Algebra 1-2
Unit 4 Study Guide

Name: Key
Date: _____ Per: _____

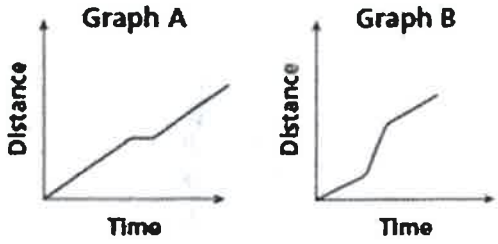
Choose the best graph for the scenario.

1. A person walks leisurely, stops, then continues walking.

A

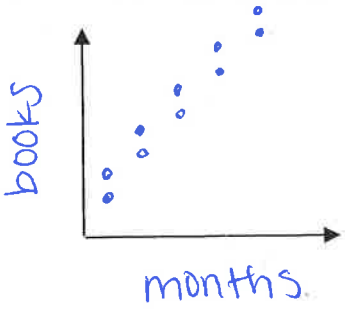
2. A person jogs, then runs, and then jogs again.

B

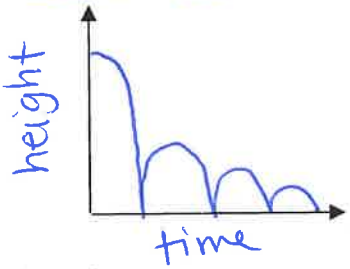


Sketch a graph for each situation.

3. Julie reads 2 books a month for 5 months.

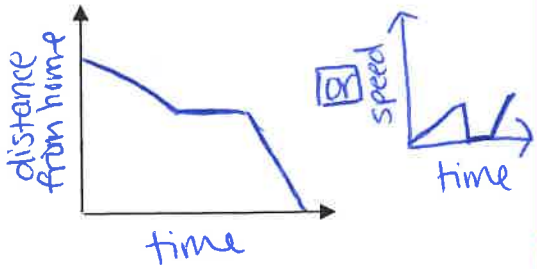


4. A ball is dropped from a second story window and bounces to a stop on the patio below.



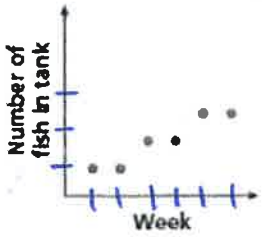
5. A girl was walking home at a steady pace. Then she stopped to talk to a friend. After her friend leaves, she jogs the rest of the way home.

① steady \
② stopped —
③ jogs /



Write a scenario for each graph. (Don't forget to assign units to #7)

6.



Every 2 weeks, you add another fish to the tank.

7.

answers vary! come show me and I'll check it for you.

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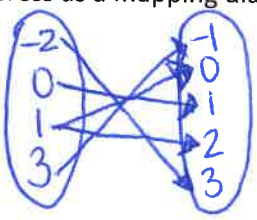
8.

x	−2	1	0	1	3
y	3	2	1	0	−1

a.) Express as a mapping diagram.



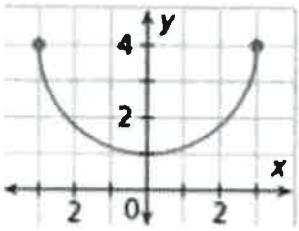
b.) Identify domain & range

D: {-2, 1, 0, 3} R: {3, 2, 1, 0, -1}

c.) Explain if it's a function.

No, it's not a function because the x-value 1 has two different y-values

9.



a.) Identify domain & range

D: [-3, 3]

R: [1, 4]

b.) Explain if it's a function.

Yes, it passes the vertical line test.

Evaluate.

10. $f(x) = -3x + 4$ *when* $x = -2$

$f(-2) = -3(-2) + 4$
$= 6 + 4$

$f(-2) = 10$

11. $g(x) = 2x^2$ *when* $x = -3$

$g(-3) = 2(-3)^2$
$= 2(9)$

$g(-3) = 18$

12. Bowling costs $3 per game plus $2.50 for shoe rental. **What is the independent and dependent variables? Write a function rule.**

I: # of games (g)

D: cost (c)

$C(g) = 3g + 2.50$

13. An engraver charges a $10 fee plus $6 per line of engraving. **Write a function rule and find a reasonable domain and range for up to 8 lines of engraving.**

Dep: fee (f)

Ind: # of lines (e)

$f(e) = 10 + 6e$

D: {1, 2, 3, 4, 5, 6, 7, 8}

R: {16, 22, 28, 34, 40, 46, 52, 58}

$f(1) = 16$ $f(3) = 28$ $f(5) = 40$ $f(7) = 52$
$f(2) = 22$ $f(4) = 34$ $f(6) = 46$ $f(8) = 58$

Determine whether the sequence is arithmetic. If so, identify the common difference and give the next three numbers.

14. 11, 6, 1, -4,...
-5 -5 -5

Yes, d = -5

..., -9, -14, -19

15. -4, -3, -1, 2,...
+1 +2 +3

Not arithmetic

16. 7, 21, 30, 45,...
+14 +9 +15

Not arithmetic

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Find the indicated term in the sequence.

