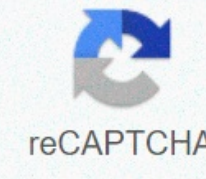I'm not robot

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Lesson 4-10 transforming linear functions worksheet answers

1 4-10 transforming linear equationsChapter 4 4-10 transformation of linear equations 2 Objectives Describe how changing slope and interception y affects the graph of a linear function. 3 Function Family A function family is a set of functions whose graphs have basic features in common. For example, all linear functions form a family because all their graphs have the same basic shape. 4 Parent Functions A parent function is the most basic function in a family. For linear functions, the parent function is f(x) = x. 5 Transformations Charts of all other linear functions are transformations of the parent function graph, f(x) = x. A transformation is a change in the position or size of a figure. 6 Types of transformationsThere are three types of transformations: translations, rotations and reflections. Look at the four functions and their graphs below. 7 Transformations Notice that all lines are parallel. The slopes are the same, but the intercepts are different. 8 Transformations Graphs of g(x) = x + 3, h(x) = x − 2, andk(x) = x − 4, are vertical translations of the parent function graph, f(x) = x. A translation is a type of transformation that moves each point at the same distance in the same direction. You can think of a translation as a slide. 9 Translations 10 Example#1 Graphic f(x) = 2x and g(x) = 2x − 6. Then describe the transformation from graph f(x) to graph g(x). f(x) = 2x g(x) = 2x − 6 Graph g(x) = 2x − 6 is the result of the translation of graph f(x) = 2x 6 units down. 11 Example#2 Graph f(x) = x + 4 and g(x) = x − 2. Then describe the transformation from graph f(x) to graph g(x). f(x) = x + 4 g(x) = x − 2 Graph g(x) = x − 2 is the result of the translation of graph f(x) = x units down. 12 Rotations Graphs g(x) = 3x, h(x) = 5x and k(x) = are rotations of graph f(x) = x. A rotation is a transformation about a point. You can think of a rotation as a return. The y intercepts are the same, but the slopes are different. 13 Rotate 14 Example#3 Graph f(x) = x and g(x) = 5x. Then describe the transformation from graph f(x) to graph g(x). g(x) = 5x f(x) = x Graph of g(x) = 5x is the result of rotating the graph f(x) = x about (0,0). The graph of g(x) is steeper than the graph of f(x). 15 Example#4 Graph f(x) = 3x − 1 and g(x) = x − 1. Then describe the transformation from graph f(x) to graph g(x). f(x) = 3x − 1 g(x) = x − 1 The graph of g(x) is the result of the rotation of the graph f(x) about (0, −1). The graph of g(x) is less steep than the graph of f(x). 16 Guided practice of studentsDo problems 3.5 and 7 on book page 305 17 Reflection Chart shows reflection of graph f(x) = 2x on y axis, producing graph g(x) = −2x. A reflection is a transformation in line that produces a mirror image. You can think of a reflection as a flip over a line. 18 reflection 19 Example#5 Graph f(x) = 2x + 2. Then reflect the f(x) graph along the y axis. Write a g(x) function to describe the new graph. f(x) = 2x + 2 f(x) g(x) To find g(x), multiply the value of m by −1. In f(x) = 2/3x + 2, m = 2/3 . (−1) = −2/3 g(x) = − 2/3 x + 2 21 Example#7 Graph f(x) = x and g(x) = 2x − 3. Then describe the transformations in the f(x) graph in the g(x) graph. Find the f(x) = x transformations that will result in g(x) = 2x − 3: Multiply f(x) by 2 to get h(x) = 2x. It rotates the chart about (0, 0) and parallels it to g(x). Then subtract 3 from h(x) to obtain g(x) = 2x − 3. This translates the 3-unit chart down. 22 Transformation solution is a rotation and a translation. 23 Example#8 Graph f(x) = x and g(x) = −x + 2. Then describe the transformations in the f(x) graph in the g(x) graph. Find the f(x) = x transformations that will result in g(x) = −x + 2 Multiply f(x) by −1 to get h(x) = −x. This reflects the graph along the y-axis. Then add 2 to h(x) to obtain g(x) = −x + 2. This translates the 2-unit chart up. 24 Solution 25 Apps A florist charges $25 for a vase plus $4.50 for each flower. The total fee for vase and flowers is given by function f (x) = 4.50x will change the chart if the vase cost is raised to $35? if the flower tax is reduced to $3.00? f(x) = 4.50x + 25 is graphic in blue. If the vase price is raised to $35, the new function is f (g) = 4.50x The original graph will be translated 10 units upwards. 26 Student Guided PracticeDo Problems 11,13,15 and 17 in the book page 305 27 Home Themes No Problems in the book page 305 28 Closing Today we will learn about linear transformationsNe class xt we go over solving systems

