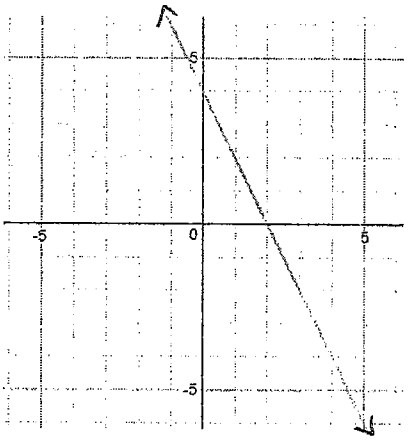
Unit 4 – Final Exam Review

1. Determine the domain and range of each relation, in both set notation and interval notation if appropiate. only

a)

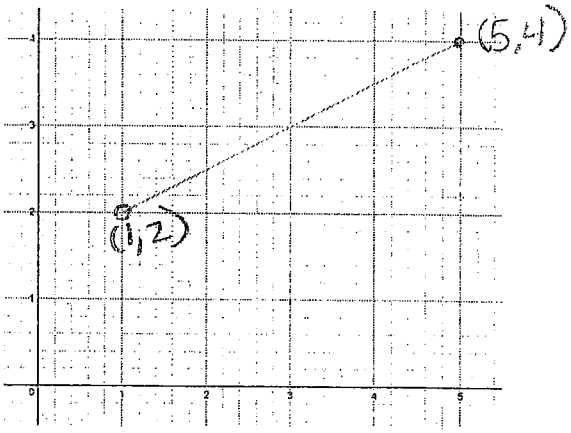


Domain: $x \in \mathbb{R}$ $(-\infty, \infty)$

Range: $y \in \mathbb{R}$ $(-\infty, \infty)$

Function: (Yes) No

b)

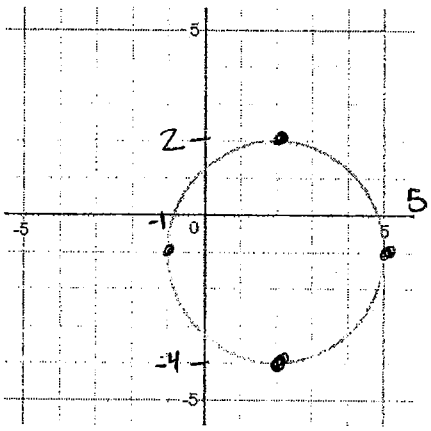


Domain: $1 < x \leq 5$ $(1, 5]$

Range: $2 < y \leq 4$ $(2, 4]$

Function: (Yes) No

c)

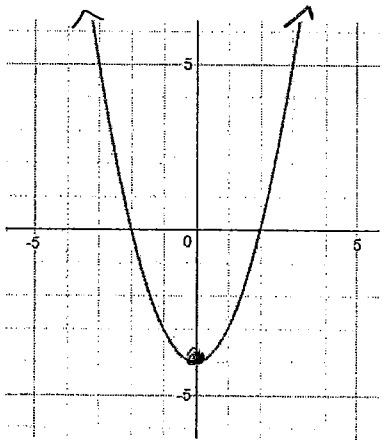


Domain: $-1 \leq x \leq 5$ $[-1, 5]$

Range: $-4 \leq y \leq 2$ $[-4, 2]$

Function: Yes (No)

d)



Domain: $x \in \mathbb{R}$ $(-\infty, \infty)$

Range: $y \geq -4$ $[-4, \infty)$

Function: (Yes) No

e) { (0 , 5) , (-3 , 4) , (7 , 1) , (2 , 8) , (7 , 3) }

Domain: $\{-3, 0, 2, 7\}$

Range: $\{1, 3, 4, 5, 8\}$

Function: Yes (No)

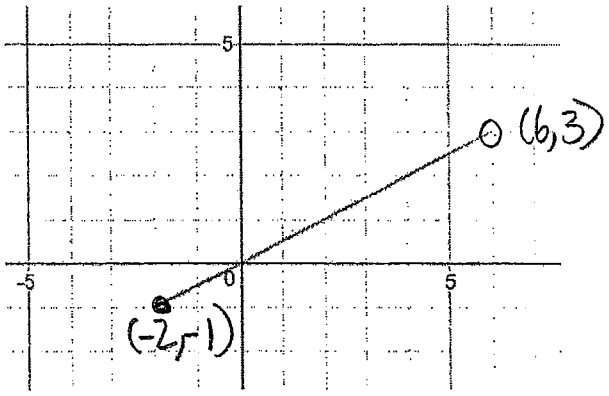
f) { (-4 , 6) , (2 , 5) , (0 , -9) , (-11 , 6) }

