

## THE DISTANCE BETWEEN TWO POINTS Teaching Guidelines

Subject: Mathematics

Topics: Algebra

**Grades:** 6 - 12

## Knowledge and Skills:

- Can interpret (x,y,z) notation as the position of a point in three-dimensional space
- Can find the distance between two points in three-dimensional space

Procedure: This project should be done by students individually or teams of two.

Distribute the handout and ensure that students understand the task.

Answers:

$(x_1, y_1, z_1)$	$(x_2, y_2, z_2)$	Distance
(3,5,8)	(4,10,14)	8
(4,9,1)	(7,0,12)	15
(18,3,22)	(5,12,19)	16
(-4,12,35)	(14,7,50)	24
(-12,6,-15)	(-16,-2,0)	17
(25,-50,25)	(-25,50,-25)	122
(2.25,5.45,9.15)	(3.15,8.75,7.95)	3.62
(15.36,24.17,18.72)	(22.78,12.39,32.18)	19.36
(128,94,276)	(253,146,275)	135
(265,4,74)	(4,265,74)	369
(-340,25,212)	(-120,-202,0)	381
(1005,2144,1546)	(1010,2150,1550)	9

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## The Distance Between Two Points

Skill Set

 $(x_1, y_1, z_1)$  and  $(x_2, y_2, z_2)$  represent the coordinates of two points in threedimensional space, in meters. Find the distance between the two points in each case. (Round the computed distances to the lowest decimal place that occurs in the coordinates.)

$(x_1, y_1, z_1)$	$(x_2, y_2, z_2)$	Distance
(3,5,8)	(4,10,14)	
(4,9,1)	(7,0,12)	
(18,3,22)	(5,12,19)	
(-4,12,35)	(14,7,50)	
(-12,6,-15)	(-16,-2,0)	
(25,-50,25)	(-25,50,-25)	
(2.25,5.45,9.15)	(3.15,8.75,7.95)	
(15.36,24.17,18.72)	(22.78,12.39,32.18)	
(128,94,276)	(253,146,275)	
(265,4,74)	(4,265,74)	
(-340,25,212)	(-120,-202,0)	
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