Parallel & Perpendicular Lines

Student Activity

7   8   9   **10 11**   12

TI-Nspire™   Investigation   Student   50 min

Introduction

Parallel and perpendicular lines in geometry are everywhere, but how can you make two equations parallel or perpendicular?

Scan the QR code or use the link to watch a video to explore parallel and perpendicular lines.

http://bit.ly/paraperp

Question: 1.

Determine the equation to the straight line that is parallel to $y = 2x - 1$ passing through the point (4, 1).

Question: 2.

Determine the equation to the straight line that is parallel to $y = -x + 2$ passing through the point (1, 3).

Question: 3.

A trapezium ABCD has vertices: A(-3, 2); B(4, 5); C(8, 3) and D(-6, -3). Identify the pairs of parallel sides.

Question: 4.

A parallelogram has vertices: A(1, 4); B(5, 9); C(14, 6) and D(d_x, d_y). Determine the coordinates of point D.

Question: 5.

Determine the equation to the straight line that is perpendicular to $y = 2x - 1$ passing through the point (4, 1)

Question: 6.

Points A, B & C have coordinates: (2, 5), (13, 3) and (p, 9) respectively. Line AC is perpendicular to BC.

a)   Determine the value(s) for p.

b)   Find the coordinates of the midpoint of A and B. Label this as point D.

c)   Show that distances: AD, BD and CD are all equal.

Question: 7.

Points A(1, 1), B(14, 3), C(10, 10) and D(2, 9) form a quadrilateral.

a)   Let P, Q, R and S be the midpoints of AB, BC, CD and DA respectively, determine the coordinates of point P, Q, R and S.

b)   PQRS forms a quadrilateral, show that this quadrilateral is a parallelogram.

c)   Create your own set of points A, B, C and D such that they form a quadrilateral. Determine the coordinates for P, Q, R and S for your quadrilateral. Show that PQRS is also a parallelogram.

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TEXAS INSTRUMENTS