

Important Concepts . . .

Preview Review



Mathematics Grade 7
W2 - Lesson 1: Table of Values and
Graphing Linear
Equations

Important Concepts of Grade 7 Mathematics

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W1 - Lesson 2	Decimal Numbers
W1 - Lesson 3	Fractions
W1 - Lesson 4	Improper Fractions, Mixed Numbers, Percents, and Decimals
W1 - Lesson 5	Integers, Number Lines, and Sequencing
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W2 - Lesson 3	Algebra and Linear Equations
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W3 - Lesson 3	Line Segments
W3 - Lesson 4	Parts and Plotting on a Cartesian Plane
W3 - Lesson 5	Transformations
W3 - Quiz	

Materials Required

Math Set
Calculator

No Textbook Required

This is a stand-alone course.

Mathematics Grade 7

Version 6

Preview/Review W2 - Lesson 1

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Preview/Review Concepts for Grade Seven Mathematics



W2 - Lesson 1:

***Table of Values and Graphing
Linear Equations***

W2 – Lesson 1: Table of Values and Graphing Linear Equations

Objective:

- I can use a linear relation to represent a pattern.

Finding A Pattern



Figure 1



Figure 2



Figure 3

Question:

What if someone asked you to draw the 9th figure in this series?

Look for the *relationship* or pattern between the figure numbers and each figure.

Relation: when two numbers or things are *related* in some way.

Example: Canada → Dollar
Japan → Yen

- The only thing that changes are the number of stars
- The number of stars is the same as the figure number
- The moons stay the same in each figure.

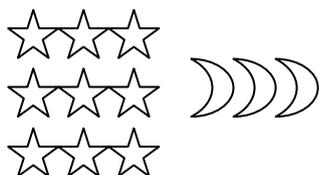
Pattern rule:

Figure $x = x$ stars + 3 moons

Variable: the part of the pattern that varies or changes; usually represented by a letter..

Answer:

Figure 9: 9 stars + 3 moons



How many stars would Figure 15 have? _____

Objective:

- *I can create a table of values for a given linear relation.*



Figure 1



Figure 2

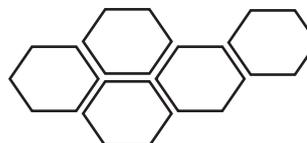


Figure 3

Shape Number (<i>n</i>)	Number of Hexagons (<i>x</i>)
1	3
2	4
3	5
4	
5	
6	
10	
24	

Creating a pattern rule from a chart

- The relationship is: **shape number + 2**
- The pattern rule: **Number of Hexagons $x = n + 2$**
- Using this pattern rule: **Number of Hexagons in Shape number 4 = $4 + 2 = 6$**

Complete the remainder of the chart using the pattern rule.

Practice:

1.



Figure 1

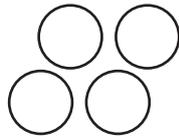


Figure 2

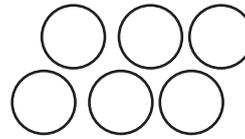


Figure 3

Pattern Number (n)	Number of circles (x)
1	2
2	4
3	6
4	8
5	
12	
25	
37	

a. What is a possible pattern rule?

b. Complete the table of values using the rule.

2. Use the pattern rule given at the top of the table to complete the tables.

$n = p - 1$	
Pattern Number (p)	Number of circles ($n = p - 1$)
1	0
2	
3	
4	
5	
10	
50	

$n = 2p$	
Pattern Number (p)	Number of circles ($n = 2p$)
1	2
2	
3	
4	
5	
10	
50	

$n = 2p - 1$	
Pattern Number (p)	Number of circles ($n = 2p - 1$)
1	0
2	
3	
4	
5	
10	
50	

Objective:

