

Lesson 7 Homework Practice

Linear and Nonlinear Functions

Determine whether each table represents a *linear* or a *nonlinear* function. Explain.

1.

<i>x</i>	1	2	3	4
<i>y</i>	4	5	6	7

2.

<i>x</i>	0	2	4	6
<i>y</i>	2	6	18	38

3.

<i>x</i>	4	6.5	9	11.5	14
<i>y</i>	3	8	13	18	23

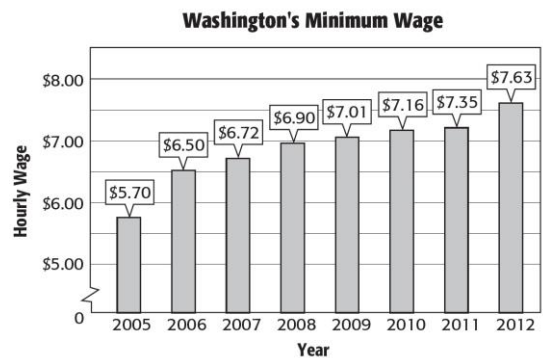
4.

<i>x</i>	1.5	3	4.5	6
<i>y</i>	2	4	8	16

5. The table shows the cost of long distance calls as a function of the number of minutes used. Is the cost a linear or nonlinear function of the number of minutes used? Explain.

Number of Minutes	40	80	120	160	200
Cost (\$)	4.00	8.00	12.00	16.00	20.00

6. **MINIMUM WAGE** The graph shows a state's minimum wage from 2005 to 2012. Would you describe the yearly increase as linear or nonlinear? Explain your reasoning.

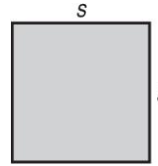


Lesson 7 Problem-Solving Practice

Linear and Nonlinear Functions

GEOMETRY For Exercises 1 and 2, use the following information.

Recall that the perimeter of a square is equal to 4 times the length of one of its sides, and the area of a square is equal to the square of one of its sides.



<p>1. Write a function for the perimeter of the square. Is the perimeter of a square a linear or nonlinear function of the length of one of its sides? Explain.</p>	<p>2. Write a function for the area of the square. Is the area of a square a linear or nonlinear function of the length of one of its sides? Explain.</p>																				
<p>3. BUSINESS The Devon Tool Company uses the equation $p = 150t$ to calculate the gross profit p the company makes, in dollars, when it sells t tools. Is the gross profit a linear or nonlinear function of the number of tools sold? Explain.</p>	<p>4. GRAVITY A camera is accidentally dropped from a balloon at a height of 300 feet. The height of the camera after falling for t seconds is given by $h = 300 - 16t^2$. Is the height of the camera a linear or nonlinear function of the time it takes to fall? Explain.</p>																				
<p>5. LONG DISTANCE The table shows the charge for a long-distance call as a function of the number of minutes the call lasts. Is the charge a linear or nonlinear function of the number of minutes? Explain.</p> <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <tr> <td style="padding: 5px;">Minutes</td> <td style="padding: 5px;">1</td> <td style="padding: 5px;">2</td> <td style="padding: 5px;">3</td> <td style="padding: 5px;">4</td> </tr> <tr> <td style="padding: 5px;">Cost (¢)</td> <td style="padding: 5px;">5</td> <td style="padding: 5px;">10</td> <td style="padding: 5px;">15</td> <td style="padding: 5px;">20</td> </tr> </table>	Minutes	1	2	3	4	Cost (¢)	5	10	15	20	<p>6. DRIVING The table shows the cost of a speeding ticket as a function of the speed of the car. Is the cost a linear or nonlinear function of the car's speed? Explain.</p> <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <tr> <td style="padding: 5px;">Speed (mph)</td> <td style="padding: 5px;">70</td> <td style="padding: 5px;">80</td> <td style="padding: 5px;">90</td> <td style="padding: 5px;">100</td> </tr> <tr> <td style="padding: 5px;">Cost (\$)</td> <td style="padding: 5px;">25</td> <td style="padding: 5px;">50</td> <td style="padding: 5px;">150</td> <td style="padding: 5px;">300</td> </tr> </table>	Speed (mph)	70	80	90	100	Cost (\$)	25	50	150	300
Minutes	1	2	3	4																	
Cost (¢)	5	10	15	20																	
Speed (mph)	70	80	90	100																	
Cost (\$)	25	50	150	300																	