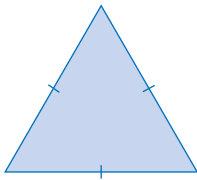


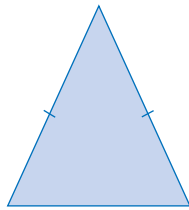
Chapter 3 Practice Test

1. Which of these triangles have at least two medians that are equal in length? Justify your choices.

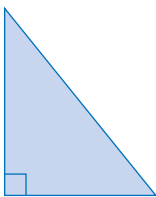
A



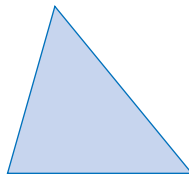
B



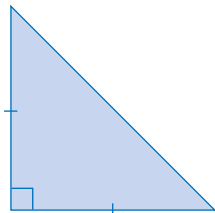
C



D



E



2. Which of the triangles in question 1 have a median that is also an altitude? Justify your choices.

3. Sketch an example of each of these types of quadrilateral. Show the diagonals on each sketch and indicate whether they are equal in length and whether they bisect each other.

a) square

b) rectangle

c) parallelogram

d) rhombus

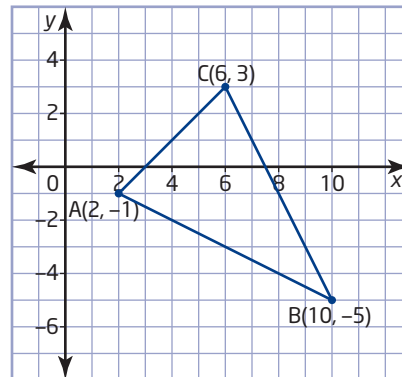
e) trapezoid

f) quadrilateral with no equal sides

4. Show that two of the altitudes of an isosceles triangle are equal in length.

5. a) Verify that $\triangle ABC$ is isosceles.

- b) Verify that the centroid of $\triangle ABC$ lies at $(6, -1)$.

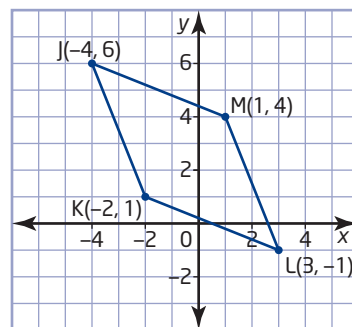


6. a) Show that the triangle with vertices $D(-2, 5)$, $E(-4, 1)$, and $F(2, 3)$ is a right triangle.

- b) Verify that the midpoint of the hypotenuse of $\triangle DEF$ is equidistant from all three vertices.

7. a) Use analytic geometry to verify that quadrilateral JKLM is a rhombus.

- b) Describe how to use geometry software to answer part a).



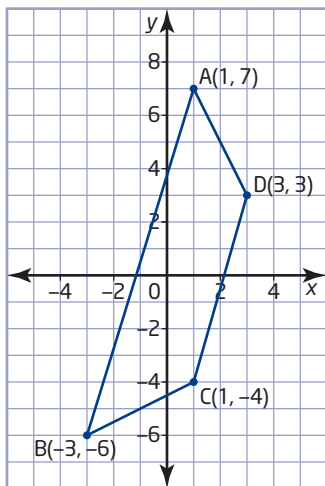
8. a) Find the midpoint of each side of the quadrilateral with vertices $P(-3, 8)$, $Q(1, 10)$, $R(5, 6)$, and $S(7, -4)$.

- b) Show that joining the midpoints of the adjacent sides of PQRS forms a parallelogram.

9. a) Verify that $C(5, 2)$ is the centre of the circle that passes through points $T(5, 15)$, $U(17, -3)$, and $V(-8, 2)$.

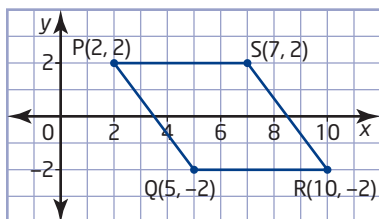
b) Find the radius of the circle.

10. Verify that quadrilateral $ABCD$ is not an isosceles trapezoid.



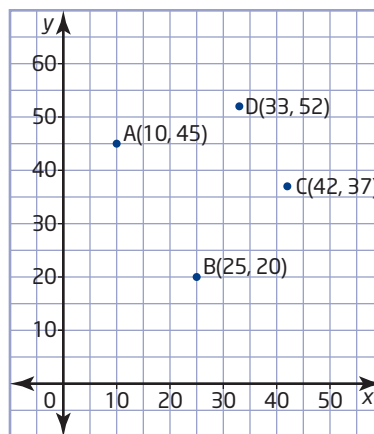
11. Describe how to use geometry software to answer question 10.

12. a) Verify that quadrilateral PQRS is a rhombus.



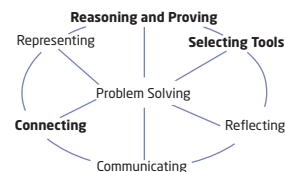
- b) Verify that the diagonals of PQRS bisect each other.
- c) Verify that the diagonals of PQRS meet at right angles.

13. A new hospital will serve the four small towns shown on the map. Where would you build the hospital? Justify this location.



Achievement Check

14. The vertices of $\triangle EFG$ are $E(-3, 5)$, $F(0, -1)$, and $G(6, 5)$.



- a) Find the coordinates of the point of intersection of the medians of $\triangle EFG$.
- b) Find the coordinates of the point of intersection of the right bisectors of the sides of $\triangle EFG$.
- c) Find the coordinates of the point of intersection of the altitudes of $\triangle EFG$.
- d) Verify that these three points of intersection are collinear.