Graph the equation y = 3x - 2

Slope: $m = \dfrac{3}{1}$

y-int: $b = -2$

(0,-2)

Real Life Situations!
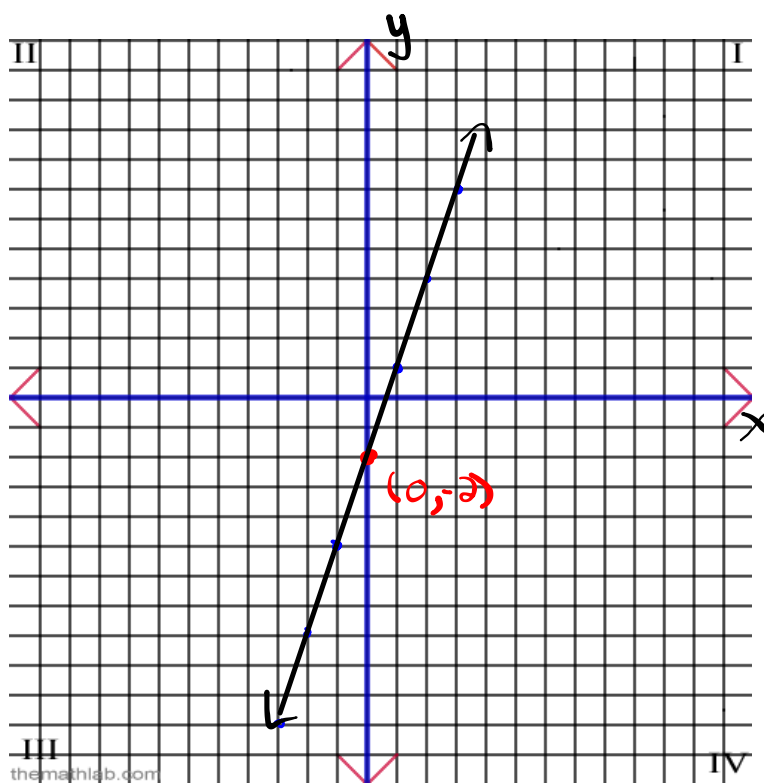
| **Slope (m):** | Cost per hour, Cost per km, Cost per picture, etc..... |

| **y-intercept (b):** | Initial cost, base rate, initial fee, flat rate, sitting fee, starting cost etc...... |

| x: | Number of kilometers, Number of hours, Number of pictures, etc.... |

| y: | Total Cost ($), Total Earned ($) |

Laura babysists on the weekend to make extra money. She charges $15 as a flat rate and then $5 every hour.

$b = 15$

$m = 5 = \dfrac{5}{1}\left(\dfrac{rise}{run}\right)$
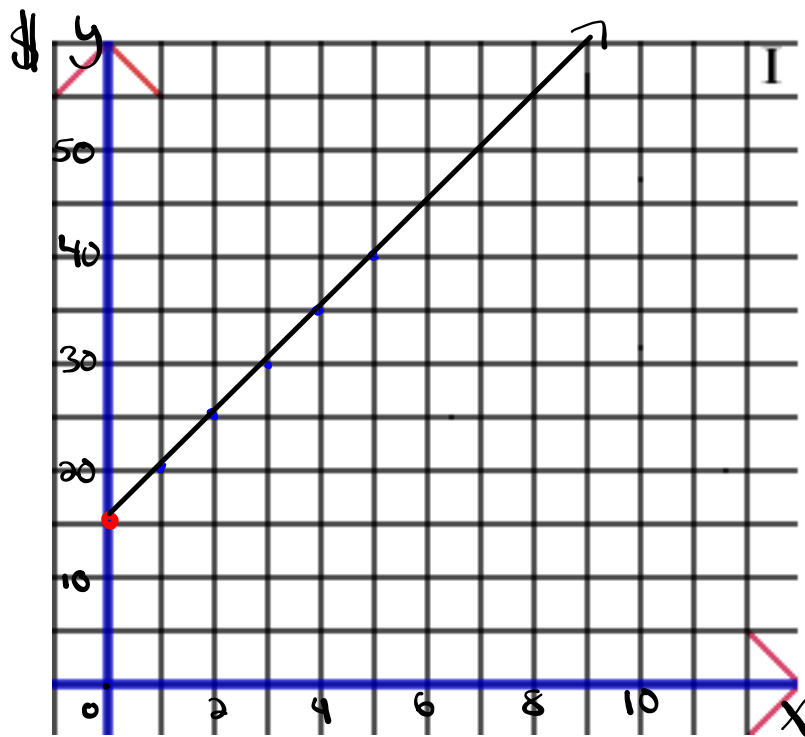
$y = mx + b$

