LessonTitle: **Rules from Tables and Graphs**	**Alg 4.2**
Utah State Core Standard and Indicators	
Summary In this lesson, students describe the rule for the patterns found in tables of coordinate pairs and their graphs. Then they use rules to find coordinate pairs.	
Enduring Understanding Coordinate graphs tell stories about numeric patterns and relationships. Using a graph helps us make predictions.	**Essential Questions** How can graphs help us make predictions?
Skill Focus Interpreting graphs	**Vocabulary Focus**
Assessment	
Materials	
Launch	
Explore	
Summarize	
Apply	

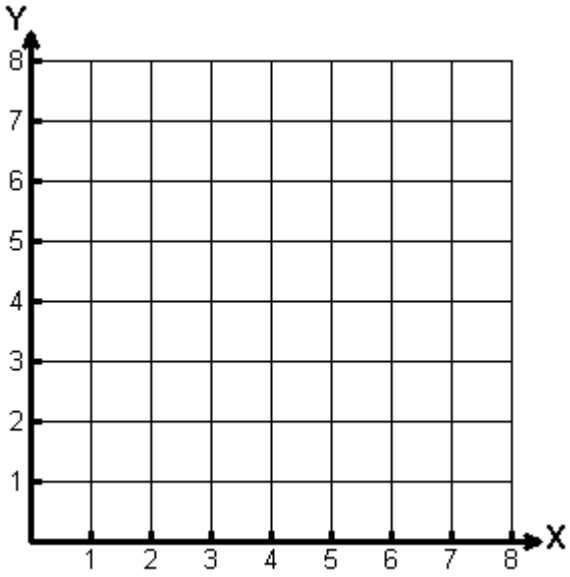
Alg 4.2 Rules from Tables and Graphs

Part I: Graph the coordinate points. Then find a rule for finding the second number from the first number in each coordinate pair.

1) Rule: _____

x (first number)	y (second number)
0	2
1	3
2	4
3	5
4	6
5	7
6	8

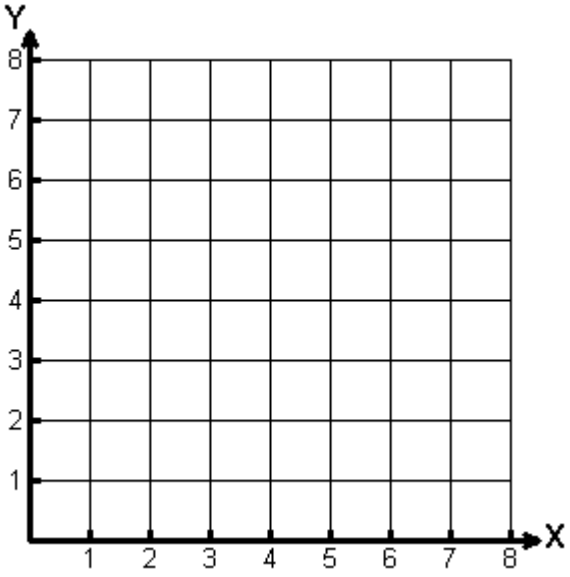
How does the graph show the rule?



2) Rule: _____

x (first number)	y (second number)
0	.5
1	1
2	1.5
3	2
4	2.5
5	3
6	3.5

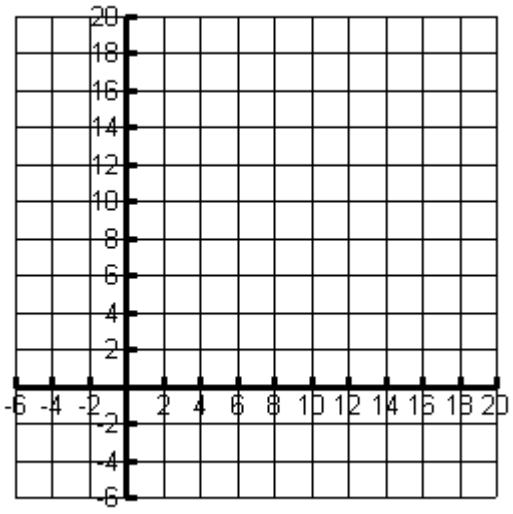
How does the graph show the rule?



