

Unit 3: Functions and Relations

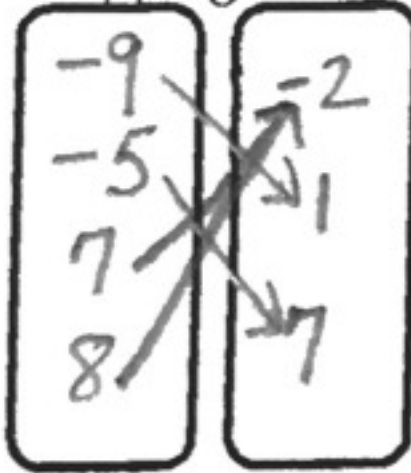
Number of Problems Missed	1	2	3	4	5	6	7	8
Homework Score	88	75	63	50	38	25	13	0

1 Relation: $\{(7,-2), (8,-2), (-5,7), (-9,1)\}$
Complete the following:

Table of Values:

X	Y
7	-2
8	-2
-5	7
-9	1

Mapping:



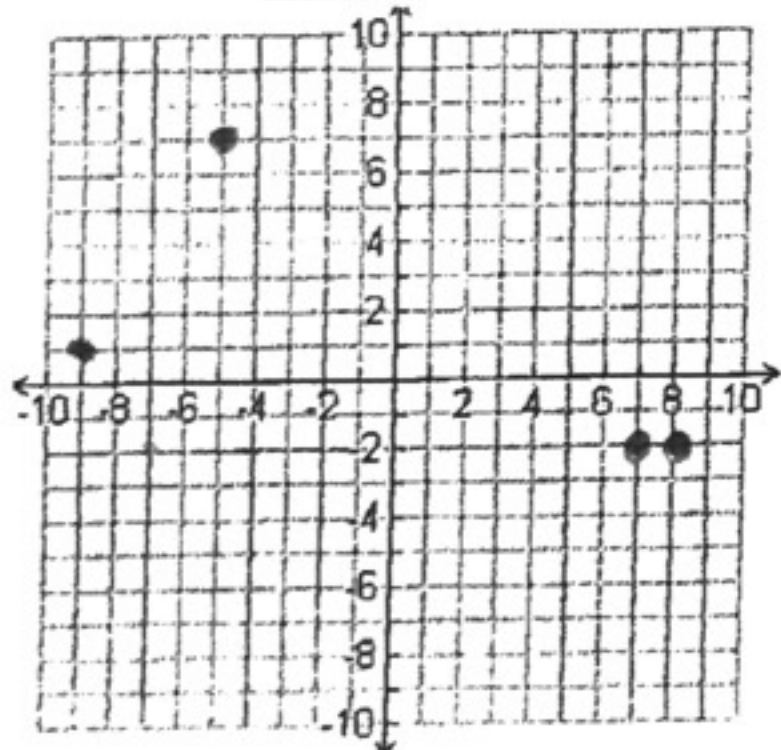
Domain:

$\{-9, -5, 7, 8\}$

Range:

