### Practice Test – Sequences, Functions, & Graphing Equations

1. Complete the chart below

<table>
<thead>
<tr>
<th>sequence</th>
<th>type of sequence</th>
<th>difference or ratio</th>
<th>rule (using a variable)</th>
<th>next 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 2, 8, 32, 128, ...</td>
<td>arithmetic, geometric, or neither?</td>
<td>common difference or ratio is _______</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. 2.2, 2.02, 2.002, 2.0002, ...</td>
<td>arithmetic, geometric, or neither?</td>
<td>common difference or ratio is _______</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. 9, 18, 27, 36, ...</td>
<td>arithmetic, geometric, or neither?</td>
<td>common difference or ratio is _______</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. 6, 15, 25, 36, ...</td>
<td>arithmetic, geometric, or neither?</td>
<td>common difference or ratio is _______</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. 4, 1, ( \frac{1}{4} ), ( \frac{1}{16} ) ...</td>
<td>arithmetic, geometric, or neither?</td>
<td>common difference or ratio is _______</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. ( \frac{1}{8} ), ( \frac{3}{16} ), ( \frac{1}{4} ), ( \frac{5}{16} ), ...</td>
<td>arithmetic, geometric, or neither?</td>
<td>common difference or ratio is _______</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. 2, 18, -54, ...</td>
<td>arithmetic, geometric, or neither?</td>
<td>common difference or ratio is -3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h. 1, -7.5, ...</td>
<td>arithmetic, geometric, or neither?</td>
<td>common difference or ratio is -8.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i. 5, 125, ...</td>
<td>arithmetic, geometric, or neither?</td>
<td>common difference or ratio is _______</td>
<td>( 5n )</td>
<td>3125, 78,125</td>
</tr>
<tr>
<td>j. 5.01, -5.41, ...</td>
<td>arithmetic, geometric, or neither?</td>
<td>common difference or ratio is _______</td>
<td>( n + (-5.21) )</td>
<td>-15.83, -26.25</td>
</tr>
<tr>
<td>k. ( \frac{1}{72} ), ( \frac{1}{12} ), ...</td>
<td>arithmetic, geometric, or neither?</td>
<td>common difference or ratio is _______</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Determine whether each relation is a function. Explain why.

2. Is this a function? ______ Why, or why not?
   \{(–8, 4), (–4, 8), (4, 8), (8, –4)\}
   domain: {                                }
   range: {                                  }

3. Is this a function? ______ Why, or why not?
   \{(3, –10), (7, –10), (–4, 10), (0, –10)\}
   domain: {                                }
   range: {                                  }

4. Is this a function? ______ Why, or why not?

5. Is this a function? ______ Why, or why not?

6. Is this a function? ______ Why, or why not?

7. Is this a function? ______ Why, or why not?

8. Is this a function? ______ Why, or why not?

9. Is this a function? ______ Why, or why not?

10. Is this a function? ______ Why, or why not?

11. Is this a function? ______ Why, or why not?
Use the graph to answer each question.

12. What is the independent variable?
13. What is the dependent variable?

15. Write the domain and range of the function in set form.

16. What is the independent variable?
17. What is the dependent variable?
18. Is the relation between height and shoe size a function? Please explain why or why not.

19. Samantha’s got a dogwalking business. Here’s a chart that shows what she charges:

Write a variable expression that you could use to find the total charge for any amount of kilometers walked. Let $k$ represent the number of kilometers walked.

20. Jake’s trying to lose a little weight to wrestle at a lower weight class. Here is his progress:

Write a variable expression that you could use to find Jake’s weight after any amount of miles run. Let $m$ represent the number of miles run.

21. Rosa’s running a distance race for charity. Friends have donated $23.50 for every mile she runs. Her parents will also donate an extra $500.

Write a variable expression that you could use to find the total donation after any amount of miles run. Let $m$ represent the number of miles run.

22. Shauna’s Death Valley hike began at Badwater Basin (which is 262 feet below sea level). On average, she climbed upward at a rate of 36.7 feet/minute.

Write a variable expression that you could use to find Shauna’s elevation after any amount of feet climbed. Let $f$ represent the number of feet climbed.
Graph each equation by making a function table, finding 3 ordered pairs, then connecting the points.

23. \( y = -x - 3 \)

24. \( y = 3x - 2 \)

25. \( y = \frac{x}{2} + 5 \)

26. \( y = \frac{1}{5}x - 7 \)

27. \( y = -2 \)

28. \( x = 1 \)

29. Circle the equations that could have the ordered pair \((-3, 1)\) as a solution.

y = x + 4
y = 2x + 5
y = -5x - 14

30. Circle all of the ordered pairs that are solutions of the equation \( y = -2x - 4 ? \)

(0, -2) (1, -6)
(2, -8) (-2, 0)
(-3, -2) (-6, 8)