

## REAL WORLD MODELING

1. Uber rates in Kansas City include a \$3 booking fee and \$1.10 base fare as well as \$0.98 per mile traveled. (a) Write a function for the total fare ( $F$ ) in terms of the number of miles ( $x$ ) traveled. (b) What is the total fare for a 14-mile Uber trip?

eg. for  $\Rightarrow y = F$   
in terms of  $= x$

fee = \$4.10      rate = 0.98/mile

$$F = 0.98x + 4.10$$

$$F = 0.98(14) + 4.10 = \$17.82$$

Slope-int.

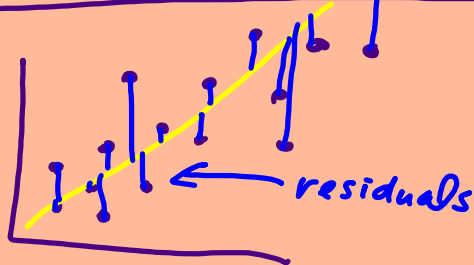
$$y = mx + b$$

$\uparrow$                        $\uparrow$   
 rate                      base fee

Point-Slope  
2 sets of data



# LINEAR REGRESSION



- 1) Line goes down the middle + points are evenly balanced on each side.

$r$  = correlation coefficient — how strong is the relationship between the  $x$  +  $y$  data.

$r^2$  = Coefficient of determination  
— how well does the line fit the data

$r^2 \geq 0.75$  good

$0.50 \leq r^2 < 0.75$  fair

$r \leq 0.5$  poor

To judge quality of line:

- 1) Are points evenly balanced on either side of the line

2)  $r^2$

- 3) How well does it predict the future?

