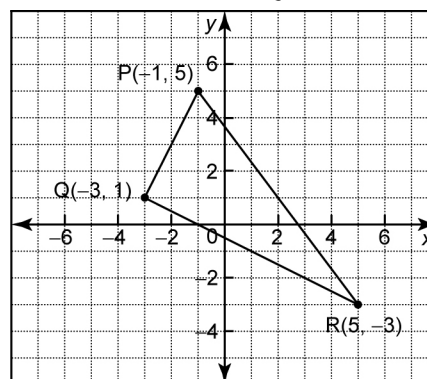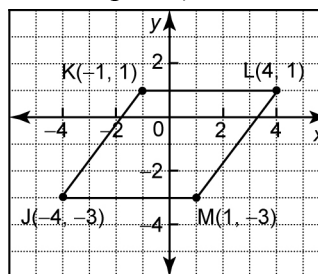# Chapter 3 Test

1. An equilateral triangle has
   A three medians that are all different in length
   B three medians that are all equal in length
   C three medians with two of the medians equal in length
   D three medians with two of the medians different in length

2. The diagonals of a kite
   A are equal in length and bisect each other at right angles
   B are equal in length and bisect each other, but not at right angles
   C are different in length and intersect each other at right angles
   D are different in length and bisect each other, but not at right angles

3. The three medians of a triangle intersect at a point called the
   A centroid   B incentre
   C circumcentre   D orthocentre

4. A trapezoid is a quadrilateral
   A with four equal sides and four 90° angles
   B that has exactly one pair of parallel sides
   C with opposite sides parallel and equal
   D that has no parallel sides

5. The point (5, –2) is on the circle represented by the equation
   A $x^2 + y^2 = 3$ B $x^2 + y^2 = 21$
   C $x^2 + y^2 = 23$ D $x^2 + y^2 = 29$

6. Sketch an example of each quadrilateral. Show the diagonals on each sketch and indicate whether they are equal in length and whether they bisect each other.
   a) parallelogram
   b) rhombus

7. a) Verify that $\triangle PQR$ is a right triangle.
   b) Verify that the point A(1, 4) lies on the line containing the altitude of $\triangle PQR$ drawn from vertex Q.

8. a) Use analytic geometry to verify that quadrilateral JKLM is a rhombus.
   b) Describe how to use geometry software to answer part a).

9. a) Draw the quadrilateral with vertices A(– 4, 3), B(–2, 2), C(–2, –3), and D(–5, 1).
   b) Verify that quadrilateral ABCD is a kite.
   c) Verify that the diagonals of quadrilateral ABCD intersect at right angles.

10. a) Show that D(–24, 7) and M(24, –7) are endpoints of a diameter of the circle defined by $x^2 + y^2 = 625$.
    b) State the coordinates of another point, C, on the circle.
    c) Show that $\triangle DMC$ is a right triangle.