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

17. 32nd term: 18, 11, 4, -3,... $d = -7$ $a_1 = 18$ $n = 32$

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

$A_{32} = 18 + (32-1)(-7)$

$= 18 + (31)(-7)$

$= 18 - 217$

$\boxed{A_{32} = -199}$

18. 24th term: $a_1 = 4$, $d = 6$

$A_{24} = 4 + (24-1)(6)$

$= 4 + (23)(6)$

$= 4 + 138$

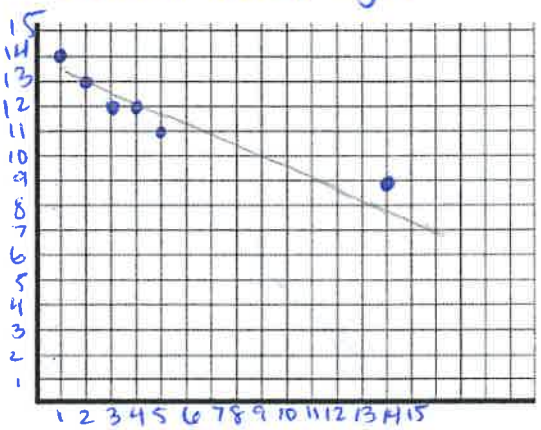
$\boxed{A_{24} = 142}$

The table shows possible recommendations for the number of hours of sleep that children should get every night.

Age (yr)	1	2	3	4	5	14
Sleep Needed (h)	14	13	12	12	11	9

19. Create a scatterplot. Don't forget labels & a title!

Child Sleeping Recommendations



20. Describe the correlation

negative correlation

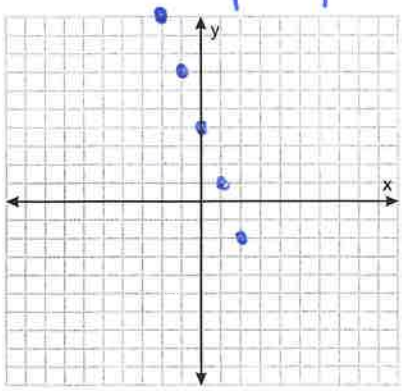
21. Predict how many hours of sleep a 16-year-old should get

about 7 hours
(anywhere from 6-8 is fine)

Graph each function with the given domain using a table.

22. $y = -3x + 4$ $D: \{-2, -1, 0, 1, 2\}$

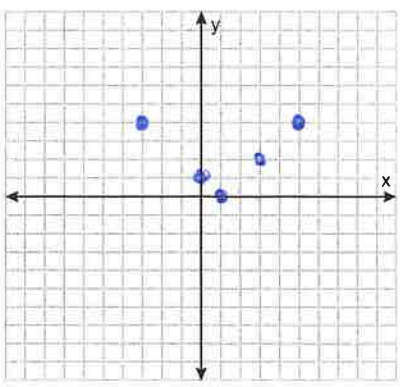
x	$y = -3x + 4$	y	(x, y)
-2	$-3(-2)+4$	10	(-2, 10)
-1	$-3(-1)+4$	7	(-1, 7)
0	$-3(0)+4$	4	(0, 4)
1	$-3(1)+4$	1	(1, 1)
2	$-3(2)+4$	-2	(2, -2)



Do NOT connect!

23. $y = |x - 1|$ $D: \{-3, 0, 1, 3, 5\}$

x	$y = \lvert x-1 \rvert$	y	(x, y)
-3	$\lvert -3-1 \rvert \to \lvert -4 \rvert$	4	(-3, 4)
0	$\lvert 0-1 \rvert \to \lvert -1 \rvert$	1	(0, 1)
1	$\lvert 1-1 \rvert \to \lvert 0 \rvert$	0	(1, 0)
3	$\lvert 3-1 \rvert \to \lvert 2 \rvert$	2	(3, 2)
5	$\lvert 5-1 \rvert \to \lvert 4 \rvert$	4	(5, 4)



Do NOT connect!

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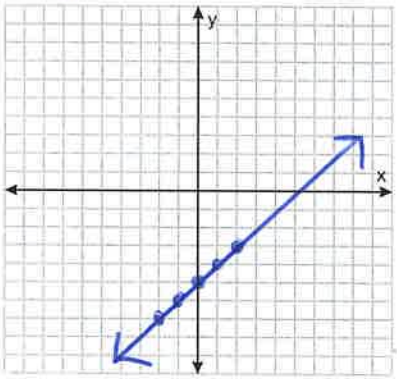
Graph each function using a table.

24. $y = x - 5$

x	y = x - 5	y	(x, y)
-2	-2 - 5	-7	(-2, -7)
-1	-1 - 5	-6	(-1, -6)
0	0 - 5	-5	(0, -5)
1	1 - 5	-4	(1, -4)
2	2 - 5	-3	(2, -3)



25. $y = x^2 - 5$

x	y = x² - 5	y	(x, y)
-2	(-2)² - 5 → 4 - 5	-1	(-2, -1)
-1	(-1)² - 5 → 1 - 5	-4	(-1, -4)
0	(0)² - 5	-5	(0, -5)
1	(1)² - 5 → 1 - 5	-4	(1, -4)
2	(2)² - 5 → 4 - 5	-1	(2, -1)