through graphs 1 4-10 transforming linear equationsChapter 4 4 4-10 transforming linear equation 2 Objectives Describe how changing slope and y-interception affects the graph of a linear function. 3 Function Family A function family is a set of functions whose graphs have basic features in common. For example, all linear functions form a family because all their graphs have the same basic shape. 4 Parent Functions A parent function is the most basic function in a family. For linear functions, the parent function is f(x) = x. 5 Transformations Charts of all other linear functions are transformations of the parent function graph, f(x) = x. A transformation a change in the position or size of a figure. 6 Types of transformationsThere are three types of transformations– translations, translations, and reflections. Look at the four functions and their graphs below. 7 Transformations Notice that all lines are parallel. The slopes are the same, but the intercepts are different. 8 Transformations Graphs of g(x) = x + 3, h(x) = x − 2, andk(x) = x − 4, are vertical translations of the parent function graph, f(x) = x. A translation is a type of transformation that moves each point at the same distance in the same direction. You can think of a translation as a slide. 9 Translations 10 Example#1 Graphic f(x) = 2x and g(x) = 2x − 6. Then describe the transformation from graph f(x) to graph g(x). f(x) = x + 4 and g(x) = x − 2. Then describe the transformation from graph f(x) to graph g(x). f(x) = x + 4 g(x) = x − 2 Graph g(x) = x − 2 is the result of the translation of graph f(x) = x units down. 12 Rotations Graphs g(x) = 3x, h(x) = 5x and k(x) = are rotations of graph f(x) = x. A rotation is a transformation about a point. You can think of a rotation as a return. The y intercepts are the same, but the slopes are different. 13 Rotate 14 Example#3 Graph f(x) = x and g(x) = 5x. Then describe the transformation from graph f(x) to graph g(x). g(x) = 5x f(x) = x Graph of g(x) = 5x is the result of rotating the graph f(x) = x about (0,0). The graph of g(x) is steeper than the graph of f(x). 15 Example#4 Graph f(x) = 3x − 1 and g(x) = x − 1. Then describe the transformation from graph f(x) to graph g(x). f(x) = 3x − 1 g(x) = x − 1 The graph of g(x) is the result of the rotation of the graph f(x) about (0, −1). The graph of g(x) is less steep than the graph of f(x). 16 Guided practice of studentsDo problems 3.5 and 7 on book page 305 17 Reflection The diagram shows the reflection of the graph f(x) = 2x on the y axis, producing graph g(x) = −2x. A reflection is a transformation over a line that produces a mirror image. You can think of a reflection as a flip over a line. 18 reflection 19 Example#5 Graph f(x) = 2x + 2. Then reflect the f(x) graph along the y axis. Write a g(x) function to describe the new graph. f(x) = 2x + 2 f(x) g(x) To find g(x), multiply the value of m by −1. In f(x) = 2/3x + 2, m = 2/3 . (−1) = − 2/3 g(x) = − 2/3 x + 2 21 Example#7 Graph f(x) = x and g(x) = 2x − 3. Then describe the transformations in the f(x) graph in the g(x) graph. Find the f(x) = x transformations that will result in g(x) = 2x − 3: Multiply 2 to get h (x) = 2x. It rotates the chart about (0, 0) and parallels it to g(x). Then subtract 3 from h(x) to obtain g(x) = 2x − 3. This translates the 3-unit chart down. 22 Transformation solution is a rotation and a translation. 23 Example#8 Graph f(x) = x and g(x) = −x + 2. Then describe the transformations in the f(x) graph in the g(x) graph. Find the f(x) = x transformations that will result in g(x) = −x + 2 Multiply f(x) by −1 to get h(x) = −x. This reflects the graph along the y-axis. Then add 2 to h(x) to obtain g(x) = −x + 2. This translates the 2-unit chart up. 24 Solution 25 Apps A florist charges $25 for a vase plus $4.50 for each flower. The total fee for vase and flowers is given by function f (x) = 4.50x will change the chart if the vase cost is raised to $35? if the flower tax is reduced to $3.00? f(x) = 4.50x + 25 is graphic in blue. If the vase price is raised to $35, the new function is f (g) = 4.50x The original graph will be translated 10 units upwards. 26 Student Guided PracticeDo Problems 11,13,15 and 17 in the book page 305 27 Themes For Home No Problems in the book page 305 28 Closing Today we will learn about linear transformationsNext class we will go over solving graphics systems