Warm Up 10/10

Write the equation of the line that goes through (8, –9) and (–10, 0).

x	y
8	−9
−10	0

$-18 \quad +9$

$\frac{\Delta y}{\Delta x} = \frac{9}{-18} = -\frac{1}{2}$

$-9 = -\frac{1}{2}(8) + b$

$-9 = -4 + b$

$+4 \quad +4$

$-5 = b$

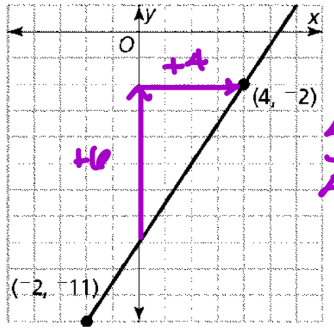
$y = -\frac{1}{2}x - 5$

Algebra 8 TWMM Re

Homework Questions?

Write the equation for the lines shown in the graphs below.

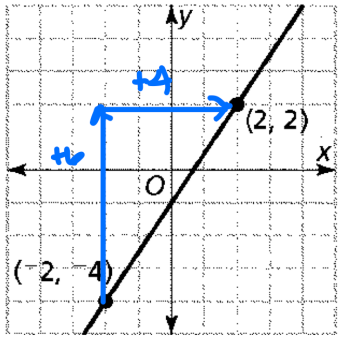
A



$\frac{\Delta y}{\Delta x} = \frac{6}{4} = \frac{3}{2}$

$y = \frac{3}{2}x - 8$

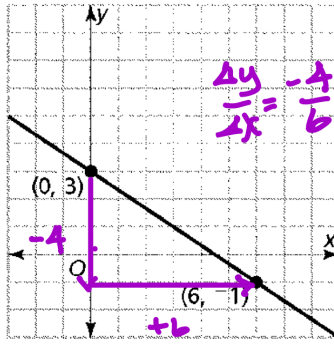
B



$\frac{\Delta y}{\Delta x} = \frac{6}{4} = \frac{3}{2}$

$y = \frac{3}{2}x - 1$

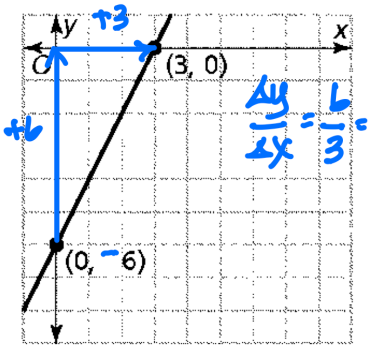
C



$\frac{\Delta y}{\Delta x} = \frac{-4}{6} = \frac{-2}{3}$

$y = -\frac{2}{3}x + 3$

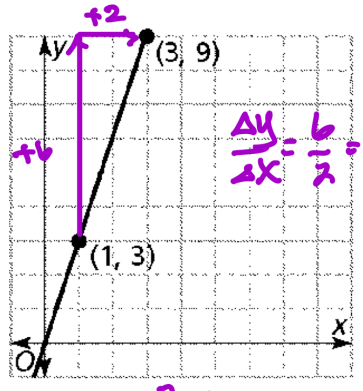
D



$\frac{\Delta y}{\Delta x} = \frac{6}{3} = 2$

$y = 2x - 6$

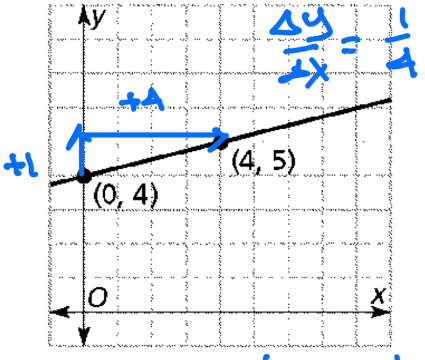
E



$\frac{\Delta y}{\Delta x} = \frac{6}{2} = 3$

$y = 3x$

F



$\frac{\Delta y}{\Delta x} = \frac{1}{4}$

$y = \frac{1}{4}x + 4$

Algebra 8 TWMM Review

Determine whether the relationship between x and y is linear or not. If it is linear, write the equation. If it is not linear, explain how you know.

