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Scatter Plots of Linear Functions - Guided Lesson Explanation

Explanation#1

A trend line roughly describes the relationship between two variables in a set of data. We can use a trend line to make predictions from a scatter plot.

Now we find the coordinates of the two points in purple. Then we look at the two purple points. Their coordinates are (20, 10) and (50, 50).

We will use the two points to find the slope.

Plug (20, 10) and (50, 50) into the slope formula.

$$m = \frac{change\ in\ y}{change\ in\ x}$$

$$m = \frac{50-10}{50-20}$$

$$m = \frac{40}{30} = \frac{4}{3}$$

The slope is $\frac{4}{3}$.

We use the slope and a point to find the y-intercept.

We will plug the slope $m = \frac{4}{3}$ and a point such as (20, 10) into the slope-intercept formula. Then we will solve for the y-intercept b.

$Y = mx + b$

$10 = \frac{4}{3}(20) + b$

$10 = 26.6 + b$ $\quad -16.6 = b$ The y-intercept is -16.6.

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Use the slope and the y-intercept to find the equation of the line.

Plug the slope m = $\frac{4}{3}$ and the y-intercept b = -16.6 into the slope-intercept formula.

Y = mx + b

Y = $\frac{4}{3}$ x – 16.6

The equation of the trend in slope-intercept form is y= $\frac{4}{3}$ x-16.6.

Explanation#2

A trend line roughly describes the relationship between two variables in a set of data. We can use a trend line to make predictions from a scatter plot.

Now we find the coordinates of the two points in red. Then we look at the two red points. Their coordinates are (20, 1) and (80, 8).

We will use the two points to find the slope.

Plug (20, 1) and (80, 8) into the slope formula.

m = $\frac{change\ in\ y}{change\ in\ x}$

m = $\frac{8-1}{80-20}$

m = $\frac{7}{60}$ The slope is $\frac{7}{60}$.

We use the slope and a point to find the y-intercept.

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We will plug the slope m = $\frac{7}{60}$ and a point such as (20, 1) into the slope-intercept formula. Then we will solve for the y-intercept b.

Y = mx + b

1 = $\frac{7}{60}$ (20) + b

1= 2.33 + b

-1.33 = b The y-intercept is -1.33.

Step 6) Use the slope and the y-intercept to find the equation of the line.

Plug the slope m = $\frac{7}{60}$ and the y-intercept b = -1.33 into the slope-intercept formula.

Y = mx + b

Y = $\frac{7}{60}$ x –1.33

The equation of the trend in slope-intercept form is y= 0.26x-0.74.

Explanation#3

A trend line roughly describes the relationship between two variables in a set of data. We can use a trend line to make predictions from a scatter plot.

Now we find the coordinates of the two points in yellow. Then we look at the two yellow points. Their coordinates are (20, 10) and (80, 80).

We will use the two points to find the slope.

Plug (20, 10) and (80, 80) into the slope formula.

m = $\frac{change\ in\ y}{change\ in\ x}$

m = $\frac{80-10}{80-20}$

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$m = \frac{70}{60} = \frac{7}{6}$

The slope is $\frac{7}{6}$.

We use the slope and a point to find the y-intercept.

We will plug the slope $m = \frac{7}{6}$ and a point such as (20, 10) into the slope-intercept formula. Then we will solve for the y-intercept b.

$Y = mx + b$

$10 = \frac{7}{6}(20) + b$

$10 = 23.3 + b$

$-13.3 = b$

The y-intercept is -13.3.

Use the slope and the y-intercept to find the equation of the line.

Plug the slope $m = \frac{7}{6}$ and the y-intercept b = -13.3 into the slope-intercept formula.

$Y = mx + b$

$Y = \frac{7}{6}x - 13.3$

The equation of the trend in slope-intercept form is $y = \frac{7}{6}$ x -13.3.