Chapter 2 Practice Test

For questions 1 to 3, choose the correct answer.

1. The midpoint of the line segment with endpoints A(−3, −3) and B(1, 5) is at

A (−2, 2) **B** (−4, −8)

C (−1, 1) **D** (1, −1)

2. The length of the line segment with endpoints C(−5, 2) and D(1, −4) is

A $\sqrt{20}$ **B** $\sqrt{24}$

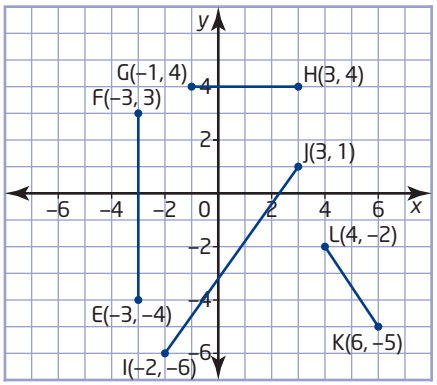
C $\sqrt{72}$ **D** $\sqrt{80}$

3. An equation for the circle with centre (0, 0) and radius 4 is

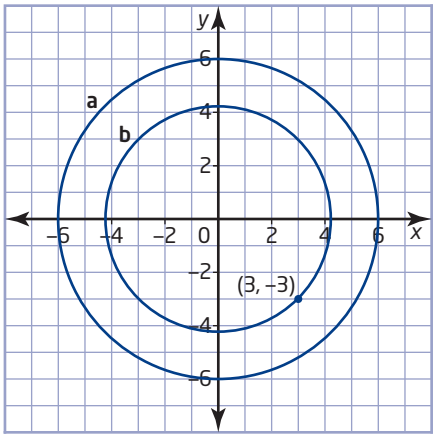
A $x^2 + y^2 = 2$ **B** $x^2 + y^2 = 4$

C $x^2 + y^2 = 8$ **D** $x^2 + y^2 = 16$

4. Determine the midpoint coordinates and the length of each line segment.

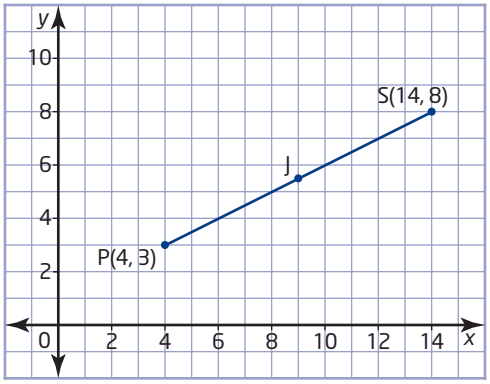


5. Write an equation for each circle.



6. Rachel makes the following statement: "Since point A is the same distance from both B and C, A is the midpoint of BC." Is Rachel correct? Explain your reasoning.

7. Jason lives exactly halfway between the primary and secondary schools in his neighbourhood. The intervals between the grid lines represent 1 km.



a) How far apart are the schools?

b) Determine the coordinates of Jason's home.

c) What other locations are equidistant from the two schools? Explain your reasoning.

d) Determine an equation that represents all locations that are equidistant from the two schools.

8. a) Plot the triangle with vertices A(−2, 1), B(2, −1), and C(0, 5).

b) Determine the lengths of the sides of the triangle.

c) Classify △ABC. Explain your reasoning.

d) Find the area of △ABC.

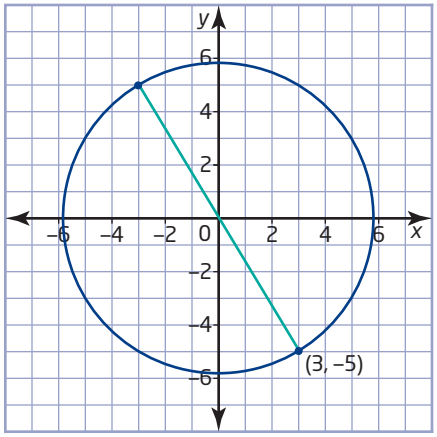
e) Describe how you could use geometry software to verify your answers to parts b), c), and d).

9. a) Plot the triangle with vertices P(3, 4), Q(−5, 2), and R(1, −4). Then, draw the median from vertex R.

b) Determine an equation for this median.

c) Is this median also an altitude for this triangle? Justify your answer.

10. a) Determine the coordinates of the other endpoint of the diameter shown.



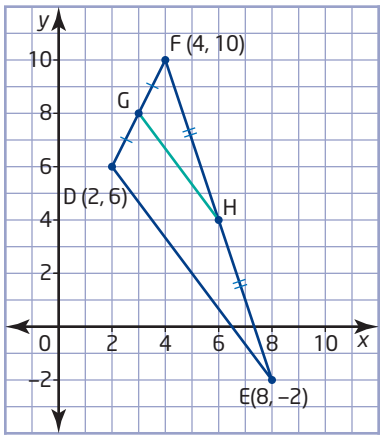
b) Does any other point on the circle have an x-coordinate of 3? Justify your answer.

c) Determine an equation for the circle.

d) Explain how you can use the equation of the circle to verify your answer to part b).

e) Determine the coordinates of four more points on the circle.

11. a) Determine the coordinates of the midpoints G and H.



b) Verify that GH is parallel to DE.

c) Show that GH is exactly half the length of DE.

12. a) Show that the triangle with vertices U(4, 3), V(0, −5), and W(−4, −3) is a right triangle.

b) Verify that the median from the right angle to the hypotenuse is half as long as the hypotenuse.

c) Find an equation for the circle that passes through the vertices of △UVW.

d) Describe how you could use geometry software to verify your answers to parts a), b), and c).

13. Scott, Arif, and Diane run a small delivery company. For their business, they use licensed two-way radios with a 20-km range. Scott is at their office, which they have marked as the origin on their map of the town. The grid lines on the map are spaced 1 km apart. Arif is dropping off a package at (−8, 16) while Diane is making a pick-up at (4, 20).

a) Draw a diagram to represent the reception range for the radio at the office.

b) Find an equation that describes the boundary of this area.

c) Are Arif and Diane both within range of the radio at the office? Justify your answer.

d) Are Arif and Diane within radio range of each other? Justify your answer.

Achievement Check

14. A(9, 5) and B(5, −9) are two points on a circle centred at the origin.

a) Determine an equation for the circle.

b) Determine the midpoint, C, of chord AB.

c) Show that the right bisector of chord AB passes through the centre of the circle.

d) Give a different solution for part c).