G

x	2	4	6	8
y	21	16	12	7

+2 +2 +2

-5 -4 -5

$\frac{\Delta y}{\Delta x} = \frac{-5}{2} \neq \frac{-4}{2} \neq \frac{-5}{2}$ not linear. no constant slope

H

x	1	2	4	6
y	15	19	27	35

I

x	1	2	3	4
y	16	24	32	40

+1 +1 +1

+8 +8 +8

$\frac{\Delta y}{\Delta x} = \frac{8}{1}$ $y = 8x + 8$

J

x	5	-5	-13	-21
y	-2	3	7	11

K

x	3	6	9	15
y	2	3	4	6

+3 +3 +6

+1 +1 +2

$\frac{\Delta y}{\Delta x} = \frac{1}{3} = \frac{2}{6}$

$y = \frac{1}{3}x + b$

$2 = \frac{1}{3}(3) + b$

$2 = 1 + b$

$1 = b$

$y = \frac{1}{3}x + 1$

L

x	1	2	3	4
y	2	4	8	16

M

x	2	3	4	5
y	15	17	19	21

+1 +1 +1

+2 +2 +2

$\frac{\Delta y}{\Delta x} = \frac{2}{1}$

$y = 2x + b$

$15 = 2(2) + b$

$15 = 4 + b$

$11 = b$

$y = 2x + 11$

N

x	2	4	6	8
y	17	29	41	53

O

x	-4	-2	2	4
y	6	10	18	22

+2 +4 +2

+4 +8 +4

$\frac{\Delta y}{\Delta x} = \frac{4}{2} = \frac{8}{4} = 2$

$y = 2x + b$

$18 = 2(2) + b$

$18 = 4 + b$

$14 = b$

$y = 2x + 14$

P

x	3	6	9	15
y	8	7	6	5

Q

x	7	25	30	37
y	-2	-2	-2	-2

+18 +5 +2

+0 +0 +0

$\frac{\Delta y}{\Delta x} = \frac{0}{18} = \frac{0}{5} = \frac{0}{2} = 0$

$y = 0x + b$

$-2 = 0(7) + b$

$-2 = b$

$y = -2$

R

x	1	3	5	7
y	10	7	4	1

Algebra 8 TWMM Review

Write the equation of the line given the following conditions:

S passes through the points (2, 7) and (6, 15)	**T** with slope −2 that passes through the point (3, −9)

+4 < 2,7 / 6,15 > +8 $\frac{\Delta y}{\Delta x} = \frac{8}{4} = 2$

$y = 2x + b$
$7 = 2(2) + b$
$7 = 4 + b$
$-4 \quad -4$
$3 = b$

$y = 2x + 3$

$y = -2x + b$
$-9 = -2(3) + b$
$-9 = -6 + b$
$+6 \quad +6$
$-3 = b$

$y = -2x - 3$

U passes through the points (2, −9) and (−2, 3)	**V** with slope $\frac{3}{2}$ that passes through the point (−2, 0)

−4 < 2,−9 / −2,3 > +12 $\frac{\Delta y}{\Delta x} = \frac{12}{-4} = -3$

$y = -3x + b$
$-9 = -3(2) + b$
$-9 = -6 + b$
$+6 \quad +6$
$-3 = b$

$y = -3x - 3$

$y = \frac{3}{2}x + b$
$0 = \frac{3}{2}(-2) + b$
$0 = -3 + b$
$+3 \quad +3$
$3 = b$

$y = \frac{3}{2}x + 3$

w	**x**
passes through the points (4, 1) and (-2, 4)	with slope $\frac{2}{3}$ that passes through the point (6, 2)

