

Finding the equation of a line - answers

① $y = mx + b$ SLOPE INTERCEPT FORM

① x = number of minutes of calls y = cost

$$m = .05 \quad b = 20$$

$$y = .05x + 20$$

② x = number of miles driven

y = total cost of car rental

$$m = .19 \quad b = 243$$

$$y = .19x + 243$$

③ x = age of equipment in years

y = value, in \$

$$m = -3000 \quad b = 66000$$

$$y = -3000x + 66000$$

② $y - y_1 = m(x - x_1)$ POINT SLOPE FORM

① x = number of books purchased

y = shipping cost

$$m = 2 \quad (x_1, y_1) = (3, 10) = (3 \text{ books}, \$10)$$

$$y - 10 = 2(x - 3)$$

$$\text{simplifies to } y = 2x + 4$$

② x = number of cupcakes baked

y = cost of making cupcakes

$$* m \text{ is "tricky": } m = \frac{\$9}{12 \text{ cupcakes}} = .75$$

$$(x_1, y_1) = (120, 200) = (120 \text{ cupcakes}, \$200)$$

$$y - 200 = .75(x - 120)$$

$$\text{simplifies to } y = .75x + 110$$

Finding the equation of a line - answers

③ $m = \frac{(y_2 - y_1)}{(x_2 - x_1)}$ to find SLOPE

$y - y_1 = m(x - x_1)$ POINT SLOPE FORM

② x = number of bracelets y = cost to make bracelets

$(x_1, y_1) = (10, 350)$ $(x_2, y_2) = (40, 950)$

$$m = \frac{(y_2 - y_1)}{(x_2 - x_1)} = \frac{(950 - 350)}{(40 - 10)} = \frac{600}{30} = 20$$

$$y - 350 = 20(x - 10)$$

simplifies to $y = 20x + 150$

⑥ x = number of tee shirts

y = cost to produce tee shirts

$m = \frac{(y_2 - y_1)}{(x_2 - x_1)}$ where $(x_1, y_1) = (1000, 20000)$
 $(x_2, y_2) = (3000, 50000)$

$$m = \frac{(50000 - 20000)}{(3000 - 1000)} = \frac{30000}{2000} = 15$$

$$y - 20000 = 15(x - 1000)$$

simplifies to $y = 15x + 5000$

③ x = age of machinery in years

y = value, in \$

$(x_1, y_1) = (5, 50000)$ $(x_2, y_2) = (8, 35000)$

$$m = \frac{(y_2 - y_1)}{(x_2 - x_1)} = \frac{(35000 - 50000)}{(8 - 5)} = \frac{-15000}{3} = -5000$$

$$y - 50000 = -5000(x - 5)$$

simplifies to $y = -5000x + 75000$

or $y = 75000 - 5000x$