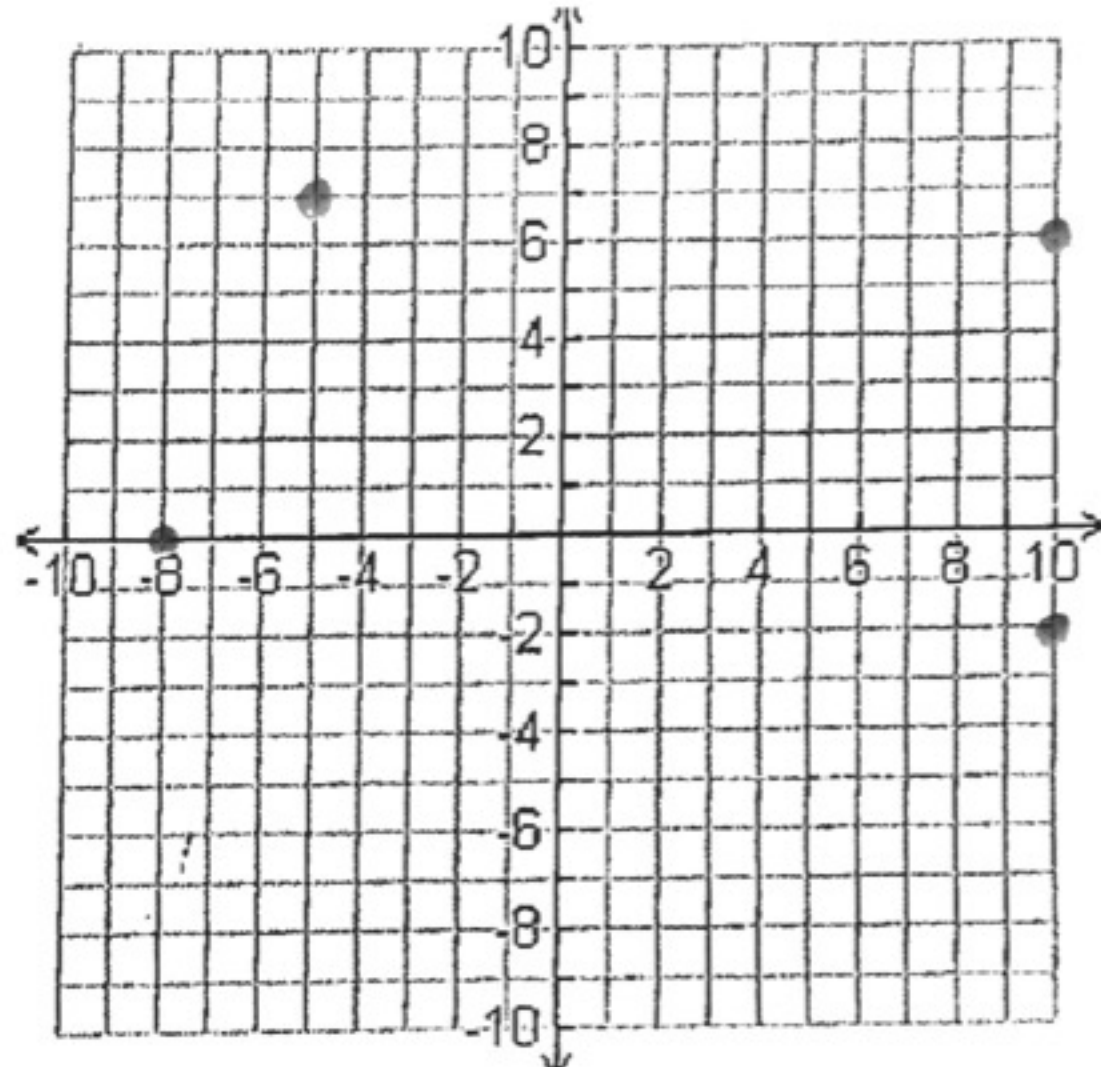
$\{-2, -1, 7\}$

Graph:



2 Graph the relation shown. Is the relation a function? Explain.

$\{(-8,0), (10,6), (10,-2), (-5,7)\}$



3 Solve:

$$\begin{aligned}
 -2x - 2(-7x + 7) &= 82 \\
 -2x + 14x - 14 &= 82 \\
 12x - 14 &= 82 \\
 12x &= 96 \\
 \frac{12x}{12} &= \frac{96}{12} \\
 x &= 8
 \end{aligned}$$

4 a.) Approximate $\sqrt{13}$ to the nearest tenth.

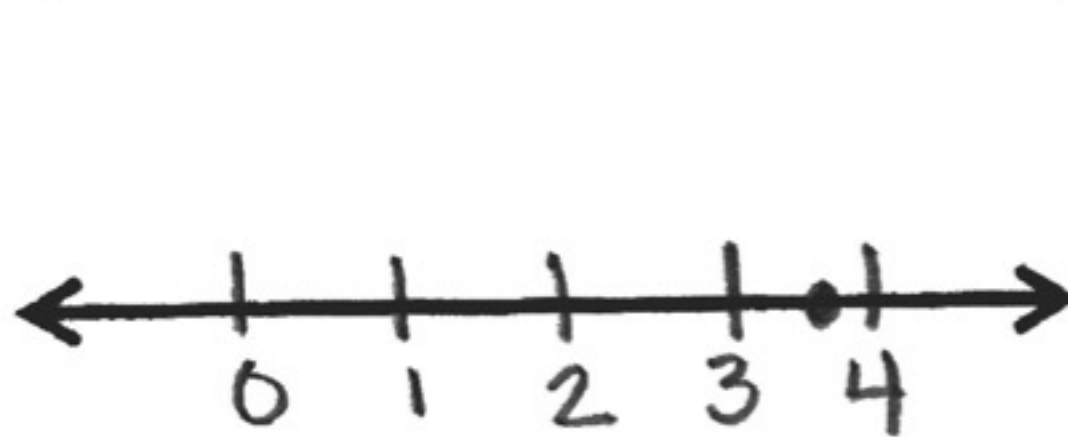
$$\begin{aligned}
 9 < 13 < 16 \\
 \sqrt{9} < \sqrt{13} < \sqrt{16} \\
 3 < \sqrt{13} < 4
 \end{aligned}$$

3.6

more than half

$$\begin{array}{r}
 3.6 \\
 \times 3.6 \\
 \hline
 216 \\
 108 \\
 \hline
 12.96
 \end{array}$$

b.) Plot it on a number line.



$$\begin{array}{r}
 3.7 \\
 \times 3.7 \\
 \hline
 259 \\
 111 \\
 \hline
 13.69
 \end{array}$$

c.) Between what two integers does $\sqrt{13}$ lie?