Domain: $\{-11, -4, 0, 2\}$

Range: $\{-9, 5, 6\}$

Function: (Yes) No

g)

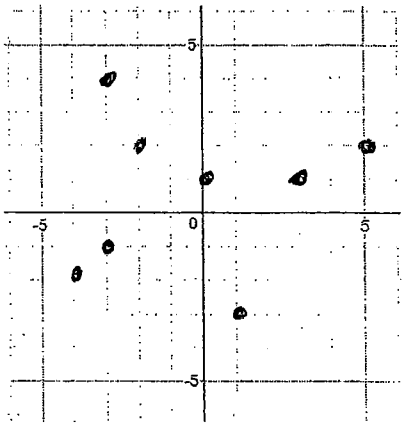


Domain: $-2 \leq x < 6$ $[-2, 6)$

Range: $-1 \leq y < 3$ $[-1, 3)$

Function: (Yes) No

h)

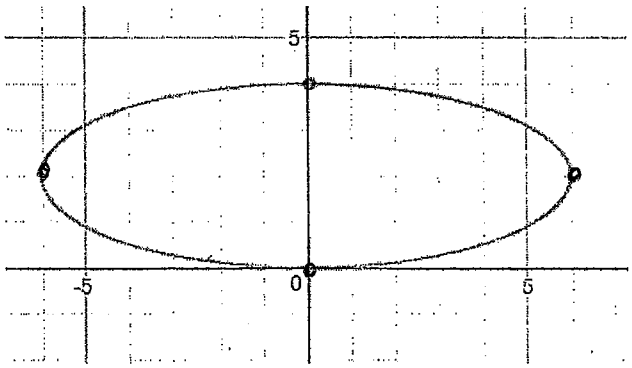


Domain: $\{-4, -3, -2, 0, 1, 3, 5\}$

Range: $\{-3, -2, -1, 1, 2, 4\}$

Function: Yes (No)

i)

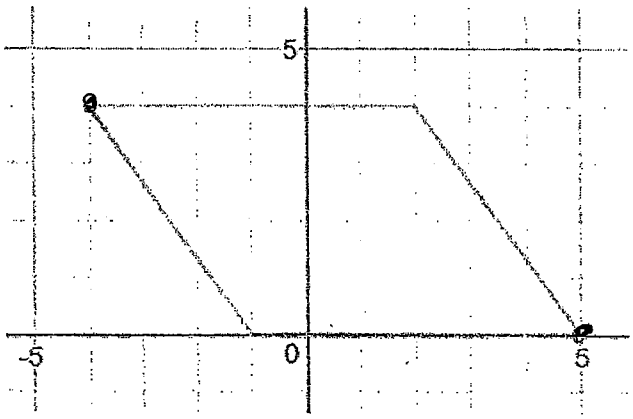


Domain: $-6 \leq x \leq 6$ $[-6, 6]$

Range: $0 \leq y \leq 4$ $[0, 4]$

Function: Yes (No)

j)



Domain: $-4 \leq x \leq 5$ $[-4, 5]$

Range: $0 \leq y \leq 4$ $[0, 4]$

Function: Yes (No)

2. Determine the rate of change for each linear relation.

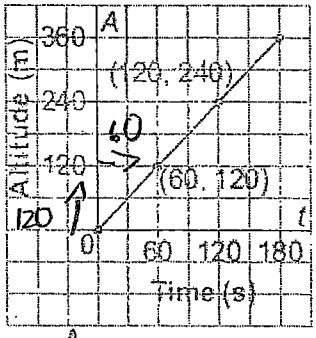
a) "x" run "y" rise

Time (s)	Distance (m)
0	18
2	24
4	30
6	36
8	42

+2 +6

slope $= \frac{6\text{m}}{2\text{s}} = \boxed{3\text{ m/s}}$

b) **Helicopter Lifting Off**

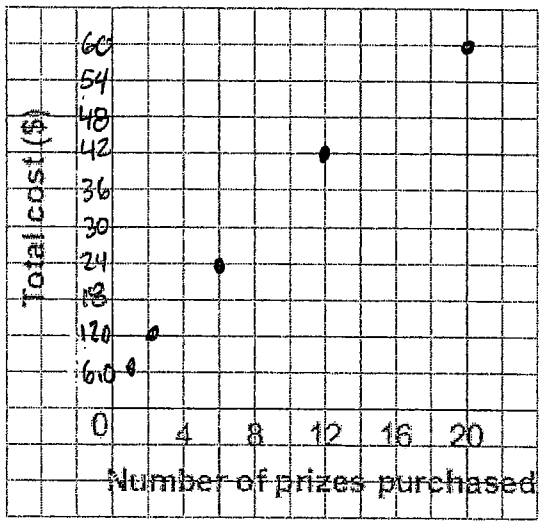


Slope $= \frac{120\text{m}}{60\text{s}} = \boxed{2\text{m/s}}$

3. This table shows the cost of prizes for a school carnival.

a) Make a graph for this relation. Choose an appropriate scale.

