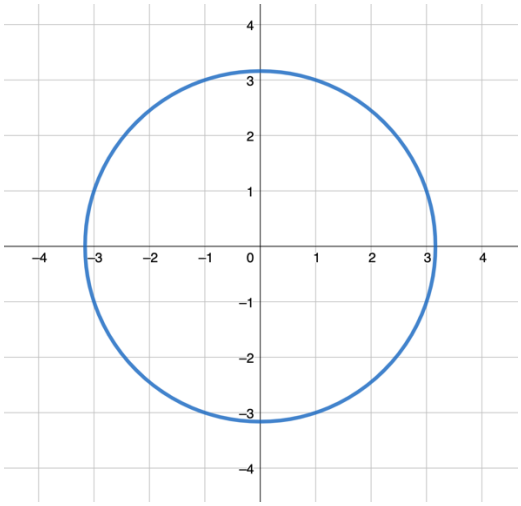
2) The vertices of a triangle are $K(2,6)$, $L(4,10)$, and $M(8,-2)$. Let P be the midpoint of KL and Q be the midpoint of LM. Verify that…

a) PQ is parallel to KM

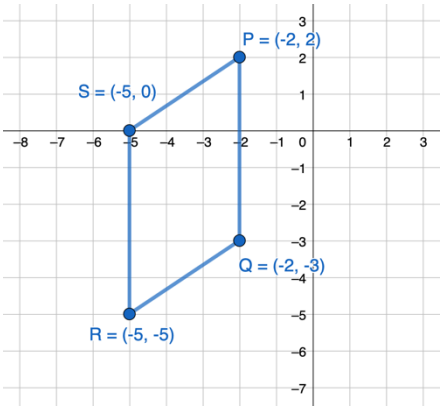


b) PQ is half the length of KM

3) The equation of a circle with center $O(0,0)$ is $x^2 + y^2 = 10$. The points $C(3,1)$ and $D(1,-3)$ are the endpoints of chord CD. Verify that the center of the circles lies on the right bisector of chord CD.



4) Verify that the quadrilateral with vertices $P(-2,2)$, $Q(-2,-3)$, $R(-5,-5)$, and $S(-5,0)$ is a parallelogram.



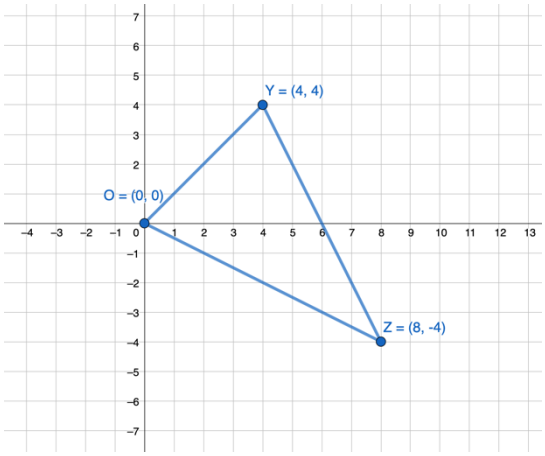
5) A triangle has vertices of $K(-2,2)$, $L(1,5)$, and $M(3,-3)$. Verify that…

a) the triangle has a right angle.

b) the midpoint of the hypotenuse is the same distance from each vertex.

6) A triangle has vertices $X(0,0), Y(4,4)$, and $Z(8,-4)$

a) Write the equation for each of the three medians.



b) The centroid of a triangle is the point of intersection of the medians of the triangle. Verify algebraically that the centroid of ΔXYZ is at $(4,0)$.

7) The endpoints of the diameter of a circle are $M(-3,5)$ and $N(9,7)$. Determine…

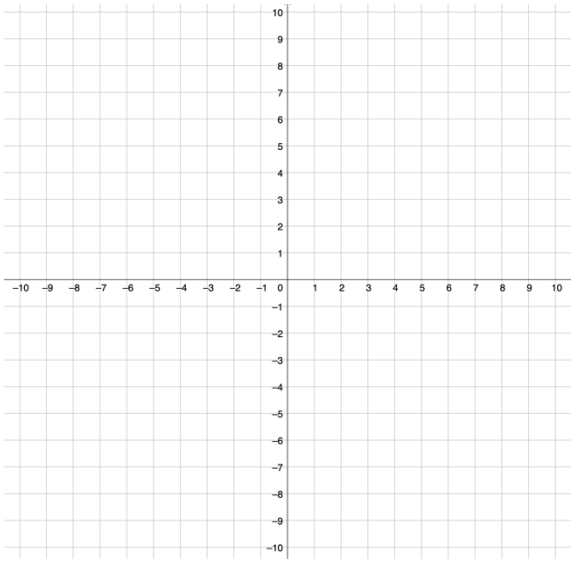
a) the coordinates of the center of the circle.

b) the length of the radius

8) Determine whether the triangle with vertices $A(-3,4), B(-1,-2)$, and $C(3,2)$ is isosceles.

9) A triangle has vertices $J(-2,0), (4,-3)$, and $L(8,8)$.

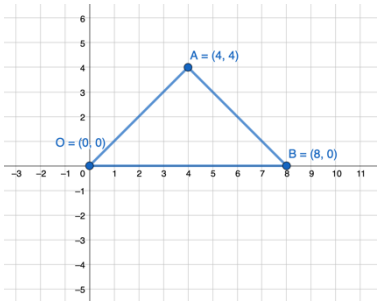
a) Find an equation for the altitude from vertex L.



b) Find the length of the altitude.

c) Find the area of ΔJKL

10) ΔAOB has vertices $A(4,4)$, $O(0,0)$, and $B(8,0)$. Determine the coordinates of the circumcenter of ΔAOB.



11) Find the exact distance from the point $D(4,-2)$ to the line segment joining the points $E(1,3)$ and $F(-4,-2)$.