$y = 5x + 15$

# of hours

Laura babysists on the weekend to make extra money. She charges $15 as a flat rate and then $5 every hour.

$b = 15$ $m = 5$

a) How much would it cost to have Laura babysit for 3 hours?

$x = 3$

$$y = 5x + 15$$
$$y = 5(3) + 15$$
$$y = 15 + 15$$
$$\boxed{y = \$30.00}$$

b) How many hours could you have Laura babysit for if you had $45? $y = 45$
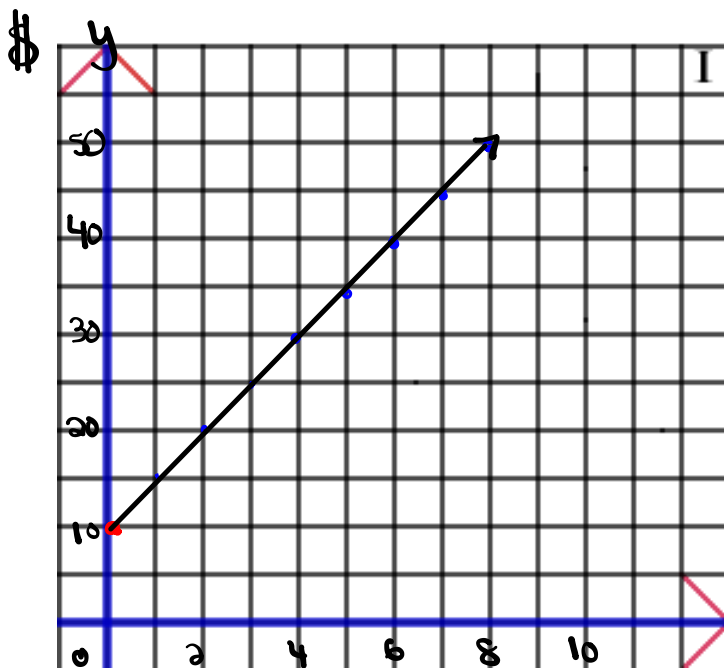
$$y = 5x + 15$$
$$45 = 5x + 15 \quad {}^{-15}$$
$$\frac{30}{5} = \frac{5x}{5}$$
$$\boxed{6 \text{ hrs} = x}$$

A photographer charges a sitting fee of $10 and $5 for every photograph ordered.

$b = 10$ $m = 5$

$$y = mx + b$$

$$y = 5x + 10$$

# of photos

A photographer charges a sitting fee of $10 and $5 for every photograph ordered.

