

1.3 Linear Models Day 4

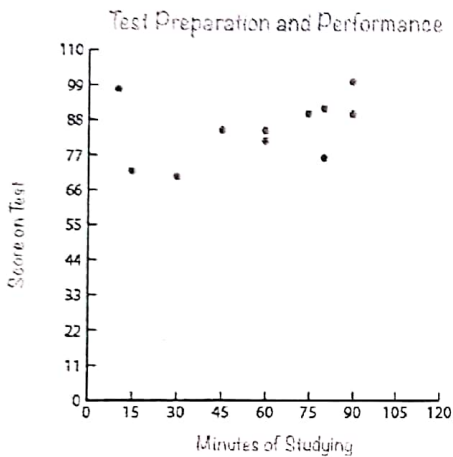
Slope-intercept form - $y = mx + b$

Point-slope form - $y - y_1 = m(x - x_2)$

Slope - $\frac{\text{Rise}}{\text{Run}}$ or $\frac{y_2 - y_1}{x_2 - x_1}$

y-intercept - starting value

1. Kevin recorded the time 11 students spent studying for the Chapter 3 test and the scores they earned. This data is displayed in the scatter plot below.



Part A

Which statement below best describes the correlation between minutes spent studying and score earned on the test?

- There is a negative correlation between minutes spent studying and score earned.
- There is a positive correlation between minutes spent studying and score earned.
- There is no correlation between minutes spent studying and score earned.
- There is not enough information to determine a correlation between minutes spent studying and score earned.

Part B

Which of the following is the most reasonable equation for the line of best fit for the data in the scatter plot?

$y = \frac{1}{3}x + 65$

$y = -\frac{1}{3}x + 65$ Neg. slope

$y = 65x - \frac{1}{3}$ Neg. y-inter

$y = -65x + \frac{1}{3}$ Neg. slope

2. The function $C(t) = 1.90 + 1.40t$ shows the cost of a hamburger, C , with different numbers of toppings t .

a. What does the y-intercept represent? The y-intercept represents the cost of a plain burger

b. What does the slope represent? Each topping costs \$1.40

- c. If Morgan paid \$3.30 for a hamburger, how many toppings were on Morgan's hamburger?

1 topping

3. Charles pays a fixed fee plus an hourly rate to rent a boat. The table below shows how much Charles paid for the boat.

- a) Write a linear equation in both point-slope form and slope-intercept form to describe the amount paid, A , for renting the boat t hours.

$y - 27 = 12(x - 1)$
 $y - 27 = 12x - 12$
 $y = 12x + 15$

Hours Rented	1	2	3	4	5
Amount Paid	\$27	\$39	\$51	\$63	\$75

$A = 12t + 15$

$m = 12$

- b) What is the hourly rate to rent the boat? \$12 per hour

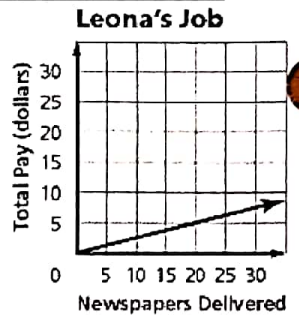
- c) What does the y-intercept represent? The starting fee to rent a boat is \$15.

1.3 Linear Models Day 4 HW

Name _____

4. The graph show the numbers of newspapers delivered and total pay for Leona's newspaper delivery job. Write a linear equation to represent Leona's total pay, P , as a function of the number of newspapers delivered, n .

$$P = \frac{1}{4}h$$



5. Write a linear equation in slope-intercept form to model each situation.

- a. You rent a bicycle for \$20 plus \$2 per hour. $y = 2x + 20$
 b. An auto repair shop charges \$50 plus \$25 per hour. $y = 25x + 50$
 c. A candle is 6 inches tall and burns at a rate of $\frac{1}{2}$ inch per hour. $y = -\frac{1}{2}x + 6$

6. The function $A(d) = -1.50d + 20$ shows the amount of money you have in your pocket, A , after buying d drinks.

a. What does the y-intercept represent? The y-intercept represents the starting amount you have in your pocket, \$20.

b. What does the slope represent? The slope represents the cost of each drink is \$1.50.

c. If you have \$10.50 left in your pocket, how many drinks did you buy?

$$10.50 = -1.50d + 20$$

$$-9.50 = -1.50d$$

$$d = 6.33$$

You bought 6 drinks.

7. Mya works as a commissioned sale rep. She makes a base salary plus a commission for each sale she makes. The table below shows how much Mya can make.

a) Write a linear equation in both point-slope form and slope-intercept form to describe the salary, S , for making n sales.

$$y - 250 = 50(x - 1)$$

$$y - 250 = 50x - 50$$

$$+ 250 \quad + 250$$

$$y = 50x + 200$$

$$S - 250 = 50(n - 1)$$

$$S = 50n + 200$$

Sales Made	x_1	x_2	3	4	5
Salary	\$250	\$300	\$350	\$400	\$450

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{300 - 250}{2 - 1} = 50$$

b) What does the slope represent? Mya makes \$50 per sale.

c) What does the y-intercept represent? Mya's starting salary is \$200.

4. You paid \$20 to join the program Spotify to listen to music and spend \$1 per downloaded. Graph the cost of using Spotify as a function of the number of downloaded songs.

