

Show Deviations

Sum of squares of deviations: 20.000



$$f(x) = -0.25 * x + 4.26$$



Change Function



Reset Sliders

Slider Limits

© Shodor

Show Squares

Data:

1	1
1	7
5	2
5	4

Plot Data

Clear Data

Auto Scale

Show Vertical

Show Tabular D

No Grid

Light Grid Lines

Dark Grid Lines

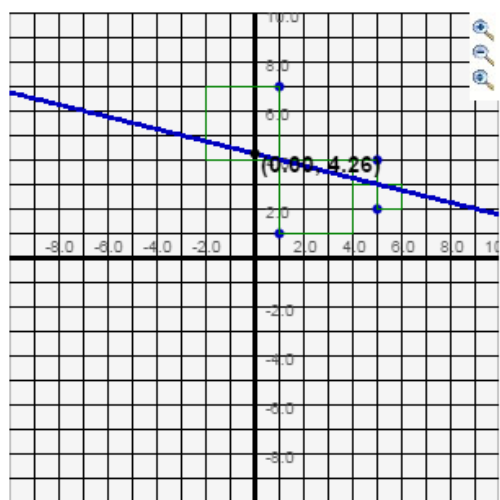
Set Window...

Show Trace

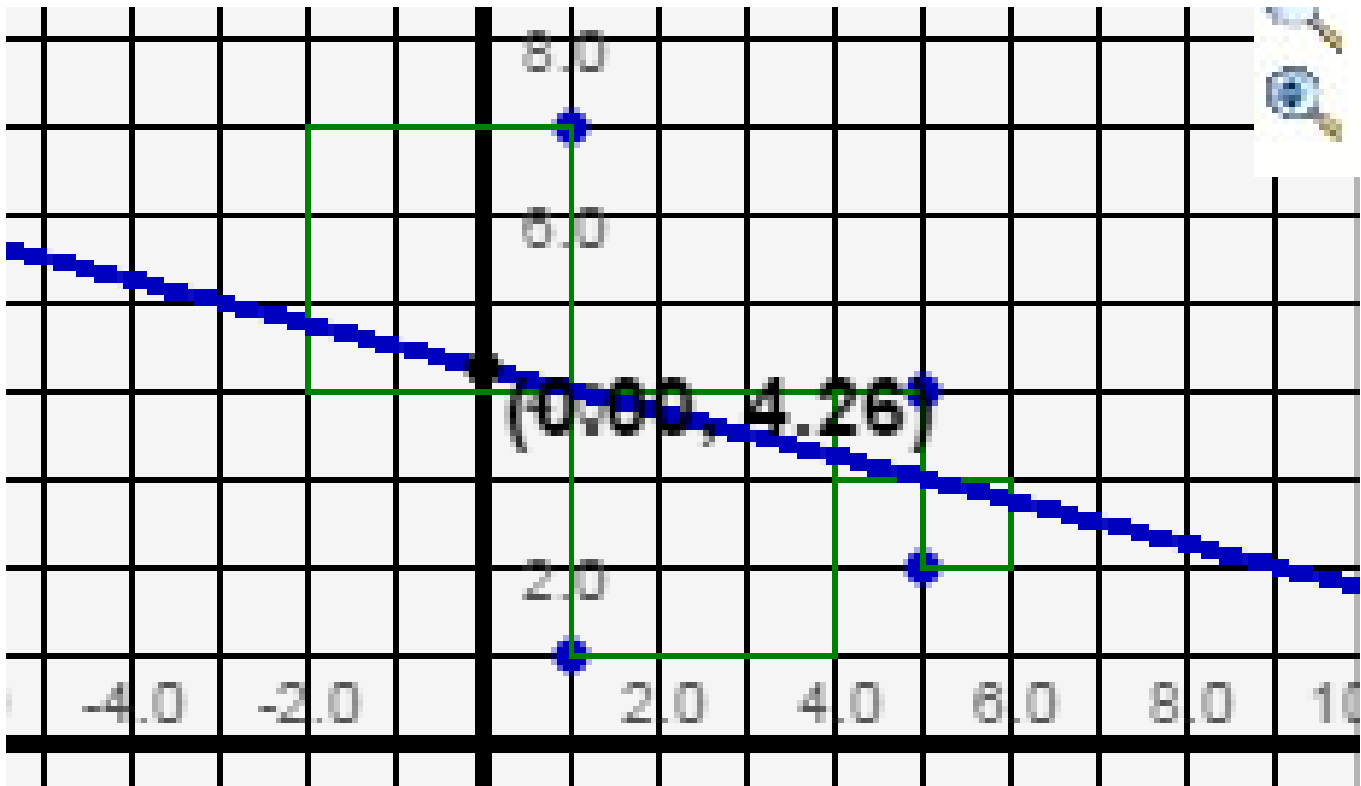
Clear Trace

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See points a and b, points (1, 1) and (1, 7) graphed just one unit to the right of the y-axis here.

See points (5, 2) and (5, 4) graphed to the right further, both with  $x = 5$ , but with the  $y$ 's only differing by 2, only being 2 units apart then for points c and d.

The point halfway between a and b is (1, 4).