4, 1
-2, 4

$\frac{\Delta y}{\Delta x} = \frac{3}{6} = -\frac{1}{2}$

$y = -\frac{1}{2}x + b$

$1 = -\frac{1}{2}(4) + b$

$1 = -2 + b$

$+2 \quad +2$

$3 = b$

$y = -\frac{1}{2}x + 3$

$y = \frac{2}{3}x + b$

$2 = \frac{2}{3}(6) + b$

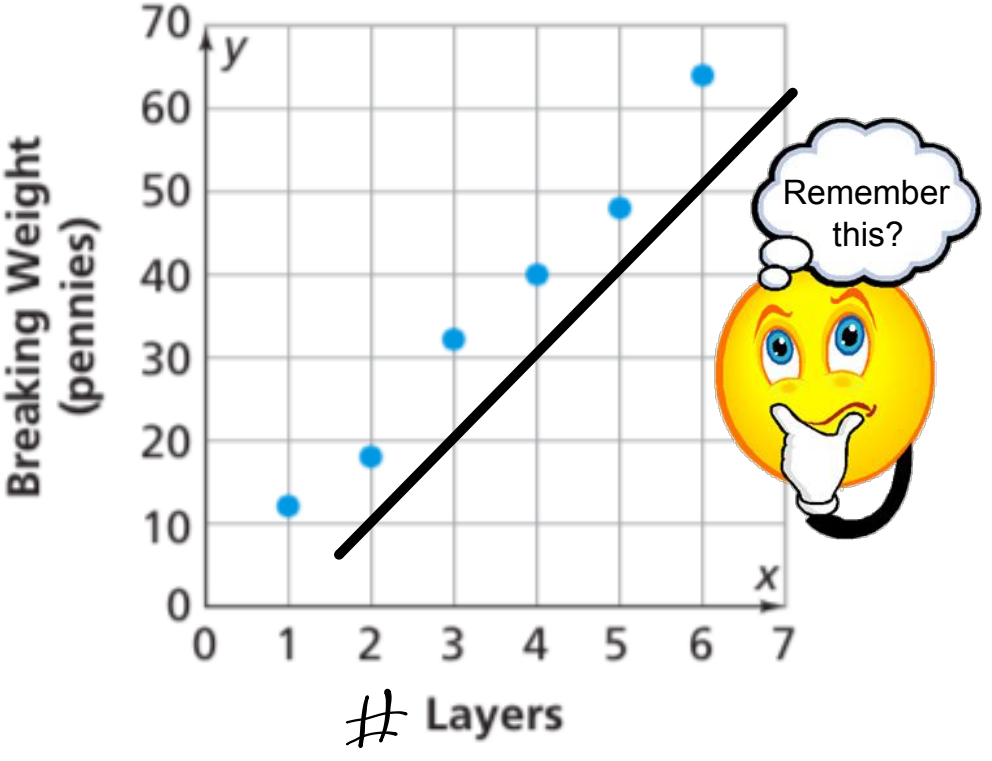
$2 = 4 + b$