Number of Prizes	Total Cost ($)
1	6.00
2	12.00
6	24.00
12	42.00
20	60.00



b) Can you connect the points?
Justify your answer
No, the number of prizes must be whole numbers.

c) Is the relation a function?

yes

d) State the domain and range.

D: {1, 2, 6, 12, 20}

R: {6, 12, 24, 42, 60}

4. Which table of values represents a linear relation?

a)

Time (s)	Distance (m)
0	0
1	1
2	2
3	4
4	8

+1, +1, +1, +1 | +1, +1, +2, +4

Non linear

Not constant

b)

Time (s)	Distance (m)
0	0
1	5
2	10
3	15
4	20

+1, +1, +1, +1 | +5, +5, +5, +5

linear

5. Given the function $f(x) = -4x + 3$. Determine $f(-5)$.

$f(-5) = -4(-5) + 3$ ← $x = -5$

$= 20 + 3$

$\boxed{f(-5) = 23}$

6. Given the function $g(n) = n^2 - 3n + 8$. Determine $g(-2)$.

$n = -2$

$g(-2) = (-2)^2 - 3(-2) + 8$

$= 4 + 6 + 8$

$\boxed{g(-2) = 18}$

7. Given the function $f(n) = 3 - 8n$. Determine the value of n when $f(n) = -85$.

$-85 = 3 - 8n$

$-3 \quad -3$

$\frac{-88}{-8} = \frac{-8n}{-8}$ $\boxed{n = 11}$

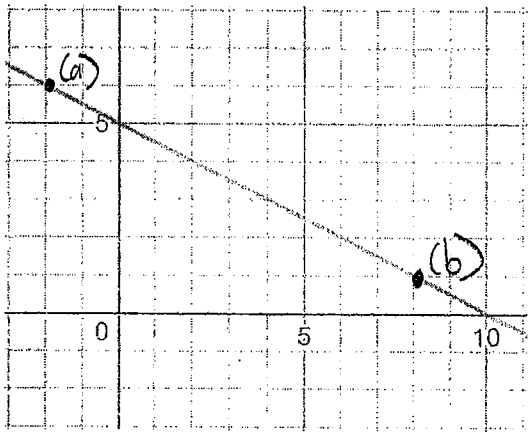
8. Given the function $f(x) = 5x - 6$. Determine the value of x when $f(x) = -41$

$-41 = 5x - 6$

$+6 \quad +6$

$\frac{-35}{5} = \frac{5x}{5}$ $\boxed{x = -7}$

9. Given the graph of the function:



a) Determine the value of the domain when the value of the range is 6.

$x = ?$

$y = 6$ $\boxed{x = -2}$

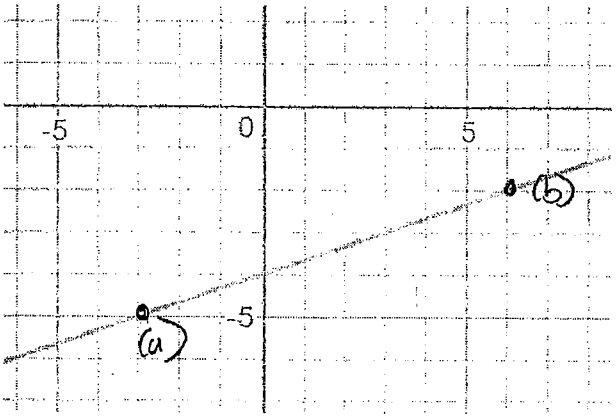
b) Determine the value of the range when the value of the domain is 8.

$y = ?$

$x = 8$

$\boxed{y = 1}$

10. Given the graph of the function:



a) Determine the value of the domain when the value of the range is -5

$x = ?$

$y = -5$ $\boxed{x = -3}$

b) Determine the value of the range when the value of the domain is 6.

$y = ?$

$x = 6$

$\boxed{y = -2}$