Station #2

Quadrilaterals

A = (-3, -1), B = (-1, 2), C = (4, 2), and D = (2, -1).

1. Find the midpoints of the diagonals of ABCD. What conclusion can you make?

2. Find the slopes of the diagonals of ABCD. What conclusion can you make?

3. Find the lengths of each of the four sides of ABCD. What conclusion can you make?

4. Find the slopes of each of the four sides of the quadrilateral ABCD. What conclusion can you make?

5. What geometric figure is quadrilateral ABCD?

DETAILED ANS

		Midpoint
1.)	$\overline{AC}$	(0.5, 0.5)
	$\overline{BD}$	(0.5, 0.5)

Same midpoint ⇒
Diagonals bisect each other
(Shape is a Parallelogram)

		Slope
2)	$\overline{AC}$	3/7
	$\overline{BD}$	−1

Not opposite reciprocals ⇒
Diagonals are <u>not</u> perpendicular
(Shape is not a rhombus ∴ thus can't be a square).

		Distances
3)	$\overline{AB}$	$\sqrt{13}$
	$\overline{BC}$	5
	$\overline{CD}$	$\sqrt{13}$
	$\overline{DA}$	5

Opposite sides (only) have same distance
Opposite sides are congruent
but all sides are not ⇒
(Shape still only a Parallelogram)

		Slopes
4)	$\overline{AB}$	3/2
	$\overline{BC}$	0
	$\overline{CD}$	3/2
	$\overline{DA}$	0

Opposite slopes are the same ⇒
Opposite sides are parallel
∴
Consecutive sides do <u>not</u> have opposite reciprocal slopes ⇒
Consecutive sides are not ⊥ so no right angles —
(Shape is <u>not</u> a rectangle)

5) Shape is only a <u>Parallelogram</u>