

Name _____ Date _____ Class _____

Chapter 1 Foundations for Functions

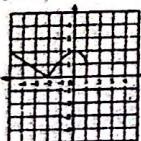
1. What is the domain and range for the parent function for $x+1$?
 $D: (-\infty, \infty)$ $R: (-\infty, \infty)$

2. What are the coordinates of the transformed point?
 $(3, 4)$; horizontal shift 1 unit left
 $(2, 4)$

3. What numbers complete the table of the transformed function?
 Reflection across y-axis

$-x$	x	y
2	-2	1
4	-4	2
6	-6	3
8	-8	4
10	-10	5

4. Use a table to perform a translation of $y = f(x)$ right 2 units and up 3 units. Graph using the same coordinate plane as the original function.



x	y	$x+2$	$y+3$
-5	2	-3	5
-2	0	0	3
0	2	2	5
1	1	3	4

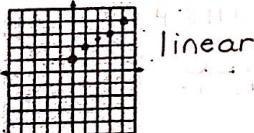
5. The graph of a function passes through the points $(3, -2)$ and $(7, -5)$. What are the coordinates of these points after the function has been reflected across the y-axis?
 $(-3, -2)$ $(-7, -5)$

6. Identify the parent function for $f(x) = (x-12)^3$.

$$\times^3$$

7. Graph the relationship from time to number of organisms living in a petri dish during the course of an experiment. Identify the parent function that best approximates the data.

Organisms in Petri Dish					
Time (h)	0	1	2	3	4
No. of Organisms	4	8	11	12	16



8. What is the parent function?

$$(x-3)^3$$

9. Let $g(x)$ be a vertical translation up 6 units of $f(x) = 3x - 4$. Write the rule for $g(x)$.

$$g(x) = 3x + 2$$

10. Let $g(x)$ be a vertical stretch by a factor of 4 of $f(x) = 3x - 2$. Write the rule for $g(x)$.

$$g(x) = 12x - 8$$

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11. What describes the transformation in terms of $f(x)$?
 Horizontal shift right 7 units

$$f(x-7)$$

12. What describes the transformation in terms of $f(x)$?
 Vertical compression of $\frac{1}{10}$

$$\frac{1}{10} \cdot f(x)$$

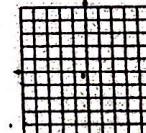
13. What transformation describes the equation from its parent equation?
 $f(x) \rightarrow 11$
 Vertical translation down 11

14. What transformation describes the equation from its parent equation?

$$15f(x) \rightarrow \text{vertical stretch by a factor of 15}$$

15. Make a scatter plot for the data in the table below, identify the correlation, and then sketch a line of best fit.

x	5	9	12	15	20
y	21	16	13	7	5



$$y = -1.168x + 27.052$$

$$r = -0.972$$

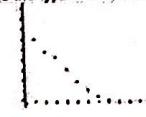
strong negative correlation

16. What is the type of correlation shown?



strong positive

17. What is the type of correlation shown?

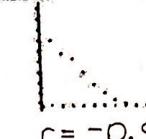


strong negative

18. What is the approximate correlation coefficient?

$$r = 0.95$$

19. What is the approximate correlation coefficient?



$$r = -0.95$$

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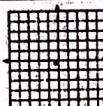
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8. What is the parent function?
 $(x-3)^2$

X

9. Let $g(x)$ be a vertical translation up 2 units followed by a reflection over the y-axis of $f(x) = 3x - 4$. Write the rule for $g(x)$.

$$f(x) + 2 \\ 3x - 4 + 2 \\ 3x - 2$$



15. Make a scatter plot of the data in the table below, identify the correlation, and then sketch a line of best fit and find its equation.

x	12	15	25	19
y	11	17	23	19

16. Make a scatter plot of the data in the table below, identify the correlation, and then sketch a line of best fit and find its equation.

x	12	15	25	19
y	11	17	23	19

17. What is the type of correlation shown?

$$r = 0.955$$

strong positive correlation

10. Let $g(x)$ be a horizontal compression by a factor of $\frac{1}{3}$ of $f(x) = \frac{3}{4}x - 2$.

$$f(x) \cdot 2 \\ 3x - 4 \cdot 2 \\ 3x - 2$$

$$f(-x) \\ 3(-x) - 2$$

$$y = 0.850x + 2.420$$

11. What describes the transformation in terms of $f(x)$?

$$f(\frac{1}{3}x)$$

$$f(3x)$$

$$\frac{3}{4}(3x) - 2$$

$$\text{medium positive}$$

12. What describes the transformation in terms of $f(x)$?

$$\text{Vertical stretch of } 12$$

$$12 \cdot f(x)$$

13. What transformation describes the equation from its parent equation?

$$f(x+3)-11$$

$$\text{horizontal translation left 3}$$

$$\text{vertical translation down 11}$$

14. What transformation describes the equation from its parent equation?

$$\frac{3}{4}f(x)$$

$$\text{vertical compression by a factor of } \frac{3}{4}$$

$$\text{vertical compression by a factor of } \frac{3}{4}$$

17. What is the type of correlation shown?

$$\text{medium negative}$$

18. What is the approximate correlation coefficient?

$$r = 0.7$$

19. What is the approximate correlation coefficient?

$$r = -0.7$$

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Chapter 1 Foundations for Functions

1

1. What is the domain and range for the parent function for $x^2 + 1$?

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

2. What are the coordinates of the transformed point?

$$(3, 4); \text{ vertical shift 3 units up and horizontal shift 2 units right}$$

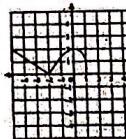
$$(5, 7)$$

3. What numbers complete the table of the transformed function?

Reflection across y-axis

-x	x	y
8	-8	-2
1	-1	-1
0	0	0
-1	1	1
-8	8	2

4. Use a table to perform a vertical stretch of $y = f(x)$ by a factor of 2. Graph using the same coordinate plane as the original function.



x	y	x	2y
-5	2	-5	4
-2	0	-2	0
0	2	0	4
1	1	1	2

7. Graph the relationship from time to number of organisms living in a petri dish during the course of an experiment. Use the parent function that best approximates the data to predict the number of organisms living in the dish at hour 6.

Organisms in Petri Dish				
Time (h)	0	1	2	3
No. of Organisms	4	8	11	12



$$y = 2.8x + 4.6$$

$$2.8(6) + 4.6 = 21.4$$