a) How many photographs could you get for $35? $y = 35$

$$y = 5x + 10$$
$$35 = 5x + 10 \quad -10$$
$$\frac{25}{5} = \frac{5x}{5}$$

$$\boxed{5 \text{ photos} = x}$$

b) How much would it cost for 8 photographs? $x = 8$
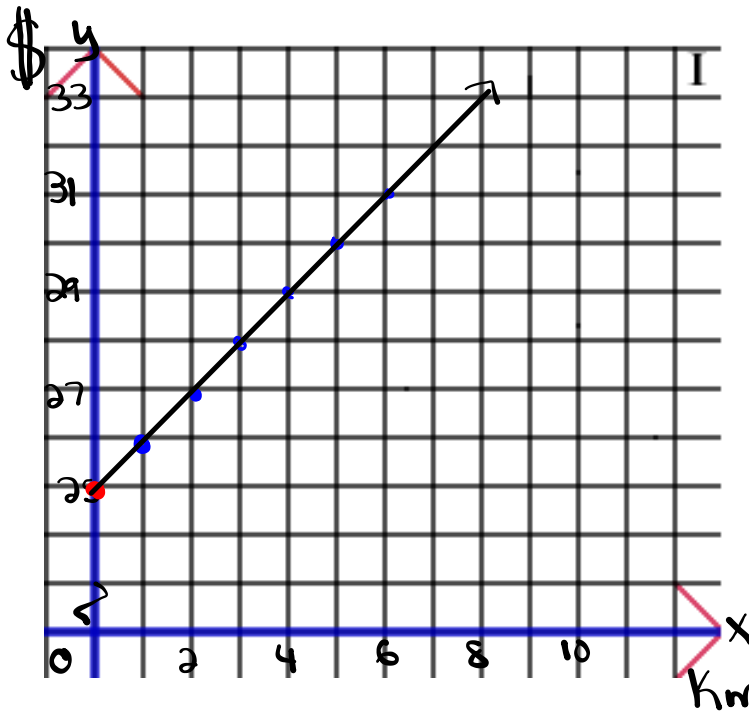
$$y = 5x + 10$$
$$y = 5(8) + 10$$
$$y = 40 + 10$$
$$\boxed{y = \$50.00}$$

A taxi driver charges a flat fee of $25 and then $1 for every km traveled.

$b = 25$　　　　　$m = 1$

$y = mx + b$

$y = 1x + 25$

Km travelled

A taxi driver charges a flat fee of $25 and then $1 for every km traveled.

$b = 25$ $m = 1$

a) How far can you travel for $75? $y = 75$

$$y = x + 25$$
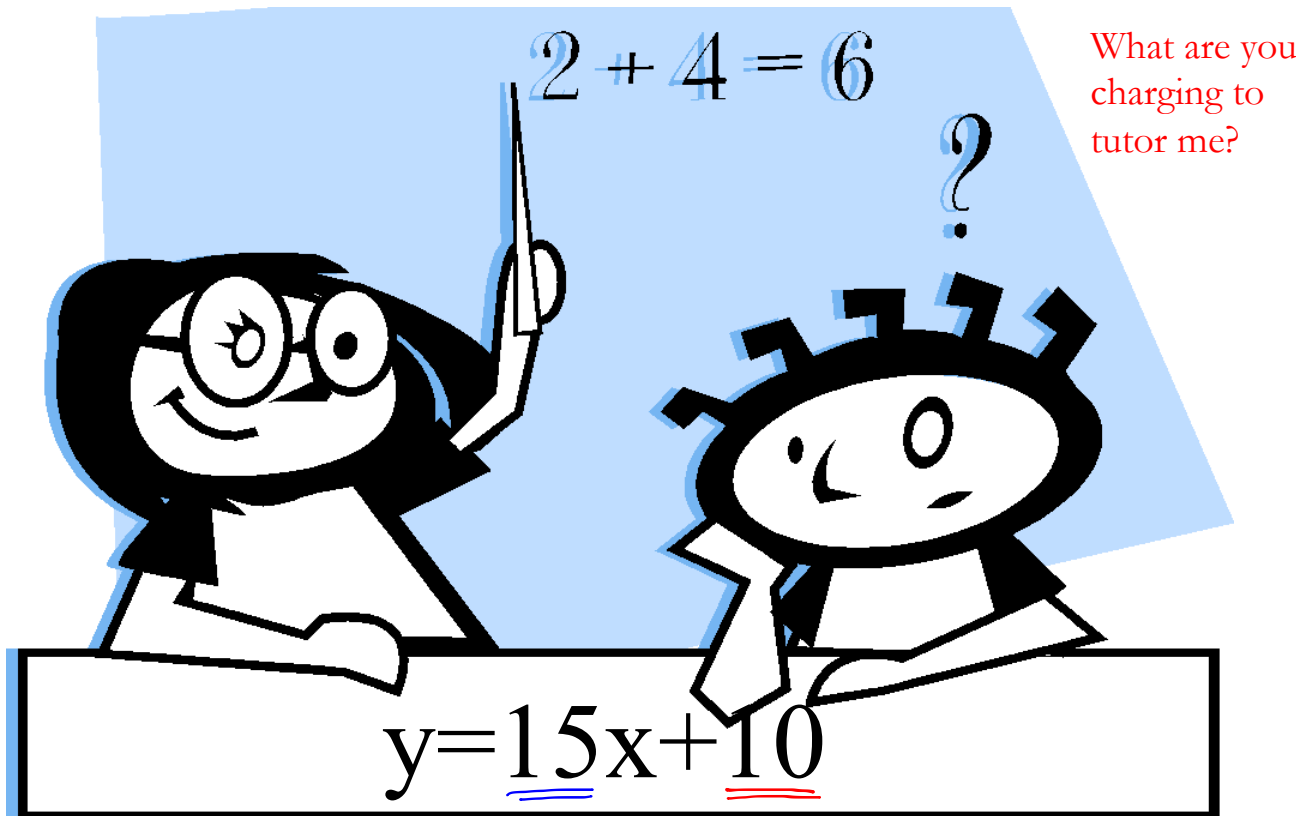
$$75 = x + 25 \quad {}^{-25}$$
$${}^{-25}$$

