Algebra 2

Name Key ID: 1

Date _____ Period ____

Evaluate Functions

Evaluate each function.

1) $k(x) = x^3 + 4x^2 + 2x$; Find $k(2)$

$(2)^3 + 4(2)^2 + 2(2)$

$8 + 16 + 4$

$k(2) = 28$

2) $f(x) = x^2 + 3 + 2x$; Find $f(-8)$

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

$64 + 3 - 16$

$f(-8) = 51$

3) $g(x) = -x + 4$; Find $g(-9)$

$-(-9) + 4$

$9 + 4$

$g(-9) = 13$

4) $k(a) = -2a - 4$; Find $k(1)$

$-2(1) - 4$

$-2 - 4$

$k(1) = -6$

5) $f(n) = n^2 - 4$; Find $f(4)$

$(4)^2 - 4$

$16 - 4$

$f(4) = 12$

6) $p(a) = a + 2$; Find $p(-9)$

$-9 + 2$

$p(-9) = -7$

7) $k(n) = n^3 + 2$; Find $k(0)$

$0^3 + 2$

$k(0) = 2$

8) $h(n) = 3n - 4$; Find $h(8)$

$3(8) - 4$

$24 - 4$

$h(8) = 20$

9) $f(t) = 4t - 1$; Find $f(3t)$

$4(3t) - 1$

$f(3t) = 12t - 1$

10) $f(a) = a + 1$; Find $f(-3a)$

$-3a + 1$

$f(-3a) = -3a + 1$

11) $h(n) = -4n + 3$; Find $h(-n)$

$-4(-n) + 3$

$h(-n) = 4n + 3$

12) $g(x) = -x + 2$; Find $g(x - 3)$

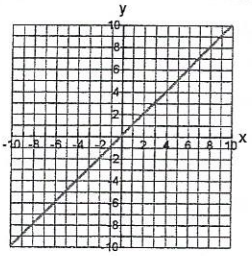
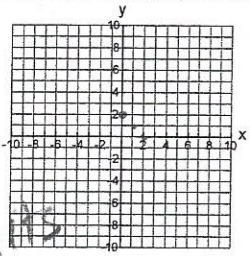
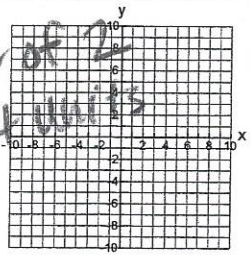
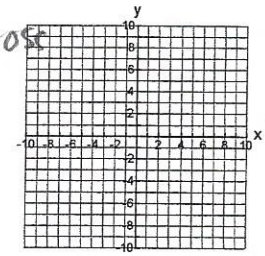
$-(x - 3) + 2$

$-x + 3 + 2$

$g(x - 3) = -x + 5$

Parameter Changes on the Linear Parent Function

Chart A: The parent function of a linear relationship is $y = x$. If a coefficient is placed in front of the x, it causes the steepness or slope of the graph to be changed. Use the graphing calculator to investigate and describe the changes in steepness "m" has on the graph of the linear parent function $y = x$.

Function	Sketch (both parent function and given function on each coordinate plane)	Value of "m" in $y = mx$	*Up* or *down* from left to right?	Is the steepness *more*, *less*, or the *same* as $y = x$?	When x increases by 1, y (*increases*, *decreases*) by ____	Coordinates of the y-intercept
$y = x$		1	Up	Same	Increases by 1	(0, 0)
Reflection across y-axis $y = -1x + 2$ Shifts up 2 units		-1	Down			
Vertical Stretch with a factor of 2 Shifts down 4 units $y = 2x - 4$					Increases by 2	
Reflection across y-axis $y = -\frac{1}{2}x$						

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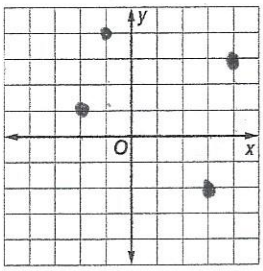
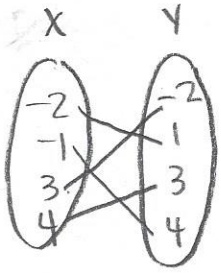
1-6 Practice
Relations

1. Express {(4, 3), (–1, 4), (3, –2), (–2, 1)} as a table, a graph, and a mapping. Then determine the domain and range.

X	y
-2	1
-1	4
3	-2
4	3



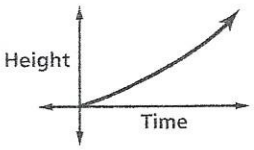


D: {-2, -1, 3, 4}

R: {-2, 1, 3, 4}

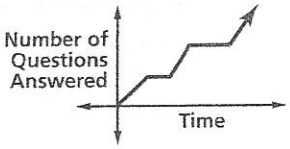
Describe what is happening in each graph.

2. The graph below represents the height of a tsunami as it travels across an ocean.



The longer the tsunami lasts, the higher it gets.

3. The graph below represents a student taking an exam.



As time passes, the more questions have been answered. There are a couple questions where it took more time.

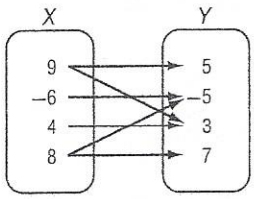
Express the relation shown in each table, mapping, or graph as a set of ordered pairs.

4.

