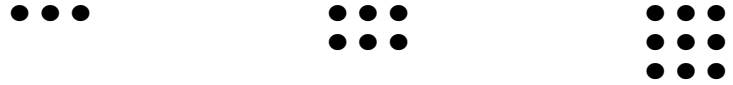
Name _____ Period _____ Date _____

6-7 ESSENTIAL SKILLS
EXPLORING PATTERNS

For each dot pattern, steps 1 – 3 are shown.
Draw the 4th step in the sequence, and then do parts a and b.

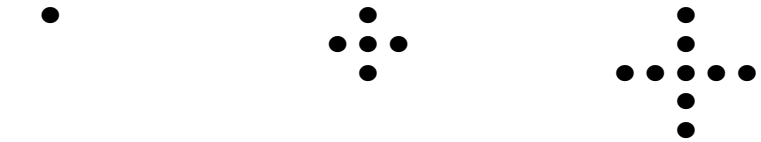
1.



a. Describe how the pattern is growing in words.

b. How many dots will be in the 10th step of the pattern? Explain.

2.



a. Describe how the pattern is growing in words.

b. How many dots will be in the 10th step of the pattern? Explain.

Study each pattern, draw the next two figures, and then draw the 10th and 100th figures.

3.  _____ _____

a. 10th term in the sequence: _____

b. 100th term in the sequence: _____

4.  _____ _____

a. 10th term in the sequence: _____

b. 100th term in the sequence: _____

Name _____ Period _____ Date _____

6-7 ESSENTIAL SKILLS
EXPLORING PATTERNS
Continued

Write the next two numbers for each pattern. Then describe the pattern it in words.

5. 3, 4, 5, 6, _____, _____, … Description:

6. 1, 3, 5, 7, 9, _____, _____, … Description:

7. 2, 7, 12, 17, 22, _____, _____, … Description:

8. 68, 58, 48, 38, 28, _____, _____, … Description:

9. Write the first 5 numbers for a pattern that starts with 0 and adds 2 to get the next number.
   _____, _____, _____, _____, _____, …

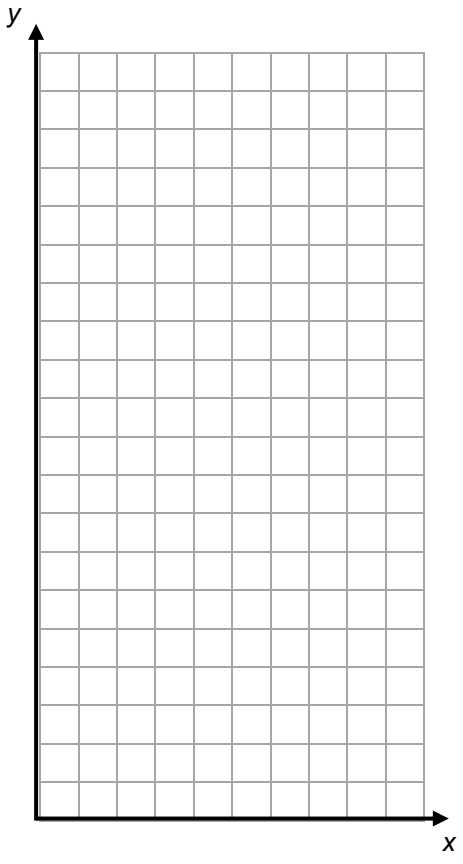
10. Write the first 5 numbers for a pattern that starts with 0 and adds 4 at to get the next number.

    _____, _____, _____, _____, _____, …

11. Write the patterns of ordered pairs, using the numbers in problem 9 as the *x*-coordinates and the numbers in problem 10 as the *y*-coordinates in the order that they occur above.

    (,), (,), (,), (,), (,)

12. Graph the ordered pairs to the right. Be sure to number the axes. What do you notice?



13. What is the next ordered pair that would be in this pattern?

    Does it follow the graphed pattern started?

Name _____ Period _____ Date _____

6-7 ESSENTIAL SKILLS
BATTLING SHIPS

The Setup:
Each player uses two coordinate grids. Label both axes from 0 to 10. One grid is labeled "my tries" and the other "my ships."