$$\boxed{50 \text{ km} = x}$$

b) How much would it cost to travel 50 km? $x = 50$

$$y = x + 25$$

$$y = 50 + 25$$

$$\boxed{y = \$75.^{00}}$$

$2 + 4 = 6$

?

What are you charging to tutor me?

$$y=15x+10$$

Write the scenario that would represent the equation.

$m = 15$

$b = 10$

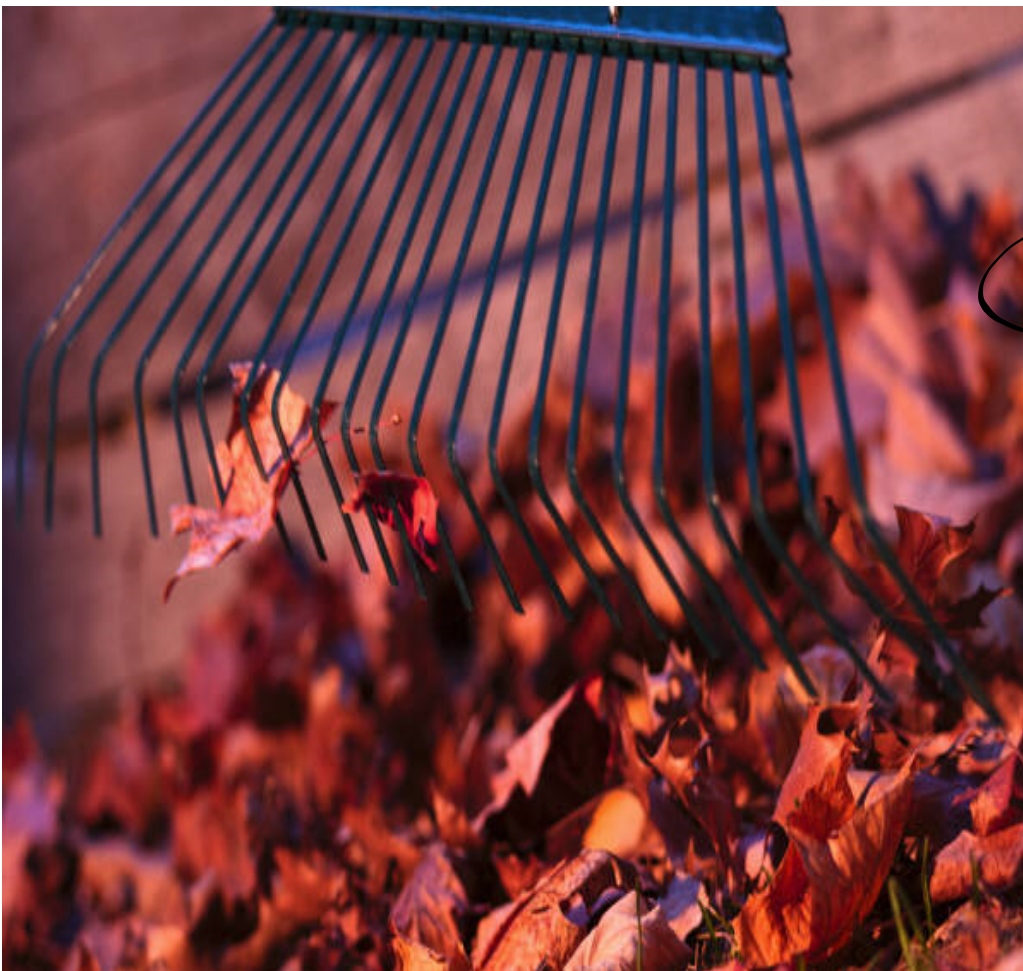They are charging you a flat rate of $10 plus $15 for every hour worked.