- *I can use a linear relation to create a table of values and then graph it*

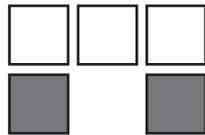


Figure 1

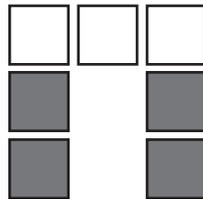


Figure 2

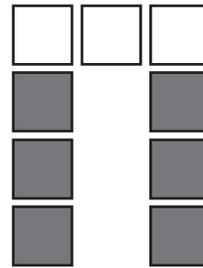
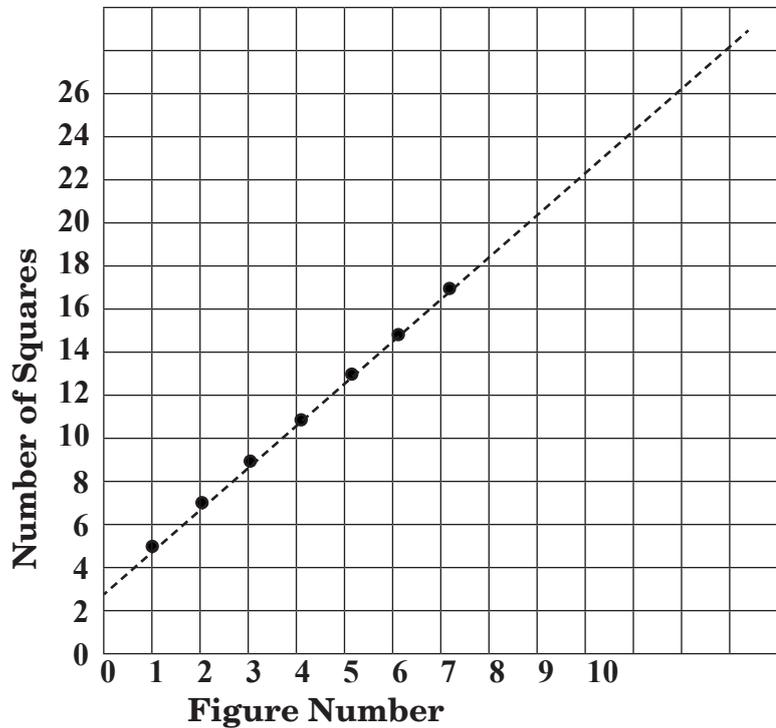


Figure 3

→ The pattern rule: Number of boxes in Fig. $x = 2x + 3$

→ A table of values for the figures above:

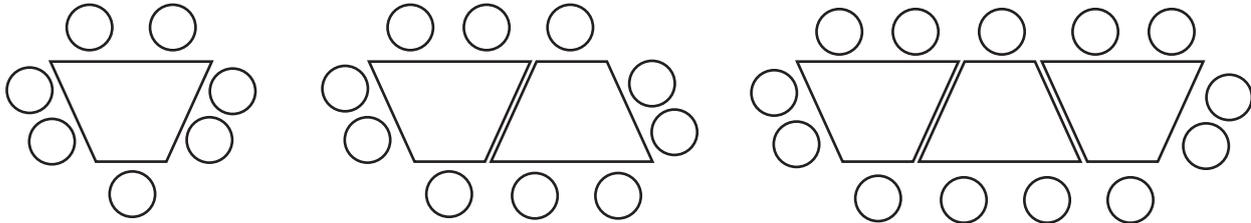
Figure Number	Number of squares
1	5
2	7
3	9
4	11
5	13
6	15
7	17
8	19



By extrapolating (extending) the line, we can use the graph to predict how many squares would be in other figures. Predict how many squares would be in Fig. 12.

Practice:

a. Patrick is arranging tables and chairs for a banquet.

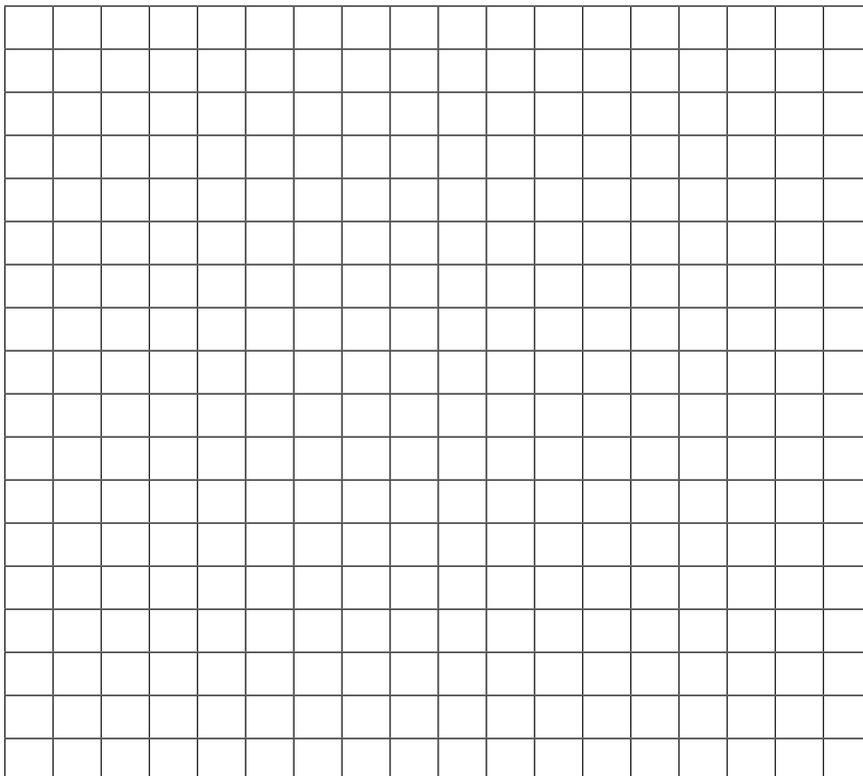


What is the pattern rule describing the number of chairs, c , needed for each number of tables, t ? _____

