5. The number of birds (Y) varies directly with the number of trees (X) in the area. When there are 60 trees the scientist counted 135 birds.

a) Find the variation constant. Include units.

$K = \frac{y}{x} = \frac{135}{60} = 2.25$ birds/tree

b) Write a direction variation equation.

$\frac{y}{x} = 2.25$ or $y = 2.25x$

c) Find the number of trees if there are 324 birds.

$324 = 2.25x$ OR $\frac{60\text{T}}{135\text{B}} = \frac{x}{324\text{B}}$

144 trees

Solve. $5(R+3) - 7(R+2) \geq 23$

$5R + 15 - 7R - 14 \geq 23$

$-2R + 1 \geq 23$

$-1 \quad -1$

$\frac{-2R}{-2} \geq \frac{22}{-2}$

$R \leq -11$

Simplify.

$6(m+3) - 2(m-4n) + 8(6m-5n) + \frac{7}{3}(12m+9n)$

6m + 18 -2m + 8n +48m - 40n +28m + 21n

$6m + 18 + 8n$

$-2m$

$+48m \quad -40n$

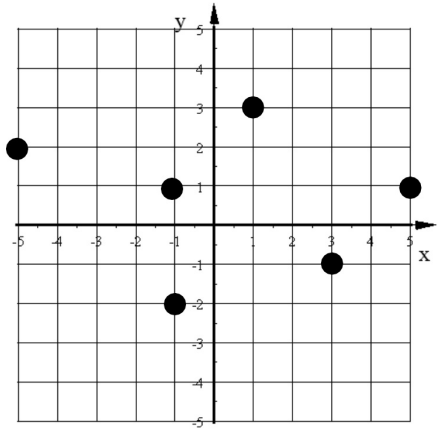
$+28m \quad +21n$

$80m - 11n + 18$

Simplify.

$4x^2y - 8xy^2 + xy - 9x^2y^2 + 6x^2y - 7xy - 3(x^2y^2 + 4xy^2) - 9x^2y$

State the Domain and Range of this graph



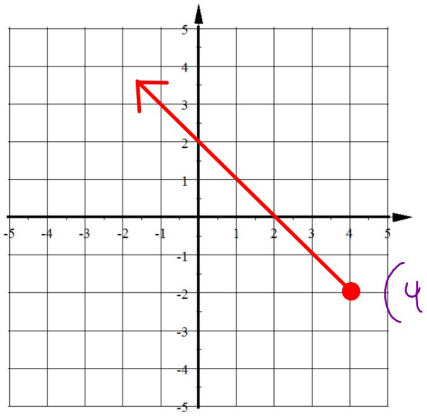
Domain:

-5,-1,1,3,5

Range:

-2,-1,1, 2, 3

State the Domain and Range of this graph



Domain: $x \leq 4$

Range: $y \geq -2$

$(4, -2)$

Use these functions:

$g(x) = 2x + 3$ $\quad 2(2)+3 = 7$

$h(w) = w^2 - 4$ $\quad 9 - 4 = 5$

$m(p) = \frac{p+4}{3}$ $\quad \frac{12+4}{3} = 7$

Find the value of:

$5g(2) - 2h(3) + 10m(17)$

$5(7) - 2(5) + 10(7)$

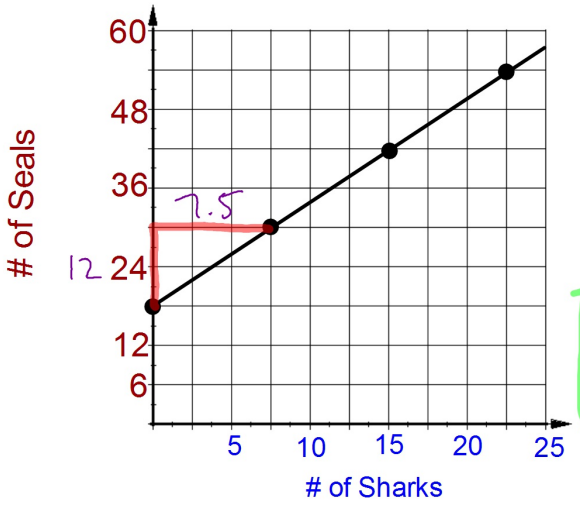
$35 - 10 + 70 = 95$

Find the rate of change. Include units.

Elephants	Gallons of Water
14	893
20	1217
25	1487

$\Delta x = 20 - 14$ $\quad \Delta y = 1217 - 893$

$\frac{\Delta y}{\Delta x} = \frac{324}{6}$ 54 gallons/elephant



Find the rate of change. Include units

1.6 seals/shark

$\frac{12 \text{ seals}}{7.5 \text{ sharks}}$

Write the equation of the line that passes through these two points in Slope-Intercept Form,

(-8,17)&(4,8)

$m = \frac{17-8}{-8-4}$

$m = \frac{9}{-12} = -\frac{3}{4}$

Using the slope of -3/4 and the point (4,8)

$y - 8 = -\frac{3}{4}(x-4)$

$y = -\frac{3}{4}x + 11$