X	Y
0	9
–8	3
2	–6
1	4

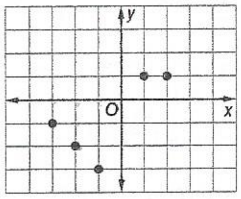
{(0, 9), (-8, 3), (2, -6), (1, 4)}

5.



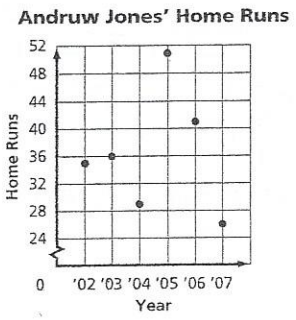
{(9, 5), (9, 3), (-6, -5), (4, 3), (8, -5), (8, 7)}

6.



{(-3, -1), (-2, -2), (-1, -3), (1, 1), (2, 1)}

7. BASEBALL The graph shows the number of home runs hit by Andruw Jones of the Atlanta Braves. Express the relation as a set of ordered pairs. Then describe the domain and range.



{(02, 35), (03, 36), (04, 29), (05, 51), (06, 41), (07, 26)}

D: {02, 03, 04, 05, 06, 07}

R: {26, 29, 35, 36, 41, 51}

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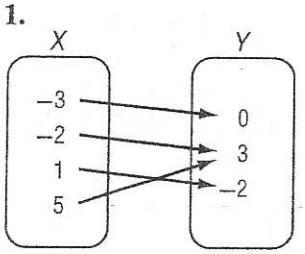
1-7 Practice
Functions

Determine whether each relation is a function.

1.



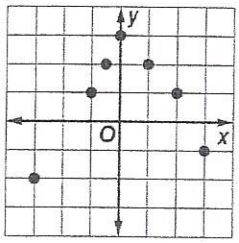
yes

2.

X	Y
1	5
−4	−3
7	6
1	−2

No

3.



yes

4. {(1, 4), (2, –2), (3, –6), (–6, 3), (–3, 6)} yes

5. {(6, –4), (2, –4), (–4, 2), (4, 6), (2, 6)} no

6. $x = -2$ no

7. $y = 2$ yes

If $f(x) = 2x - 6$ and $g(x) = x - 2x^2$, find each value.

8. $f(2)$

9. $f\left(-\frac{1}{2}\right)$

10. $g(-1)$

11. $g\left(-\frac{1}{3}\right)$

12. $f(7) - 9$

13. $g(-3) + 13$

14. $f(h + 9)$

15. $g(3y)$

16. $2[g(b) + 1]$

17. WAGES Martin earns $7.50 per hour proofreading ads at a local newspaper. His weekly wage w can be described by the equation $w = 7.5h$, where h is the number of hours worked.

a. Write the equation in function notation. $f(h) = 7.5h$

b. Find $f(15)$, $f(20)$, and $f(25)$. $f(15) = 7.5(15) = \$112.50$

$f(20) = 7.5(20) = \$150$

$f(25) = 7.5(25) = \$187.50$

18. ELECTRICITY The table shows the relationship between resistance R and current I in a circuit.

R	Resistance (ohms)	120	80	48	6	4
I	Current (amperes)	0.1	0.15	0.25	2	3

a. Is the relationship a function? Explain. yes. No x-values repeat.

b. If the relation can be represented by the equation $IR = 12$, rewrite the equation in function notation so that the resistance R is a function of the current I.

c. What is the resistance in a circuit when the current is 0.5 ampere?

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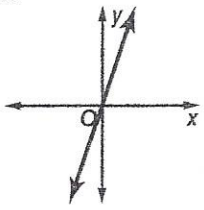
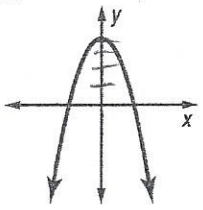
Determine if each is a function. Then, give the domain and range.

1.



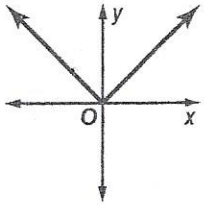
yes
D: $(-\infty, \infty)$
R: $(-\infty, \infty)$

2.



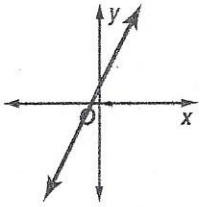
yes
D: $(-\infty, \infty)$
R: $(-\infty, 4]$

3.



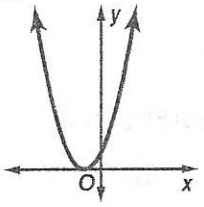
yes
D: $(-\infty, \infty)$
R: $[0, \infty)$

4.



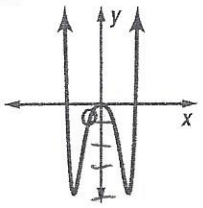
yes
D: $(-\infty, \infty)$
R: $(-\infty, \infty)$

5.



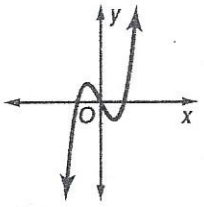
yes
D: $(-\infty, \infty)$
R: $[0, \infty)$

8.



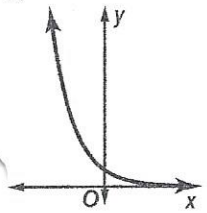
yes
D: $(-\infty, \infty)$
R: $[-4, \infty)$

6.



yes
D: $(-\infty, \infty)$
R: $(-\infty, \infty)$

7.



yes
D: $(-\infty, \infty)$
R: $(0, \infty)$