

DISTANCE BETWEEN TWO POINTS

$$d(A,B) = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

ex:
What is the distance between point A (-2,1) and B(1,3)

$\swarrow \quad \searrow$
 $x_1 \quad y_1 \quad x_2 \quad y_2$

Steps:
 1. Identify (x_1, y_1) & (x_2, y_2)
 2. Input values into formula
 3. Solve

$$d(A,B) = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$d(A,B) = \sqrt{(1 - -2)^2 + (3 - 1)^2}$$

$$d(A,B) = \sqrt{3^2 + 2^2}$$

$$d(A,B) = \sqrt{9 + 4}$$

$$d(A,B) = \sqrt{13} \rightarrow 3.60$$

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Calculate the distance of the following points:

① (1,5) and (2,3)

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$x_1 = 1 \quad y_1 = 5$
 $x_2 = 2 \quad y_2 = 3$

$$d = \sqrt{(2 - 1)^2 + (3 - 5)^2}$$

$$d = \sqrt{1^2 + -2^2}$$

$$d = \sqrt{1 + 4}$$

$$d = \sqrt{5}$$

② (1, -2) and (2, 5)

$$d = \sqrt{1^2 + 7^2}$$

$$d = \sqrt{50}$$

③ (-1, -3) and (2, 3)

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② (1, -2) (2, 5) $x_1 = 1 \quad y_1 = -2$
 $x_2 = 2 \quad y_2 = 5$

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$d = \sqrt{(2 - 1)^2 + (5 - -2)^2}$$

$$d = \sqrt{1^2 + 7^2}$$

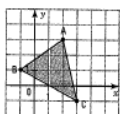
$$d = \sqrt{1 + 49} = \sqrt{50}$$

$$\sqrt{50} = \sqrt{(25)(2)} = \sqrt{(5)(5)(2)}$$

$$\rightarrow \sqrt{(5^2)(2)} = 5\sqrt{2}$$

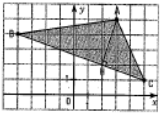
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Determine the perimeter of triangle ABC on the right.



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Given A(3, 5), B(-4, 4) and C(5, 1), the vertices of triangle ABC on the right, and H(2, 2) the foot of the altitude to side BC, calculate the area of triangle ABC.



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