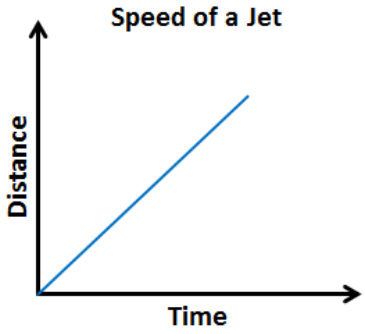
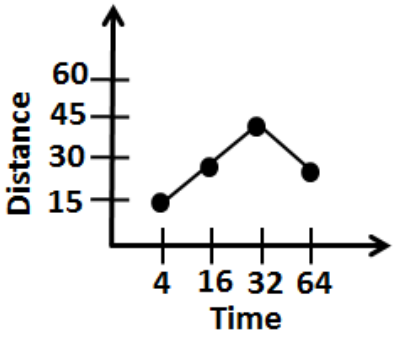
Name: _____ Period: _____ Date: _____

Unit 4 Review Guide

1. **What variables are represented in the graph? Also tell the relationship between the variables.**



2. **Write the table representing the graph shown below.**



3. **Sketch a graph representing the situation given below.**

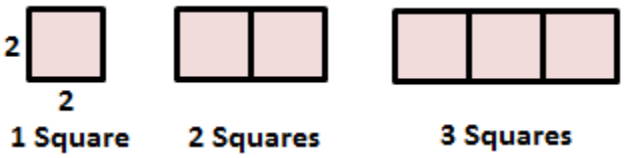
   Harry's time in office starting from morning till the evening.

Unit 4 Review Guide

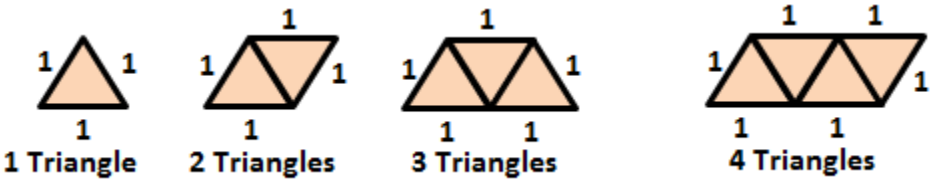
4. **Distance from a city decreasing with time is an example of:**

   a. Linearly increasing relation
   b. Linearly decreasing relation
   c. Constant relation
   d. None of these

5. **For the diagram given below, find the relationship between the number of shapes and the perimeter of the figure they form. Then represent this relationship using words and an equation.**



6. **For the diagram given below, find the relationship between the number of shapes and the perimeter of the figure they form. Then represent this relationship using a table.**



Unit 4 Review Guide

7. For the table given below, determine whether the relationship is a function. If yes, then represent the relation using words and ordered pairs.

x	1	3	5	7	9
y	3	5	7	9	11

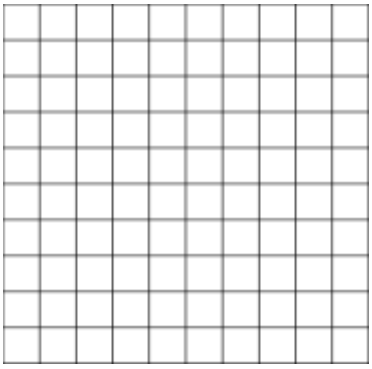
8. The perimeter of a square having side equal to 4 is:

a. 8
b. 12
c. 4
d. 16

9. Graph the function represented by the data in the table. Tell whether the function is linear or non-linear.

x	*y*
0	1
1	2
2	5
3	10

Graph:



Unit 4 Review Guide

10. The set of ordered pairs represents a function. Write a rule representing the function.

(-1,1), (0,2), (1,3), (2,10), (3,29)

Rule:

11. The set of ordered pairs represents a function. Write a rule representing the function.

(0,-1), (1,0), (2, 1), (3,2), (4,3)

Rule:

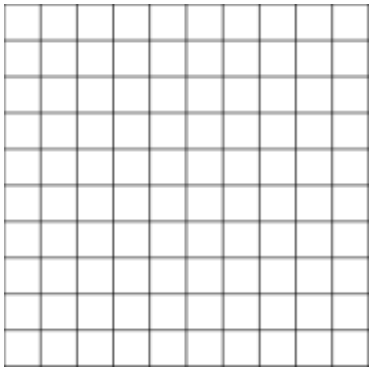
12. A function whose graph is not a straight line is a:

a. Quadratic function
b. Linear function
c. Nonlinear function
d. None of these

13. Make a table of values of the function given. Then graph the function rule using the table of values.

$$y = \frac{x}{3}$$

Graph:

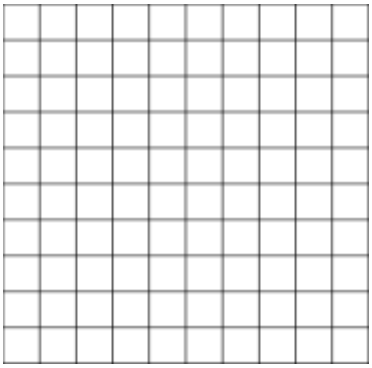


Unit 4 Review Guide

14. Make a table of values of the function given. Then graph the function rule using the table of values.

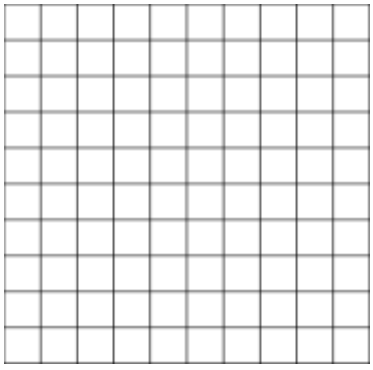
$$y = |x - 2| + 1$$

Graph:



15. Graph the function rule. Also tell whether the function is continuous or discrete.

The cost d in dollars, of the number n of tickets bought for a baseball game is related as $d = 10n$.



Unit 4 Review Guide

16. Which one of this is a type of function graphs?

a. Atomic function graph
b. Linear function graph
c. Nonlinear function graph
d. Both b and c

17. Write a function rule representing the verbal statement given below.

5 times w increased by 4 is 2 times u.

18. Write a function rule representing the situation given below.

The cost c of the membership of a club is 30$ for sign up and 15$ per week w to be a member.

19. A taxi cab charges 3$ for the first mile and 1.5$ for each additional mile. Write a rule for describing the total rate r as a function of miles m. What is the taxi rate for 16 miles?

20. The word 'ratio' in a mathematical verbal statement suggests that the mathematical operation to be used is:

a. Addition
b. Multiplication
c. Division
d. Subtraction

Unit 4 Review Guide

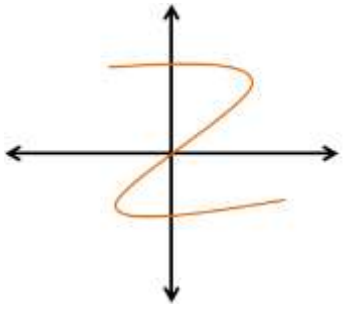
21. A mathematical verbal statement is a translation into words, of an equation (or an expression) containing:

a. Numbers
b. Variables
c. Operations
d. All of these

22. Identify the domain and range of the relation given below. Use a mapping diagram to determine whether the relation is a function or not.

R = {(5,2.2),(3,2.6),(1,2.6),(0,2.5)}

23. Use the vertical line test to determine whether the relation is a function.



24. Find the range of the function given its domain.

$f(x) = x^2 - 5$; {-2,1,0,2}

Range:

Unit 4 Review Guide

25. If a vertical line passes through more than 1 point on the graph at one time, then the graph is a:

a. Function
b. Relation
c. Not a Function
d. None of these

26. Find the range of the function given its domain.

$f(x) = x^3 + 12$; {-3,-1,1,2}

Range:

27. Describe the pattern in the sequence given below. Also find the next three terms in the sequence.

1, 3, 9, 27, 54, …

28. Tell whether the sequence in given below is arithmetic or not. If it is, identify the common difference.

4, 7, 10, 13, 16, …

29. Find the n^{th} term in the arithmetic sequence given.

5^{th} term in $\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, \ldots$

30. The sequence $0, \frac{1}{3}, \frac{2}{3}, 1, \ldots$ is a/an:

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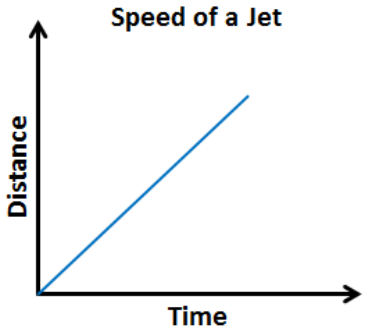
Name: _____ Period: _____ Date: _____