b. Complete the table, and graph the results

c. If Patrick has 10 tables lined up, how many chairs would he need?

Number of Tables (t)	Number of Chairs (c)
1	
2	
3	
4	
5	
6	
7	
8	



Objective:

- *I can describe the patterns found in the graph to draw conclusions.*

Graph each of the following table of values in different colours on the same grid. Make a key to identify each line produced.

a.

$y = n$	
n	y
1	
2	
3	
4	
5	

b.

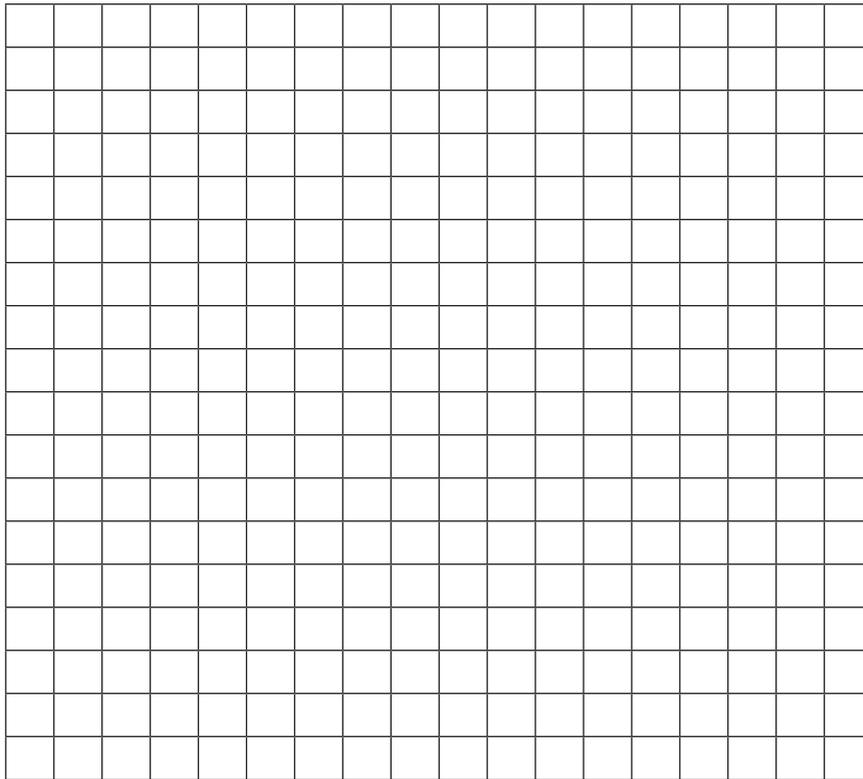
$y = n + 3$	
n	y
1	
2	
3	
4	
5	

c.

$y = 2n$	
n	y
1	
2	
3	
4	
5	

d.

$y = n - 1$	
n	y
1	
2	
3	
4	
5	



a. What is the difference between graphs a. and b?

b. What is the difference between graphs a. and c?

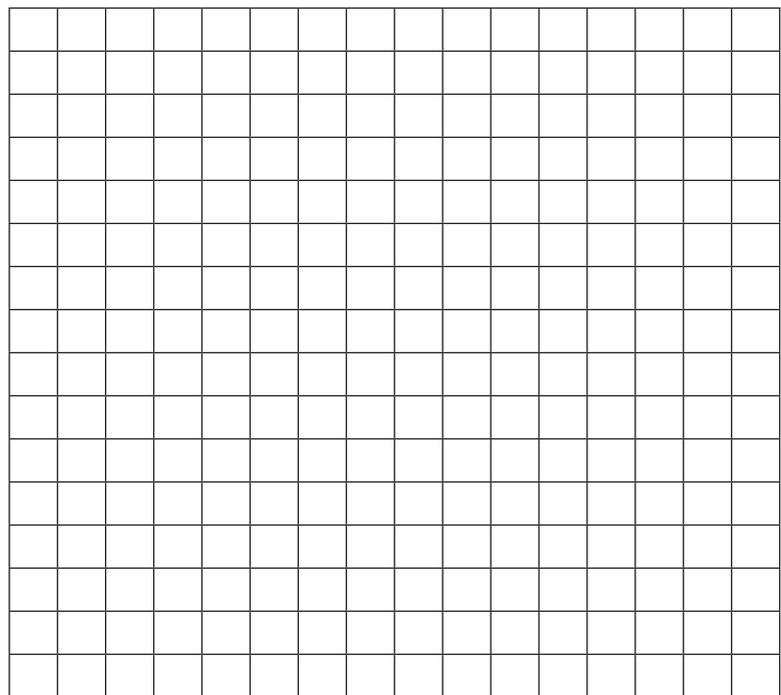
c. What is the difference between graphs a. and d?