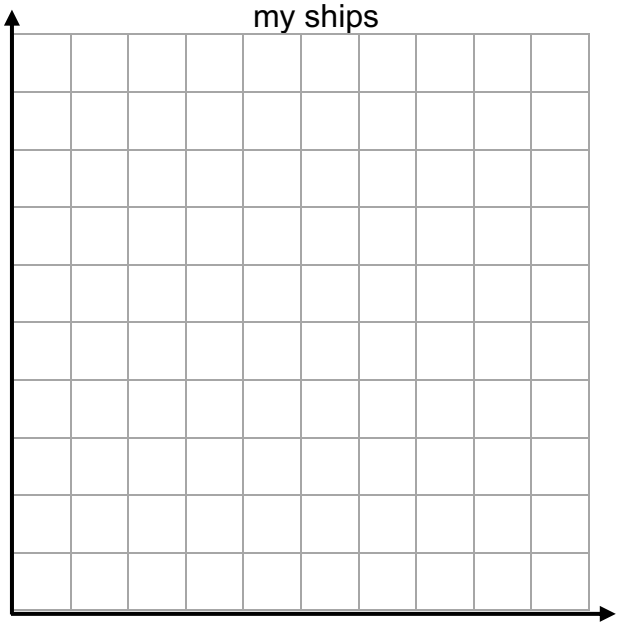
Each player decides where to place three rectangular ships on the Self grid: a **B**attleship (5 units × 1 unit), a **C**ruiser (3 units × 1 unit), and a **D**estroyer (2 units × 1 unit) so that edges and corners are on the grid lines. All ships must be placed either horizontally or vertically, and therefore all ordered pairs for vertices will have whole number coordinates. Two ships may be adjacent to each other (may share part or all of a side), but they cannot overlap. Label the ships by the first letters of their names, B, C, and D.

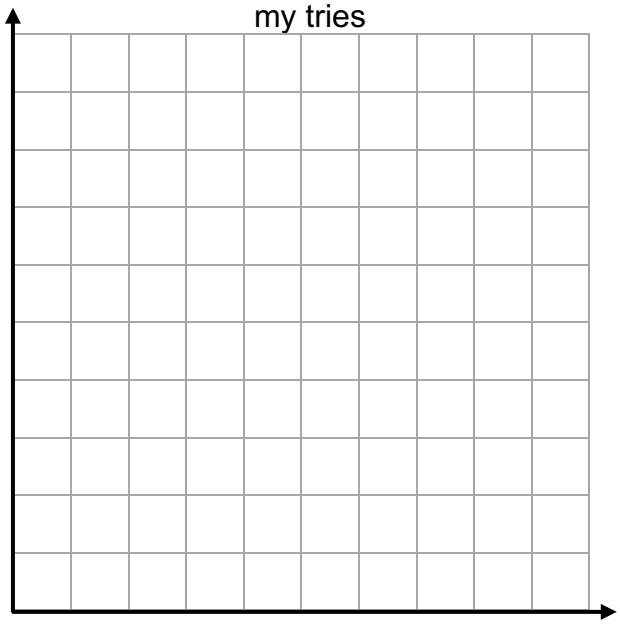
The Game:
Players take turns calling out one ordered pair of whole numbers at a time. If a player calls an ordered pair where an edge or corner of a ship is located, the opponent says "hit" and the player gets another turn. If no ship is located at the ordered pair, the opponent says "miss," and players change roles.

Players mark the "my ships" grid with shots taken by their opponent. Players should take care to record their hits and misses on their "my tries" grid so that they do not call an ordered pair more than once.

A ship is sunk when all of its corner and edge points have been hit. When this happens, the player whose ship was sunk says, "You sank my _____."

You win by sinking all of your opponent's ships. If time is called, the player who has sunk more of the opponent ships wins. If tied, the winner is the one who scored the most hits. Make sure to exchange grids afterward to check that both players marked coordinates correctly.





Name _____ Period _____ Date _____

6-7 ESSENTIAL SKILLS
FOUR IN A ROW: DECIMAL DIVISION

Players: 2+

Objective: Be the first player to claim 4 spaces in a row, column, or diagonal to win the game.

Materials: Board game, 2 sets of colored counters (for the game board), 2 objects (e.g. cubes, paperclips, cut up paper) that will cover numbers in Box A and Box B

Rules: Two players alternate finding the quotient by choosing a dividend from Box A and a divisor from Box B. Players check the quotient and, if successful, place their colored counter on a space with the appropriate value.

BOX A: DIVIDEND		
1.2	9.6	6
3.6	7.2	2.40

BOX B: DIVISOR		
2	10	6
3	5	4

GAME BOARD: DECIMAL DIVISION $A \div B$					
2	0.60	1.2	1.92	1.20	1.80
0.20	0.96	0.72	4.80	0.30	0.6
1.20	3.20	0.36	2.40	1.5	0.40
0.8	1	1.44	0.60	3	0.24
0.24	1.8	0.90	0.12	0.48	2.4
0.72	1.60	0.4	3.60	0.6	1.20