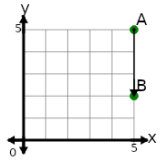
Name

Calculate distances involving points, lines, and planes

1

Find the distance between point A and point B on the diagram



A 6	B 0	C 1
D 5	E 3	F 2

2

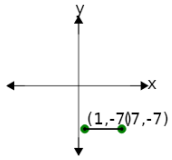
Find the distance between the given (x,y) points

$$\text{Point A} : (2, 1)$$
$$\text{Point B} : (0, 1)$$

A 5	B 4	C 1
D 2	E 0	

3

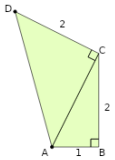
Find the length of the line that goes between the two coordinates



A 1	B 2	C 9
D 12	E 6	F 3

4

What is the distance from point A to point D on this pair of triangles?



A 3	B 5	C 12
D 10	E 1	F 4

5

Does the given point lie on the line?

$$\vec{r} = \begin{pmatrix} 1 \\ -1 \\ 2 \end{pmatrix} + t \begin{pmatrix} 1 \\ 1 \\ 3 \end{pmatrix} \quad \text{Point } (2,\ 0,\ 5)$$

A Yes	B No

6

Are the two given points the closest points on the two skew lines?

$$\vec{r} = \begin{pmatrix} 2 \\ 4 \\ 0 \end{pmatrix} + t \begin{pmatrix} 0 \\ 0 \\ -1 \end{pmatrix} \quad \text{point } (2,\ 4,\ 0)$$

$$\vec{r} = \begin{pmatrix} -1 \\ 3 \\ 2 \end{pmatrix} + t \begin{pmatrix} -1 \\ -4 \\ -3 \end{pmatrix} \quad \text{point } (0,\ 7,\ 5)$$

A Yes	B No

7

The line is parallel to the plane. Find the distance between them (to 2 decimal places).

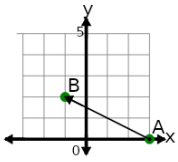
$$\text{Plane } -4x - 4y + 3z = 2$$

$$\text{Line } \vec{r} = \begin{pmatrix} 0 \\ -3 \\ -3 \end{pmatrix} + t \begin{pmatrix} -4 \\ 4 \\ 0 \end{pmatrix}$$

A 0.16	B 0.02	C 0.47
D 0.15	E 1.05	

8

Find the distance between point A and point B on the diagram



A 3.46	B 8	C 4.47
D 7.83	E 5.31	F 1.11

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9

Find the shortest distance from the external point to the plane (to 2 decimal places).

$2x-2y+3z=1 \quad \text{External point } (7,\ -11,\ 11)$

A 16.98	B 16.49	C 4.00
D 17.01	E 14.84	

10

Find the distance between the two parallel planes (to 2 decimal places).

$$-x+2y+z=-3$$
$$-x+2y+z=2$$

A 0.83	B 2.86	C 2.04	D 1.58

11

Find the distance between the given (x,y) points

$$\text{Point A}:(5,3)$$
$$\text{Point B}:(3,0)$$

A 2.24	B 6	C 6.97
D 3.61	E 1	F 6.13

12

Find the shortest distance between the two skew lines (to 2 decimal places).

$$\vec{r}=\begin{pmatrix}1\\1\\-2\end{pmatrix}+t\begin{pmatrix}-1\\-2\\0\end{pmatrix}$$
$$\vec{r}=\begin{pmatrix}-1\\2\\-4\end{pmatrix}+t\begin{pmatrix}-4\\-1\\3\end{pmatrix}$$

A 3.20	B 0.31	C 2.99
D 3.83	E 2.93	

13

Find the shortest distance between the two skew lines (to 2 decimal places).

$$\text{Line 1: } \vec{r}=\vec{a}+s\vec{d}_1 \quad \vec{a}=\begin{pmatrix}1\\2\\3\end{pmatrix} \quad \vec{d}_1=\begin{pmatrix}3\\0\\4\end{pmatrix}$$
$$\text{Line 2: } \vec{r}=\vec{b}+s\vec{d}_2 \quad \vec{b}=\begin{pmatrix}1\\4\\-4\end{pmatrix} \quad \vec{d}_2=\begin{pmatrix}4\\1\\4\end{pmatrix}$$
$$d=\frac{\left|(\vec{b}-\vec{a})\cdot(\vec{d}_1\times\vec{d}_2)\right|}{\left|\vec{d}_1\times\vec{d}_2\right|}$$

where $\vec{a}$, $\vec{b}$ are points on the lines and $\vec{d}_1$, $\vec{d}_2$ are their direction vectors

A 0.22	B 7.05	C 6.99
D 7.71	E 6.98	

14

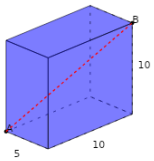
Find the distance between the given (x,y) points

$$\text{Point A}:(4,3)$$
$$\text{Point B}:(0,-2)$$

A $\sqrt{17}$	B $\sqrt{41}$	C $\sqrt{9}$
D $\sqrt{77}$	E $\sqrt{45}$	F $\sqrt{37}$

15

What is the distance from point A to point B on this Rectangular Prism?



A 15	B 5	C 9
D 8	E 17	F 19