3) Create a graph to help you find four more ordered pairs that fit this pattern:
(3,10), (1,4), (0,1), (2,7), _____ _____ _____ _____

What rule did you use?

Explain how the graph shows the rule.

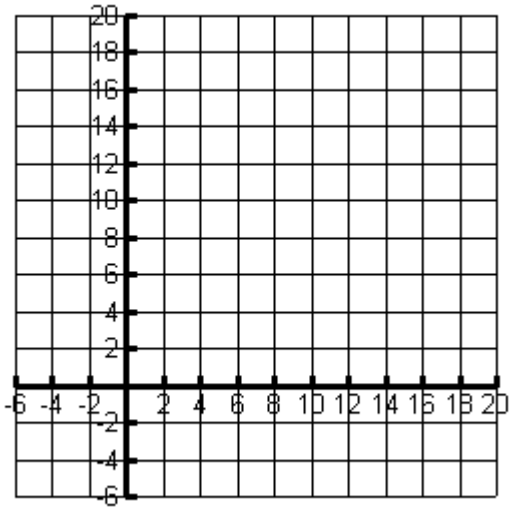


4) Create a problem. Draw a line on the graph.

Trade with a partner. Then figure out coordinate pairs for each other's graphs.

x	y

What is the rule for the pattern of the graph and table?



Extra Challenge: All but one of these ordered pairs fit a pattern: (1,2), (4,4), (7,6), (9,7), (13, 10), (16,12). Which pair does not fit the pattern? Explain why and give the correct ordered pair. (Graphing the points may help you find the pattern.)

Part II: Using Rules

1) Cari is 10 years old. If y stands for the number of years from now, which expression tells how old Cari will be ten years from now?

a. 10-y b. 10* y c. 10 + y d. y/10

2) One pizza serves 6 people. If p stands for the number of pizzas Nick bought for his party, which expression tells how many people were served?

a. 6 * p b. p – 6 c. p/6 d. p + 6

3) Complete each table. Use the rule to find the values that makes the sentence true.

d	30-d
4	
7	
10	
11	
13	

If 30 – d = 19 d = _____

n	n/5 - 2
10	
15	
20	
25	
30	

If n/5 – 2 = 3 n = _____

w	w + 25
4	
7	
10	
11	
13	

If w + 25 = 43 w =____

3) Complete the table using the rule. Then use the table to answer questions.

a) Fran had s seashells. She found 2 more shells. Write an expression to show how many shells she had altogether.

b) Fran divided the total number of shells she had among 3 friends. Write an expression to represent what she did.

Shells (s)	$\frac{(s + 2)}{3}$
4	
7	
10	
11	
13	

c) If each of Fran's friends received 5 shells after Fran divided them up, how many shells did Fran have to start with? Explain how you found your answer.

d) Tim is thinking of a number, n. He doubles his number, then adds 4 to it. Write an expression that shows the result.

e) If Tim's result is 50, what was Tim's starting number? Start with 20 and make a table using values of n. Stop when you think you know the answer.

4) Complete each table and answer the questions

.

Regular (r)	Sale price (r – 3)
10	
11	
12	
16	
18	
20	

Hours worked (h)	Amount Earned (2 * h)
2	
3	
5	
8	
10	
14	

n	n/3	(n/3) + 1
3		
6		
12		
15		
18		
24		

If the sale price is $15, The regular price is_____.

What value for h makes2 * h = 16 a true statement? _____

What value for n makes n/3 + 1 a true sentence? _____

5) Create your own problem with a rule. Trade with a partner to solve and graph.