

Name:

Level 2 Further Maths

Distance Between Two Points



Corbettmaths

Ensure you have: Pencil or pen

Guidance

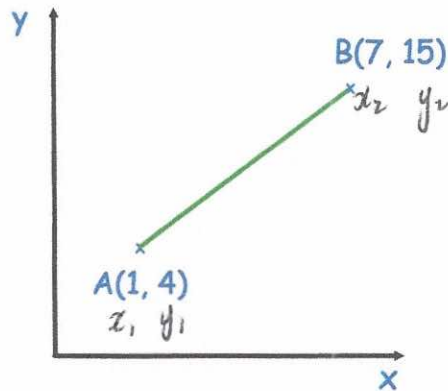
1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

Revision for this topic

www.corbettmaths.com/more/further-maths/



1. Shown below are the points A(1, 4) and B(7, 15)



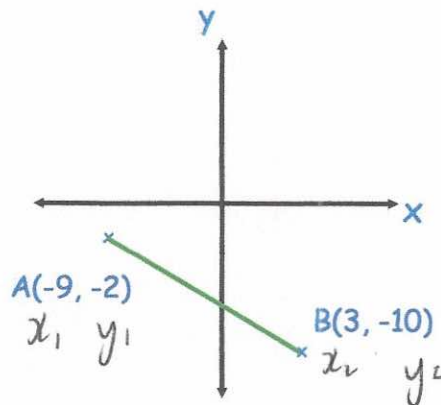
Calculate the length of the line joining A and B.

$$\sqrt{(7-1)^2 + (15-4)^2}$$

12.53

(2)

2. Shown below are the points A(-9, -2) and B(3, -10)



Calculate the length of the line joining A and B.

$$\sqrt{(-9-3)^2 + (-2-3)^2} = 13$$

or

$$\sqrt{(3-(-9))^2 + (-10-(-2))^2} = 13$$

13

(2)

3. Calculate the distance between the points (x_1, y_1) $(-5, 7)$ and (x_2, y_2) $(-3, -2)$.

$$\sqrt{(-2-7)^2 + (-3-5)^2} =$$

9.22

(3)

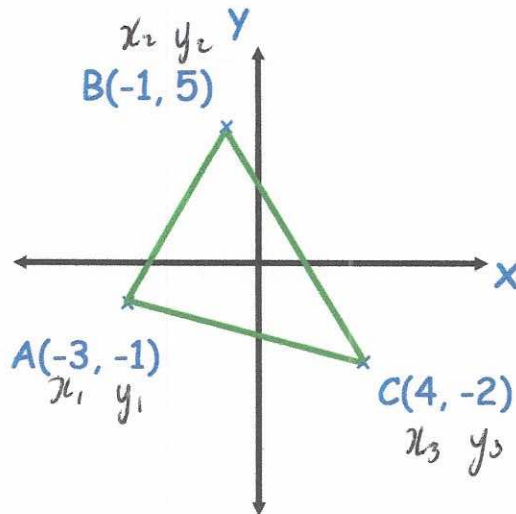
4. Calculate the distance between the points (x_1, y_1) $(-15, 2)$ and (x_2, y_2) $(35, 17)$.

$$\sqrt{(35-(-15))^2 + (17-2)^2} =$$

52.2

(3)

5. Shown below is triangle ABC



Calculate the perimeter of the triangle.

$$AB = \sqrt{(-1 - -3)^2 + (5 - -1)^2} = \sqrt{40}$$

$$BC = \sqrt{(4 - -1)^2 + (-2 - 5)^2} = \sqrt{74}$$

$$AC = \sqrt{(4 - -3)^2 + (-2 - -1)^2} = \sqrt{50}$$

$$\sqrt{40} + \sqrt{74} + \sqrt{50} =$$

22

(5)

6. The distance between the points (x_1, y_1) and (x_2, y_2) is 17. Find the possible values of p .

$$\sqrt{(16-1)^2 + (p-2)^2} = 17$$

$$(15)^2 + (p-2)^2 = 289$$

$$(p-2)^2 = 64$$

$$p-2 = \pm 8$$

$$p = 2 \pm 8$$

$$p = 10 \text{ or } p = -6$$

(3)

7. The distance between the points $(-3, -4)$ and $(q, 5)$ is 15. Find the possible values of q .

$$\sqrt{(q - (-3))^2 + (5 - (-4))^2} = 15$$

$$\sqrt{(q+3)^2 + 81} = 15$$

$$(q+3)^2 + 81 = 225$$

$$(q+3)^2 = 144$$

$$q+3 = \pm 12$$

$$q = 9 \text{ or } q = -15$$

(3)

8. The point C has coordinates $(-5, 4)$
The point D has coordinates $(6, 1)$
The point E has coordinates $(9, -13)$

The midpoint of CE is H

The midpoint of DE is I

Work out the distance between the points H and I

$$H \left(2, -\frac{9}{2} \right)$$

$$I \left(\frac{15}{2}, -6 \right)$$

$$\sqrt{\left(\frac{15}{2} - 2\right)^2 + \left(-6 - -\frac{9}{2}\right)^2}$$

$$= \sqrt{5.5^2 + (-1.5)^2}$$

$$= 5.7$$

5.7

.....
(5)

9. The line L has equation $3x - 2y + 15 = 0$

The line L intersects the x-axis at the point A.

The line L intersects the y-axis at the point B.

Find the distance between the points A and B.

$$\begin{aligned} A : \quad y &= 0 \\ 3x + 15 &= 0 \\ 3x &= -15 \\ x &= -5 \quad (-5, 0) \end{aligned}$$

$$\begin{aligned} B : \quad x &= 0 \\ -2y + 15 &= 0 \\ -2y &= -15 \\ y &= 7.5 \quad (0, 7.5) \end{aligned}$$

$$9.014$$

(5)

$$\begin{aligned} &\sqrt{(0 - (-5))^2 + (7.5 - 0)^2} \\ &= 9.014 \end{aligned}$$

10. The points D and E have coordinates (x_1, y_1) and (x_2, y_2) $(-4, 13)$ and $(6, 2)$.
Given DE is the diameter of the circle C.

(a) Find the coordinates of the centre of circle C.

$$\frac{(1, 7.5)}{\dots\dots\dots}$$

(1)

(b) Calculate the exact length of the diameter DE.

$$\sqrt{(6 - (-4))^2 + (2 - 13)^2}$$

$$= \sqrt{221}$$

$$\frac{\sqrt{221}}{\dots\dots\dots}$$

(3)

(c) Find the equation of C

$$(x - 1)^2 + \left(y - \frac{15}{2}\right)^2 = \left(\frac{1}{2}\sqrt{221}\right)^2$$

$$\frac{(x - 1)^2 + \left(y - \frac{15}{2}\right)^2 = \frac{221}{4}}{\dots\dots\dots}$$

(2)