Which of the following equations is a reasonable representation of the cost of raking leaves.
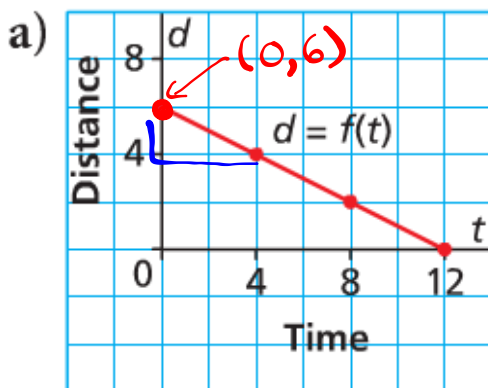
$50/hr ???

$$y=50x+5$$

$$y=15x$$

$15/hr

$$y = mx + b$$

m = Rate of Change (Slope)

b = initial amount (vertical intercept or y-int.)
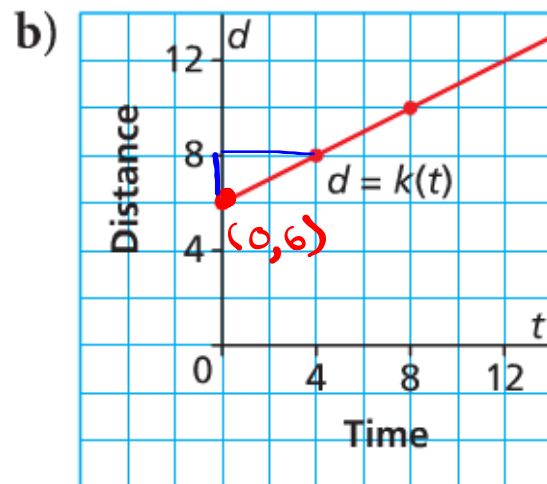
Write the equation for each.

a)

$b = 6$ $m = \dfrac{-2}{4} = \dfrac{-1}{2}$

$(0,6)$

$d = f(t)$

$$y = \dfrac{-1}{2}x + 6$$

b)