Unit 4 Review Guide

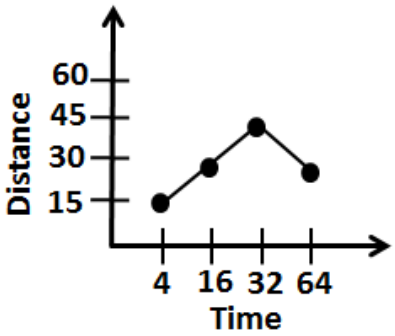
ANSWERS

1. **What variables are represented in the graph? Also tell the relationship between the variables.**



Distance and Time, Distance increases with the increase in time.

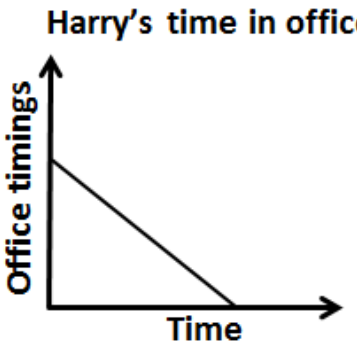
2. **Write the table representing the graph shown below.**



Time	Distance
4	15
16	30
32	45
64	30

3. **Sketch a graph representing the situation given below.**

Harry's time in office starting from morning till the evening.



Unit 4 Review Guide

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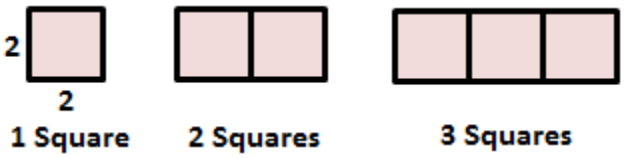
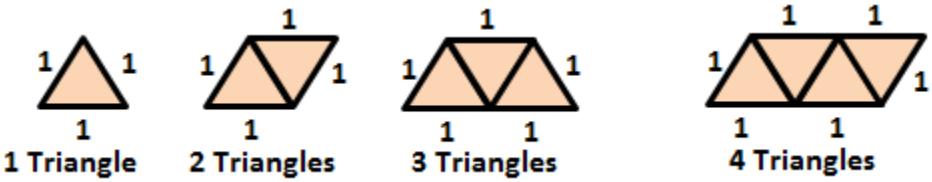


Using words: **The perimeter is 4 more than 4 times the number of squares.**

Using Equation: $P = 4n + 4$; **P = Perimeter, n = number of squares**

6. For the diagram given below, find the relationship between the number of shapes and the perimeter of the figure they form. Then represent this relationship using a table.



Using table:

Number of Triangles	1	2	3	4
Perimeter	3	4	5	6

Unit 4 Review Guide

7. **For the table given below, determine whether the relationship is a function. If yes, then represent the relation using words and ordered pairs.**

x	1	3	5	7	9
y	3	5	7	9	11

Yes, it is a function.

Using words: y is 2 more than x

Using ordered pairs: (1,3), (3,5), (5,7), (7,9), (9,11)

8. **The perimeter of a square having side equal to 4 is:**

   a. 8
   b. 12
   c. 4
   d. 16

9. **Graph the function represented by the data in the table. Tell whether the function is linear or non-linear.**

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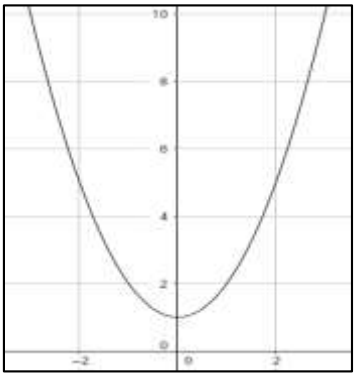

Unit 4 Review Guide

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Rule: $y = x^3 + 2$

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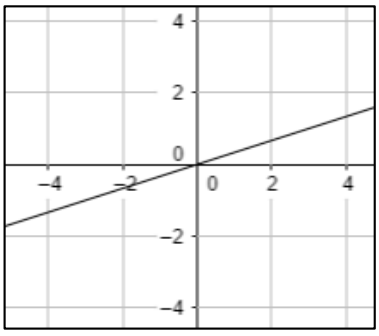
$$y = \frac{x}{3}$$

x	y
−6	−2
−3	−1
3	1
6	2

Graph:



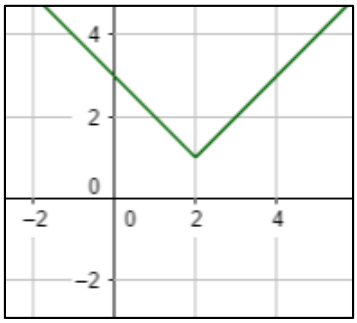
Unit 4 Review Guide

14. Make a table of values of the function given. Then graph the function rule using the table of values.

$$y = |x - 2| + 1$$

x	y
0	3
1	2
2	1
3	2
4	3

Graph:



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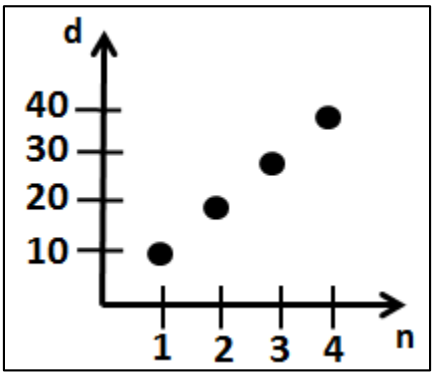

The function is discrete since the graph is discrete.

Unit 4 Review Guide

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The cost c of the membership of a club is 30$ for sign up and 15$ per week w to be a member.

____$c = 30 + 15w$____

19. A taxi cab charges 3$ for the first mile and 1.5$ for each additional mile. Write a rule for describing the total rate r as a function of miles m. What is the taxi rate for 16 miles?

Rule: ___$r = 3 + 1.5(m - 1)$___

when $m = 16$,

$r = 3 + 1.5(16 - 1)$

$r = 3 + 22.5 = 25.5\$$

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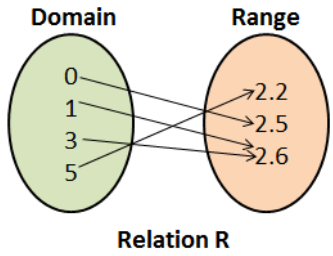
R = {(5,2.2),(3,2.6),(1,2.6),(0,2.5)}

Domain: {0,1,3,5}

Range: {2.2,2.5,2.6}

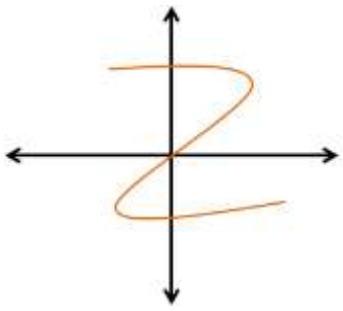
Mapping diagram:



Relation R = {(5,2.2),(3,2.6),(1,2.6),(0,2.5)}

It is a function

23. Use the vertical line test to determine whether the relation is a function.



It is not a function since some vertical lines pass through more than 1 point on the function.

24. Find the range of the function given its domain.

$f(x) = x^2 - 5$; {-2,1,0,2}

Range: {-1,-4,-5,-1}

25. If a vertical line passes through more than 1 point on the graph at one time, then the graph is a:

a. Function
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26. Find the range of the function given its domain.

$f(x) = x^3 + 12$; {-3,-1,1,2}

Range: {-15,11,13,20}

27. Describe the pattern in the sequence given below. Also find the next three terms in the sequence.

1, 3, 9, 27, 54, …

Pattern: Each term is 3 times the previous one.

Next three terms: $54 \times 3 = 162$

$15 \times 2 = 486$

$17 \times 2 = 1458$

28. Tell whether the sequence in given below is arithmetic or not. If it is, identify the common difference.

4, 7, 10, 13, 16, …

Common difference: $7 - 4 = 3 = 10 - 7$

Since the common difference is same, it is an arithmetic sequence.

Unit 4 Review Guide

29. Find the n^{th} term in the arithmetic sequence given.

5^{th} term in $\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, \ldots$

Common difference: $\frac{1}{2} - \frac{1}{4} = \frac{1}{4} = \frac{3}{4} - \frac{1}{2}$

$$a_n = a_1 + (n-1).d$$

$$a_5 = \frac{1}{4} + (5-1).\frac{1}{4}$$

$$a_5 = \frac{1}{4} + 1 = \frac{5}{4}$$

30. The sequence $0, \frac{1}{3}, \frac{2}{3}, 1, \ldots$ is a/an:

a. Geometric sequence
b. Arithmetic sequence
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