The point halfway between c and d is (5, 3).

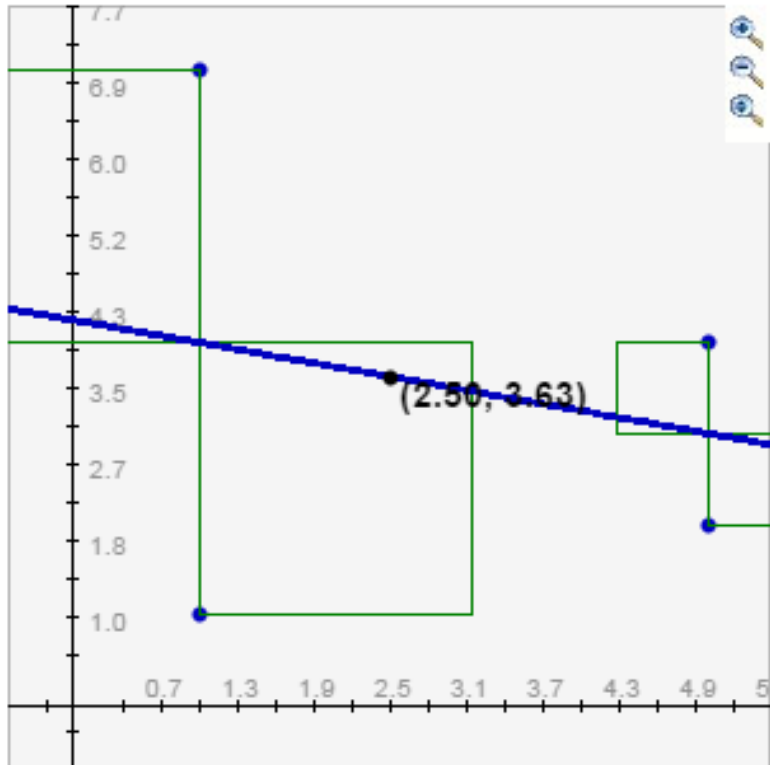
The equation for the line is best fitting when the equation is  $y = -0.25x + 4.25$  where  $m = -0.25$  and  $b = 4.25$ . The equation  $y = mx + b$  is a LINEAR equation. The above line is actually the BEST FITTING line for this set of four points.

Any change to the slope  $m$  and/or change to the intercept  $b$  from  $m = -0.25$  and  $b = 4.25$  increases the sum of the squares of the deviations. The deviations are 3, 3, 1, and 1.  $3^2 + 3^2 + 1^2 + 1^2 = 9 + 9 + 1 + 1 = 20.0000$ , the least possible sum of squares for any LINEAR FIT to these FOUR points.

## Deviations

X	Y	Dev^2
1.00	1.00	9.00
1.00	7.00	9.00
5.00	2.00	1.00
5.00	4.00	1.00

Sum of squares of deviations: 20.00



$$f(x) = -0.25 * x + 4.25$$