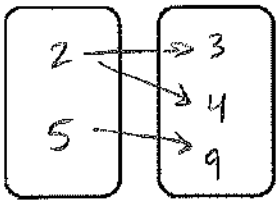
Algebra 1 – Chapters 3/4 Group Quiz / Review (17 pts) ****SHOW YOUR WORK****

Group Number: Key **Date:** _____ **Block:** _____

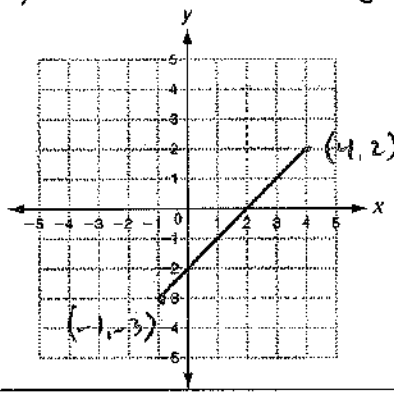
1 point each = 12 points

PART 1: SHORT ANSWER (points)

1) Express the relation {(2, 3), (2, 4), (5, 9)} as a mapping diagram.



2) Give the domain and range of the relation.



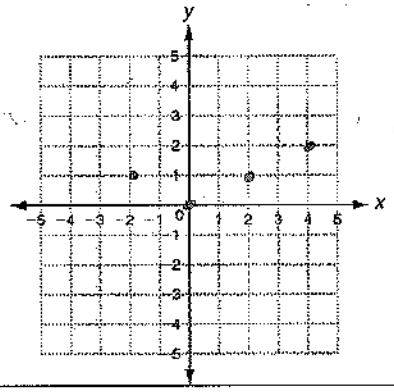
D: $-1 \leq x \leq 4$

R: $-3 \leq y \leq 2$

3) Tell whether the relation is a function. Explain.
{(–4, –1), (–3, 0), (–2, 1), (–1, 2)}

Yes b/c each x has only one y.

4) $y = \frac{1}{2}|x|$; D: {–2, 0, 2, 4}



$y = \frac{1}{2}|-2| = \frac{1}{2}(2) = 1$ (−2, 1)

$y = \frac{1}{2}|0| = \frac{1}{2}(0) = 0$ (0, 0)

$y = \frac{1}{2}|2| = \frac{1}{2}(2) = 1$ (2, 1)

$y = \frac{1}{2}|4| = \frac{1}{2}(4) = 2$ (4, 2)

5) Find the next three terms of the arithmetic sequence 2, 9, 16, 23, ...

+7 +7 +7

23 + 7 = 30 30 + 7 = 37 37 + 7 = 44

6) What is the 45th term of the arithmetic sequence 58, 61, 64, 67,...?

+3 +3 +3

$a_n = a_1 + (n-1)d$

$a_{45} = 58 + (45-1)(3)$

$a_{45} = 190$

7) This table shows the number of people at a festival at certain times during the day. During which time interval did the number of people increase at the greatest rate? What was the rate of change for that interval?

Hour (PM)	1	2	4	7	8
# of People	12	20	34	40	45

$r_1 = \frac{20-12}{2-1} = \frac{8}{1} = 8$

$r_2 = \frac{34-20}{4-2} = \frac{14}{2} = 7$

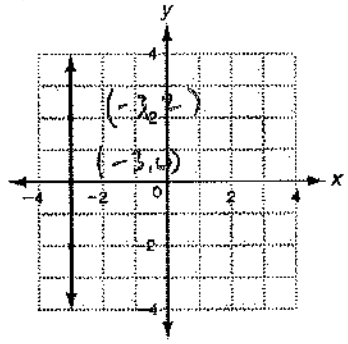
$r_3 = \frac{40-34}{7-4} = \frac{6}{3} = 2$

$r_4 = \frac{45-40}{8-7} = \frac{5}{1} = 5$

1 PM – 2 PM

8 people / hr

8) Find the slope of this line.



$m = \frac{2-0}{-3+3} = \frac{2}{0}$

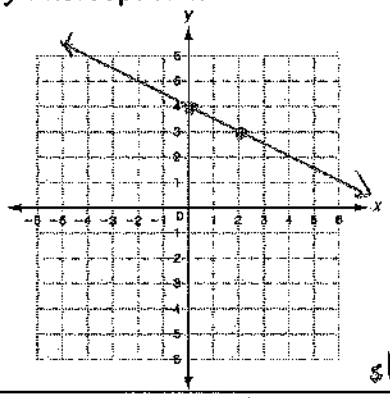
Undefined

8

9) Find the slope of the line that contains the points (4, 5) and (7, 11).

$m = \frac{11-5}{7-4} = \frac{6}{3} = 2$

10) Graph the line with a slope of $-\frac{1}{2}$ and y-intercept of 4.



$y = -\frac{1}{2}x + 4$

slope-intercept ✓

11) An artisan crochets blankets for a craft fair. The table shows the relationship between how many hours the artisan spent on a blanket and the price charged for the blanket.

Hours	8	24	16	8	20
Price ($)	80	200	120	65	180

Find an equation for a line of best fit.

$y = 8.18x + 4.61$

12) Write an equation in ~~point-slope~~ form that describes the line with a ~~slope of −3 that contains the point (4, 2).~~ (4, -3) (5, 0)

$m = \frac{0+3}{5-4} = \frac{3}{1} = 3$

$y = mx + b$

$0 = 3(5) + b$

$0 = 15 + b$

$-15 = b$

$y = 3x - 15$

PART 2: EXTENDED RESPONSE (points)

A scientist theorizes that you can estimate the temperature by counting how often crickets chirp. The scientist gathers the data in the table shown.

Number of chirps in a 14-second interval	37	32	42	37	46	35	34
Temperature (°F)	78	72	81	77	88	75	76

x

y

a. How many cricket chirps would you expect to indicate a temperature of 85 degrees? Include a graph and an equation as part of the justification of your answer.

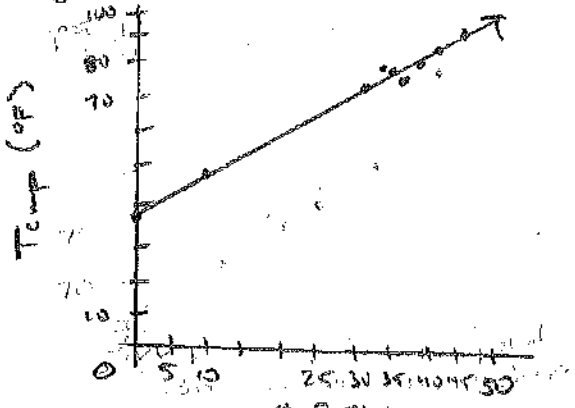
$y = 1.03x + 39.32$

$85 = 1.03x + 39.32$

$-39.32 \quad -39.32$

$\frac{45.66}{1.03} = \frac{1.03x}{1.03} \rightarrow x = 44.35$

About 44 chirps



b. What might be the lowest temperature to which your model could be applied? Explain your reasoning.

$y = 1.03(0) + 39.32$

$y = 39.32$

About 39° F b/c if there were 0 chirps, then that would mean the temperature was too cold for the crickets to live.