Midpoint of a Line Segment
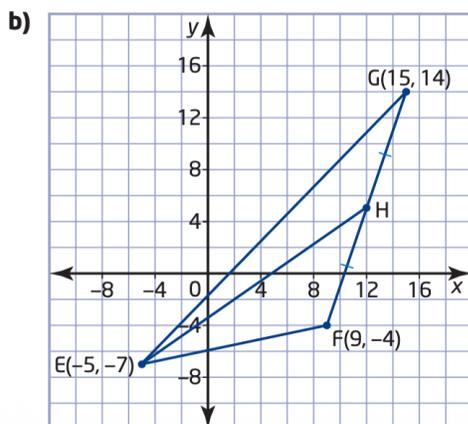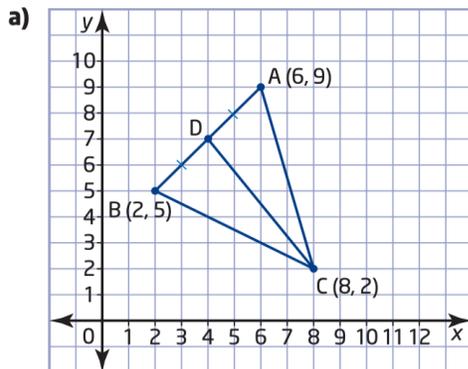
For each question, complete your answers on a separate sheet of lined paper or graph paper.

Then, check your solutions against the final answers on the next page.

As needed, we will take up full solutions in our next class together.

Questions

4. Find the slope of each median shown.

a)

b)

8. The vertices of △ABC are A(4, 4), B(−6, 2), and C(2, 0). Find an equation in slope y-intercept form for the median from vertex A.

13. A line segment with one end at C(6, 5) has midpoint M(4, 2).

    a) Determine the coordinates of the other endpoint, D.

    b) Explain your solution.

    c) Describe a method you could use to check your answer to part a).

14. One endpoint of a diameter of a circle centred on the origin is (−3, 4). Find the coordinates of the other endpoint of this diameter.

16. Determine an equation for the right bisector of the line segment with endpoints P(−5, −2) and Q(3, 6).

Answers

4. a) $-\dfrac{5}{4}$ **b)** $\dfrac{12}{17}$

8. $y = \dfrac{1}{2}x + 2$

13. a) $(2, -1)$

b) Answers may vary. For example: Let the coordinates of the other endpoint be D(x, y). Solving the equation

$\dfrac{x + 6}{2} = 4$ gives $x = 2$. Similarly, solving the

equation $\dfrac{y + 5}{2} = 2$ gives $y = -1$.

Alternative method: Since the run from C to M is -2, subtract 2 from the x-coordinate of M to find the x-coordinate of D. Since the rise from C to M is -3, subtract 3 from the y-coordinate of M to find the y-coordinate of D.

c) Answers may vary. For example: Substitute the coordinates of points C and D into the midpoint formula to confirm that M is the midpoint of CD.

14. $(3, -4)$

16. $y = -x + 1$