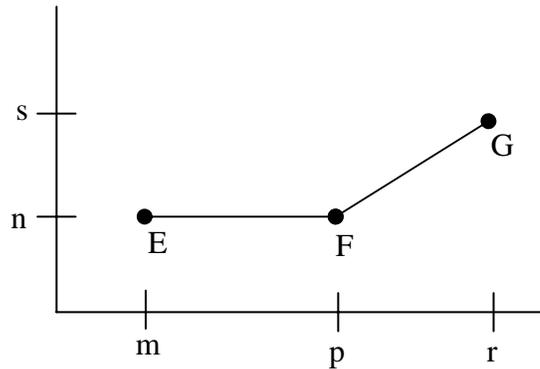


Finding Missing Vertices of Squares and Parallelograms

1. ABCD is a parallelogram. Given A (3, 4) B (10, 4) D (5, 11), plot and locate the point C. Label the parallelogram. What are the coordinates of C? Use mathematics to justify that your coordinates of C make ABCD a parallelogram.
2. EFGH is a parallelogram. Given E (m, n), F (p, n), and G (r, s). Locate H in the drawing. What are the coordinates of H?



Assignment

For square ABCD in the first quadrant, draw the square and find the missing vertices. What are the coordinates of these vertices?

1. A (2, 1) B() C() D (2, 8)

2. A (4, 1) B (8, 4) C() D ()

Use mathematics to justify that ABCD is a square.

3. A (e, f) B() C() D (e, h)

- Answers:
1. C (12,11) Students could apply any of the theorems that are used to prove a quadrilateral is a parallelogram. Such as: the slope of \overline{AB} and \overline{CD} is 0 so \overline{AB} and \overline{CD} are parallel since they have the same slope. Their lengths are congruent (7 by the distance formula). So ABCD is a parallelogram by the theorem: a quadrilateral is a parallelogram if one pair of opposite sides is parallel and congruent.
 2. H (m + r - p, s)

Assignment

- Answers:
1. B (9, 1) and C (9, 8)
 2. C (5, 8) and D (1, 5) ABCD is a square because it is a parallelogram with 4 congruent sides (5, using the distance formula) and angle A is a right angle (slope of \overline{AB} is $\frac{3}{4}$ and the slope of \overline{AC} is $\frac{4}{-3}$).
 3. B (e + h - f, f) and C (e + h - f, h)