

DAY 3 - Find Equation of Lines from Word Problems

1. To purchase a fishing license, it costs \$25/year plus a one-time \$5 fee for processing the application. Assign variables and state the equation that describes this.

Let x be # of yrs

Let y be total cost

r.o.c = $25 \frac{\$}{\text{yr}}$ initial = 5

Equation: $y = 25x + 5$

3. Brian's car costs him \$4000 plus \$0.20 per km every year. Assign variables and state the equation that describes this.

let x be # of km
let y be total cost

$$y = 0.20x + 4000$$

5. A club charges each member \$24 plus \$2 per each exercise class. Assign variables and state the equation that describes this.

let x be # of classes
let y be total cost

$$y = 2x + 24$$

7. Tim wants air conditioning in his room. The air conditioner costs \$45. Each day the electricity costs \$2.
a. Assign variables and state the equation that describes this.

let x be # of days
let y be total cost

$$y = 2x + 45$$

2. A medium pizza costs a flat rate of \$9. Each additional topping cost is \$0.65. Assign variables and state the equation that describes this.

let y be total cost
let x be # of toppings

$$y = 0.65x + 9$$

4. Mike earns \$225 each week. Assign variables and state the equation that describes this.

let y be earnings
let x be # of weeks

$$y = 225x + 0$$

6. Each chocolate box costs \$5.99. Assign variables and state the equation that describes this.

let y be total cost
let x be # of boxes

$$y = 5.99x$$

- b. If Tim spent \$85 to cool his room, how many days did he run the AC?

sub $y = 85$

$$85 = 2x + 45$$

$$85 - 45 = 2x$$

$$40 = 2x$$

$$x = 20$$

∴ he ran AC for 20 days⁵

8. Sam charges a \$5 base fee plus \$20/hr to fix jewelry. Assign variables and state the equation that describes this.

let y be total cost
let x be # of hours

$$y = 20x + 5$$

9. Each minute of a song in MP3 format takes up approximately 1.4 MB of disk space. Assign variables and state the equation that describes this.

let y be space in MB
let x be # of min

$$y = 1.4x + 0$$

10. Ms. Underwood wants to send cookies to her nephew. The post office charges \$5.50 to package the item before delivery. Each box sent costs an extra \$1.25 added to the starting charge.

Assign variables and state the equation that describes this.

let y be total charge
let x be # of boxes

$$y = 1.25x + 5.50$$

11. The submarine starts at 3000^{kPa} below the surface of water. As it rises the underwater pressure in the ocean decreases by about 51 kPa for every 5 m of depth. Assign variables and state the equation that describes this.

let y be pressure in kPa
let x be depth

$$y = -\frac{51}{5}x + 3000$$

12. Hercules Fitness Club has two different rates for a kick-boxing class, one for members and one for non-members. For members of the fitness club, the yearly membership is \$75 and the cost of each class is \$10. For non-members of the club the cost of each class is \$25. Write down the two equations for these relationships. Identify variables you are using.

let y be total cost
let x be # of classes

Members: $y = 10x + 75$

non mem: $y = 25x + 0$

13. Students are planning a ski trip. They have a choice between two packages. The first package costs \$630 per student. It includes 2 meals a day and accommodation for 9 days. The second package costs \$720 per student. It includes 3 meals a day and accommodation for 9 days. Write down the two equations for these relationships. Identify variables you are using.

let "m" be price per meal
let "a" be price per accom

1st: $630 = 2m + 9a$

2nd: $720 = 3m + 9a$

14. Tammy wants to rent a movie from the video store. The membership fee is \$15 per month, plus \$4 per movie.

- a. Assign variables and state the equation that describes this.

let m be # of months
let v be # of movies
let y be total cost

$$y = 15m + 4v$$

- b. If Tammy spent \$135 at the store, how many videos did she rent?

↑ more months.

$$135 = 15(1) + 4v$$

$$135 - 15 = 4v$$

$$\frac{120}{4} = \frac{4v}{4}$$

$$30 = v$$

∴ she rented 30 videos