

Shortest Distance between a Point and a Line Video 381 on Corbettmaths

Examples

Workout



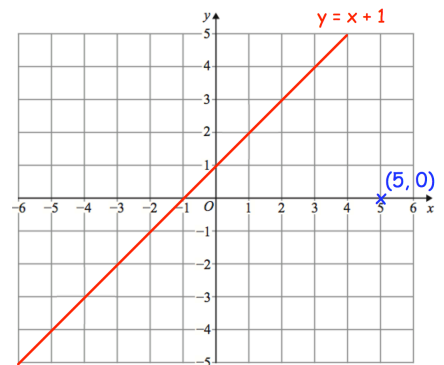
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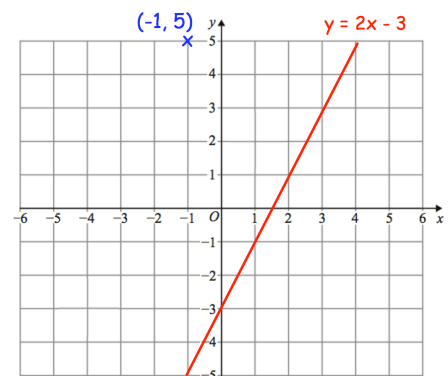
Question 1: Shown on the grid is the line, $y = x + 1$, and the point $(5, 0)$

- (a) Find the gradient of a line perpendicular to $y = x + 1$
- (b) Find the equation of the line perpendicular to $y = x + 1$ that passes through the point $(5, 0)$
- (c) Find the point where your answer to (b) and the line $y = x + 1$ intersect.
- (d) Calculate the distance between your answer to (c) and the point $(5, 0)$



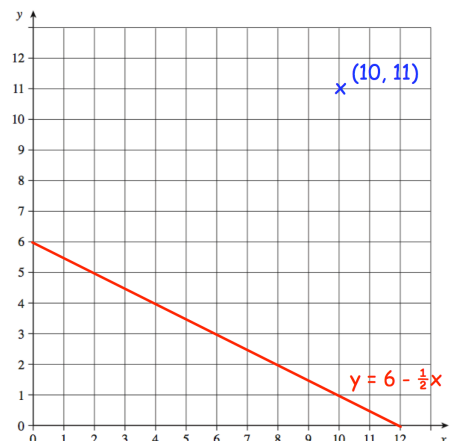
Question 2: Shown on the grid is the line, $y = 2x - 3$, and the point $(-1, 5)$

- (a) Find the gradient of a line perpendicular to $y = 2x - 3$
- (b) Find the equation of the line perpendicular to $y = 2x - 3$ that passes through $(-1, 5)$
- (c) Find the point where your answer to (b) and the line $y = 2x - 3$ intersect.
- (d) Calculate the distance between your answer to (c) and the point $(-1, 5)$



Question 3: Shown on the grid is the line, $y = 6 - \frac{1}{2}x$ and the point $(10, 11)$

- (a) Find the equation of the line perpendicular to $y = 6 - \frac{1}{2}x$ that passes through $(10, 11)$.
- (b) Find where your answer to (a) intersects $y = 6 - \frac{1}{2}x$
- (c) Calculate the shortest distance between the $(10, 11)$ and the line $y = 6 - \frac{1}{2}x$



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Question 4: Calculate the shortest distances between the following lines and points.

- (a) The line $y = -x + 2$ and the point $(8, 4)$
- (b) The line $y = 4x + 7$ and the point $(-13, 6)$
- (c) The line $x - 3y + 9 = 0$ and the point $(5, 38)$

Question 5: Calculate the shortest distances between the following lines and points.

- (a) The line $y = 5x + 1$ and the point $(3, 3)$
- (b) The line $y = -2x - 15$ and the point $(-1, -4)$
- (c) The line $2x + y + 5 = 0$ and the point $(0, 0)$

Apply

Question 1: The line L_1 has equation $y = 2x - 4$
The line L_2 has equation $y = -3x + 11$
The line L_3 has equation $y = x$
 L_1 and L_2 meet at the point A.

Work out the shortest distance between the line L_3 and the point A.

Question 2: ABC is a triangle.
A is the point $(-5, 2)$
B is the point $(0, 8)$
C is the point $(9, 3)$

Work out the area of triangle ABC.

Answers



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