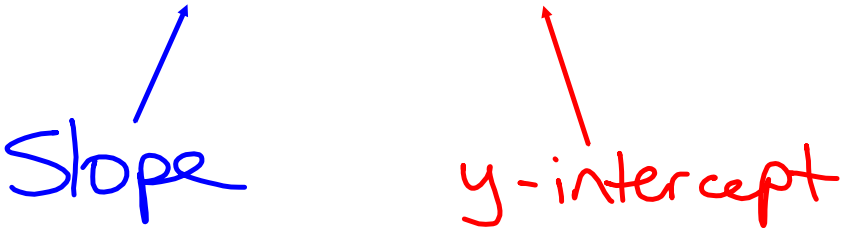
Word Problems

The equation of a line:

$$y = mx + b$$



When you have word problems (a context) that are linear relationships, the same formula can be used, but the "*m*" and the "*b*" have different meanings.

EX.1. Tom agrees to buy a gym membership which charges an initiation fee of $35.00 plus $2.00 per visit.

$2.00 → m; $35.00 → y-int

a. Write the equation that represents the cost of going to the gym.

$y = mx + b$

$y = 2x + 35$

b. What is the slope? What does it represent?

2

cost to visit gym

c. What is the y-intercept? What does it represent?

35

initial value (base fee)

d. Find the cost for 12 visits.

x = # of visits

Cost ←

$y = 2x + 35$

$y = 2(12) + 35$

$y = 24 + 35$

$y = 59$

∴ it costs $59

EX.2. It costs $7 for a taxi and $1.50 per km.

y-int. m

a. Write the equation that represents the cost of riding in a taxi.

$y = mx + b$

$y = 1.5x + 7$

Cost — number of Km

b. What is the slope? What does it represent?

1.5

cost per Km

c. What is the y-intercept? What does it represent?

7

- starting point
- initial value
- base fee

d. Find the cost of a 6km taxi ride.

$y = 1.5x + 7$

$y = 1.5(6) + 7$

$y = 9 + 7$

$y = 16$

∴ costs $16

EX.3. A tennis club charges an annual membership fee of $25 plus $5 for a day pass to play tennis.

y-int. m

a. Write the equation that represents the cost of a membership.

$y = mx + b$

$y = 5x + 25$

cost; # of times you go and play

b. What is the slope? What does it represent?

5

Cost per day

c. What is the y-intercept? What does it represent?

$25

base fee

d. How much would it cost to play tennis everyday for a week?

$y = 5x + 25$

$y = 5(7) + 25$ * $x = 7$ (7 days in a week)

$y = 35 + 25$

$y = 60$ ∴ it costs $60

e. How many times would you play if the cost for the membership is $65?

cost

$y = 5x + 25$

$-25 \quad -25$

$65 = 5x + 25$

$\frac{40}{5} = \frac{5x}{5}$

$8 = x$

∴ you play 8 times (days)

Homework:

Handout: Word Problems #1-3

Fill in the Blanks Sheet

Test is Fri!!