3 and 4

5 a) Write the fraction $-4\frac{7}{9}$ as a decimal.

$-4.\overline{7}$ $\frac{7}{9} \rightarrow 7$ is repeating

b) Classify this as a terminating or repeating decimal.

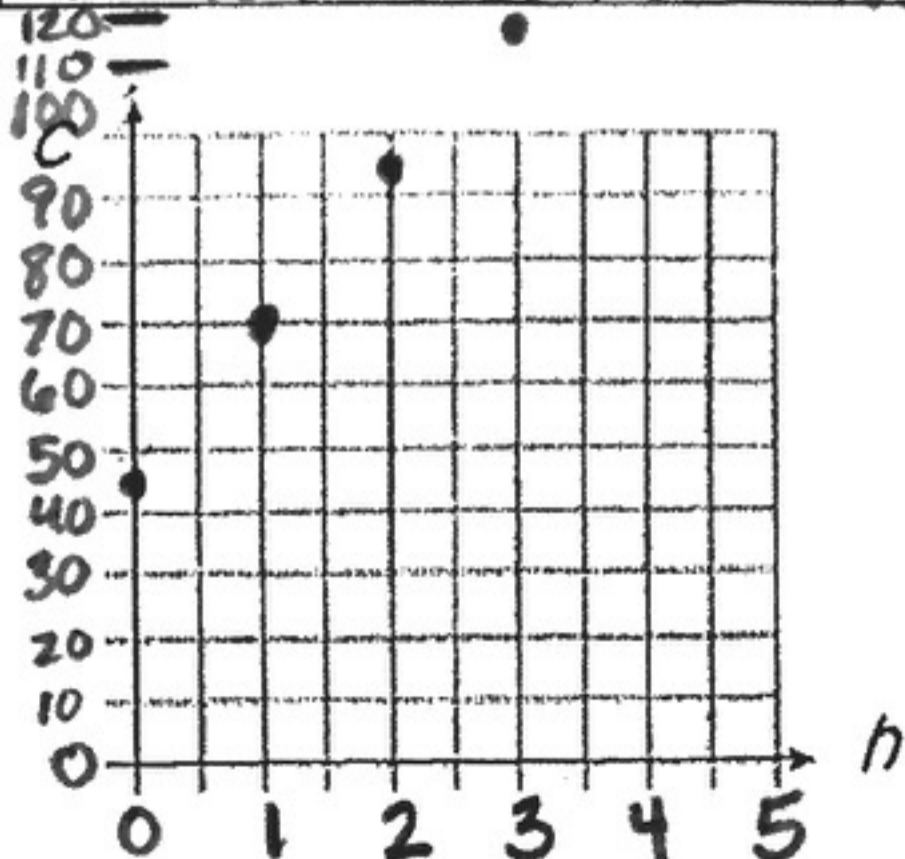
repeating decimal

c) Is $-4\frac{7}{9}$ a rational or irrational number? Explain how you know?

rational because it repeats

7 Elaine is in the business of repairing home computers. She charges a base fee of \$45 for each visit and \$25 per hour for her work. The total cost (c) for a home visit and (h) hours of work is modeled by the function rule $c = 45 + 25h$. Use the function rule to make a table of values and a graph.

Input	Rule	Output	Ordered Pair
h	$c = 45 + 25h$	c	(h, c)
0	$c = 45 + 25(0)$	45	(0, 45)
1	$c = 45 + 25(1)$	70	(1, 70)
2	$c = 45 + 25(2)$	95	(2, 95)
3	$c = 45 + 25(3)$	120	(3, 120)



6 Simplify:

a) $\frac{3^2 \cdot 3^5 \cdot 4^{-1}}{4^{-2} \cdot 3^{-3}}$ $\frac{3^2 \cdot 3^5 \cdot 3^3 \cdot 4^2}{4}$

$3^{10} \cdot 4$

b) $(4a^{-2})^3 (2ab)^2$

$4^3 a^{-2(3)} \cdot 2^2 a^2 b^2$

$64a^{-6} \cdot 4a^2 b^2$

$256 a^{-6+2} b^2$

$256 a^{-4} b^2$

$\frac{256 b^2}{a^4}$

8 What is the slope and y-intercept?

a) $3x - 4y = 12$

$m = \frac{3}{4}$

$b = -3$

$-4y = -3x + 12$

$\frac{-4y}{-4} = \frac{-3x + 12}{-4}$

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

b) $6x - y + 3 = 0$

$m = 6$

$b = 3$

$6x - y = -3$

$-y = -6x - 3$

$y = 6x + 3$