$b = 6$ $m = \dfrac{2}{4} = \dfrac{1}{2}$
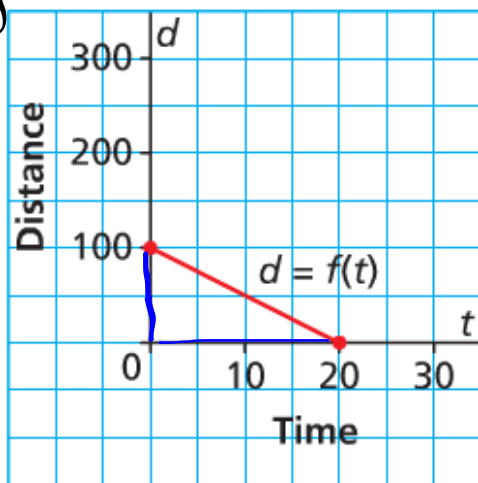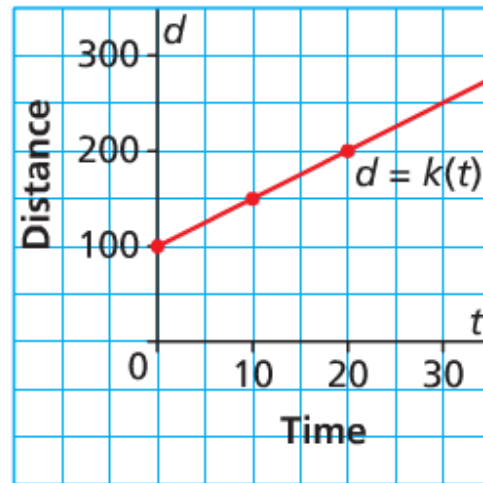
$d = k(t)$

$(0,6)$

$$y = \dfrac{1}{2}x + 6$$

Which graph has a rate of change of -5 and a vertical intercept of 100?

$m = -5$ $b = 100$

a)

$d = f(t)$

$m = \dfrac{-100}{20}$

$m = -5$

b)

$d = k(t)$

Homework

Answers:

① $y = 25x + 100$

② $y = 2.5x + 15$

③ $y = 5x + 20$

④ $y = 8x + 10$

⑤ $y = 30x + 100$

⑥ $y = 15x + 20$

⑦ $y = 10x + 45$

⑧ $y = 35x + 150$

⑨ $y = 10x + 40$

⑩ $y = 9x + 14$

⑪ $y = 18x + 75$

⑫ $y = 170x + 800$

⑬ $y = 15x$

⑭ $y = 7x + 10$

⑮ $y = 11x + 60$

⑯ $y = 20x + 150$

⑰ $y = 16x + 30$

⑱ $y = 12x + 20$

⑲ $y = 6x + 40$

⑳ $y = 15x + 23$

㉑ $y = 17x + 200$

㉒ $y = 20x + 30$

㉓ $y = 30x + 60$

a) $y = 11x + 60$

$y = 11(41) + 60$

$y = 451 + 60$

$y = \$511$

b) $y = 35x + 150$

$y = 35(21) + 150$

$y = 735 + 150$

$y = \$885$

c) $y = 20x + 30$

$250 = 20x + 30$

$220 = 20x$

$11 = x$

d) $y = 7x + 10$

$y = 7(35) + 10$

$y = 245 + 10$

$y = \$255$

e) $y = 15x$

$y = 15(19)$

$y = \$285$

f)
$$y = 25x + 100$$
$$1000 = 25x + 100$$
$$900 = 25x$$
$$36 = x$$

g)
$$y = 12x + 20$$
$$140 = 12x + 20$$
$$120 = 12x$$
$$10 = x$$

h)
$$y = 15x + 20$$
$$y = 15(6) + 20$$
$$y = 90 + 20$$
$$y = \$110$$

i)
$$y = 10x + 45$$
$$135 = 10x + 45$$
$$90 = 10x$$
$$9 = x$$

j)
$$y = 2.5x + 15$$
$$42.50 = 2.5x + 15$$
$$27.50 = 2.5x$$
$$11 = x$$

k)
$$y = 10x + 40$$
$$1100 = 10x + 40$$
$$1060 = 10x$$
$$106 = x$$