Summary and Practice:

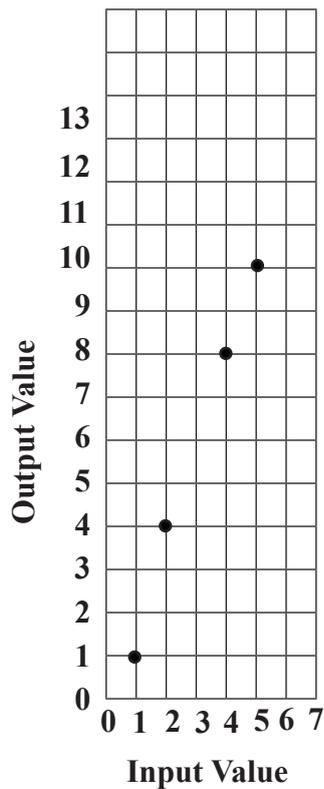
- *Using what you've learned, answer the following questions.*

- Hilary started with \$50 in her piggy bank and saved \$5 each week from her allowance.
 - What is the pattern relation that would describe the amount of money (t) in the bank for n weeks?
 - Complete a table of values for this relation, and graph the relation.

Week (n)	Money (t)
1	
2	
3	
4	
5	



- After 20 weeks, how much money would Hilary have in the bank?



2. Consider the following graph.

- a. What is the relation represented by this graph?
- b. The data for input value 3 is missing. What should be the output value for input value 3?
- c. What would be the output value for an input value of 20?

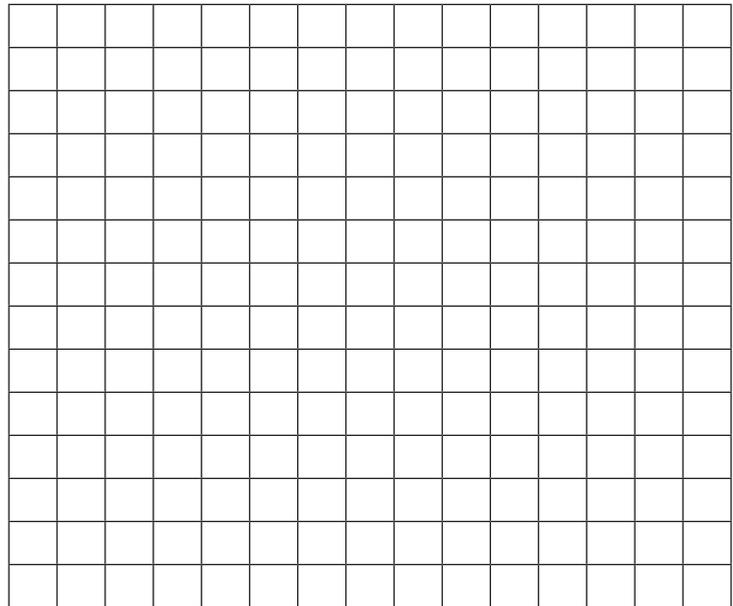
3. A pizza with cheese costs \$8.50. Each additional topping is \$0.50.

- a. Write a relation for the cost of a pizza with n number of extra toppings.
- b. What is the cost of a pizza with 8 extra toppings?
- c. On the first Thursday of the month the pizzas go on sale for \$5.00. What would the new relation look like?
- d. What is the cost of the 8 topping pizza on the first Thursday of February?

4. Admission to Wacky World is \$6. Each ride is an additional \$2.
- a. What is the pattern rule showing how total cost is related to the number of rides?

 - b. Complete a table of values for this relation, and graph the relation.

Rides (r)	Total Cost (c)
1	
2	
3	
4	
5	



- c. Circle the point on the graph that would show the total cost of going on 8 rides.

- d. If Charles goes into the park with \$35, what is the maximum number of rides he can go on?



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