$-4 \quad -4$

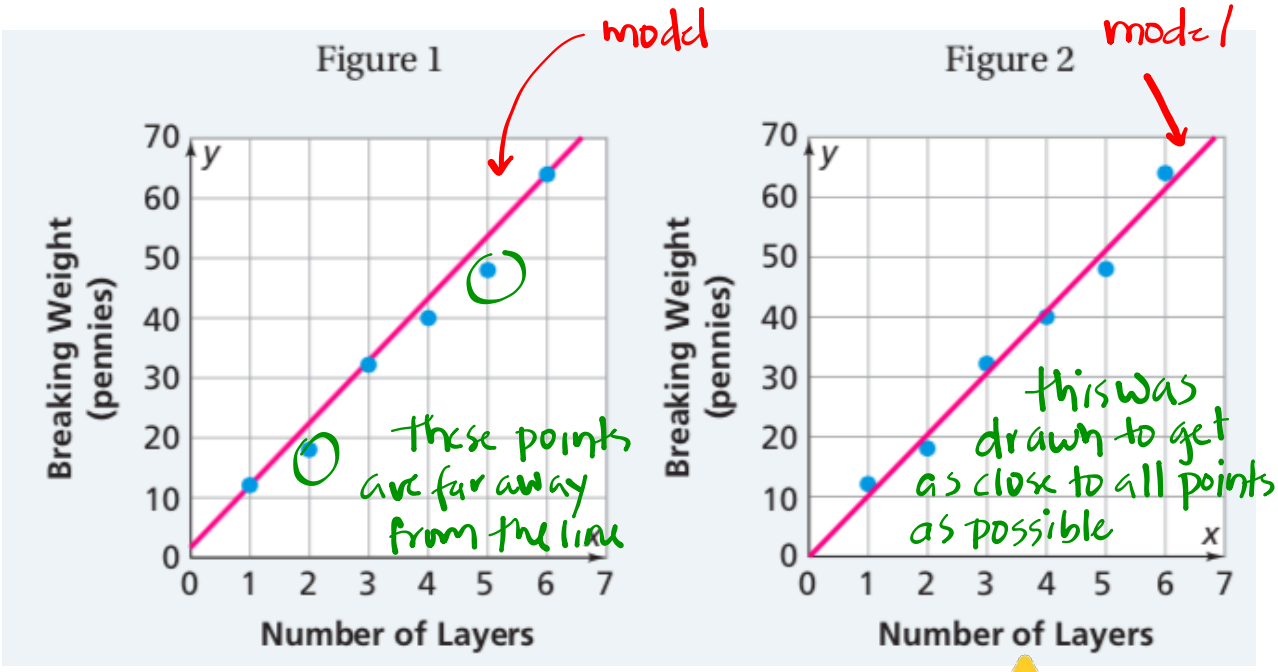
$-2 = b$

$y = \frac{2}{3}x - 2$

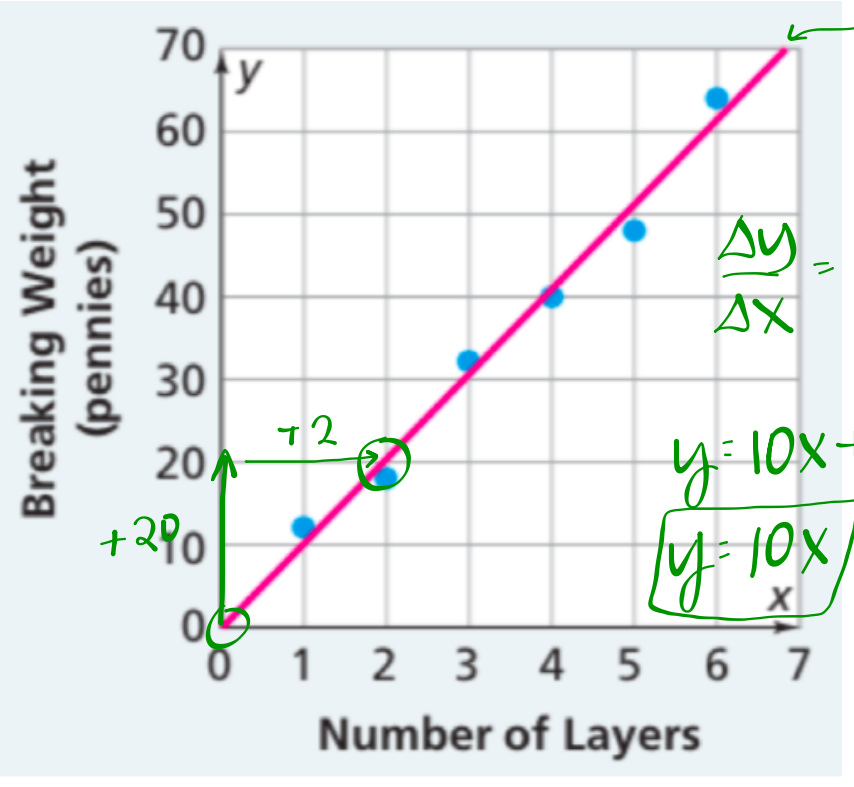
Real life data is not always "perfect", yet it still can represent a linear relationship.



Which line do you think "models" the plotted data the best?

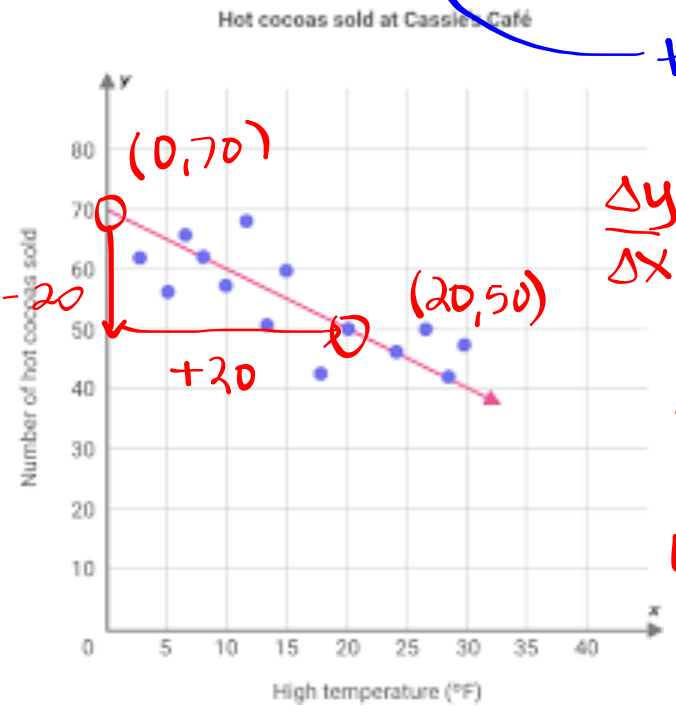


How do we write an equation from a line of best fit?



To write the equation of the line, always choose points ON THE LINE (they don't need to be actual data points).

How can we use our model to answer a question?



the equation

$\frac{\Delta y}{\Delta x} = \frac{-20}{20} = -1$

$y = -1x + b$

$y = -x + 70$

↑ read off graph

If the temp is 15°, how many hot cocoas will be sold?

$y = -x + 70$

$y = -(15) + 70$

$y = 55$

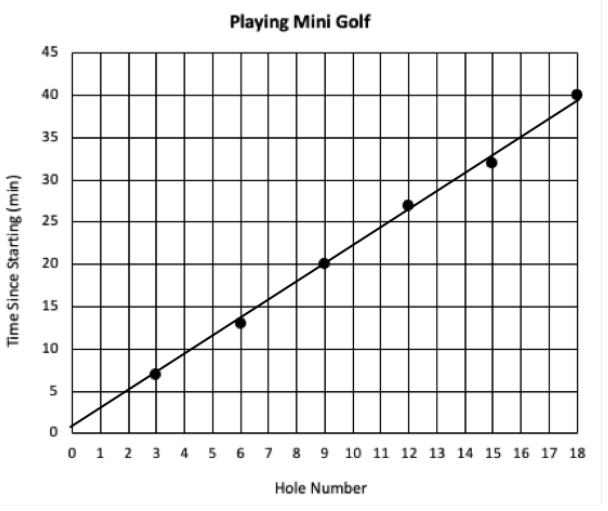
55 hot cocoas sold if 15° outside

Using A Line of Best Fit to Make Estimates

Mini Golf:

Jamal and Alisha played a round of miniature golf. They made some notes of the time it took them to play. Their data are plotted in the graph below:

A line of best fit is already drawn. Pick 2 points on the line, and write the equation for the line of best fit in slope-intercept form (y = mx + b).



What is the slope of your line? What does this number tell us about playing mini golf?

The following questions can be answered using your equation.

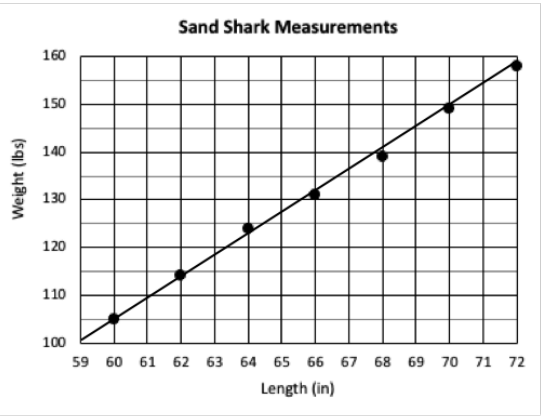
1. Estimate the time it took Jamal and Alisha to play the first 7 holes.

2. What hole would you estimate them to be on if they played for 35 minutes?

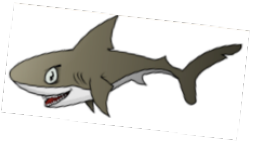
Sand Sharks:

Lengths and corresponding ideal weights of sand sharks were collected and the data is plotted below.

A line of best fit is already drawn. Pick 2 points on the line, and write the equation for the line of best fit in slope-intercept form (y = mx + b).



What is the slope of your line? What does this number tell us about the length and ideal weight for a sand shark?



The following questions can be answered using your equation.

1. Predict the weight of a sand shark whose length is 75 inches.

2. If a shark weighs 150 pounds, how long would we expect it to be?

Homework

Finish pages 1 and 2