



## Patterned Pathways Lesson Plan (3-8)

### Objectives:

- Compare and contrast the attributes (shape, size, color, shading) of two figures.
- Match one or two attributes of two figures (shape, size, color, shading).
- Plan a solution pathway rather than simply jumping into a solution attempt.

### Common Core State Standards:

MP1 Make sense of problems and persevere in solving them.

MP7 Look for and make use of structure.

### Materials Needed:

- 6 by 6 gameboard, 1 per group of 4 players
- 4 game pieces per group of 4 players
- Tetrahedral die, 1 per group of 4 players
- Set® cards (Remove all cards that have 3 shapes and all cards that are shaded with lines.)

### Launch:

Lay down five figure cards face up so students can see the figures displayed on them. Ask students to look for any similarities and/or differences between the figures on the cards. (Students should notice that some are the same color, same shape, same shading, and have the same number of shapes). Explain to students that they will be playing a game that requires them to look for these similar attributes between cards.

### Pre-Activity:

Deal out 6 Set® cards to each player. Ask students to try to form a line of cards where each pair of adjacent cards shares at least two attributes in common. All 6 cards may not form a line, so have students make the longest line possible.

- For example: One shaded, red oval could be adjacent to two shaded, red squiggles because both figures on the cards are shaded and red. Then two non-shaded, purple squiggles could be adjacent to the two shaded, red squiggles because they both have two squiggles. This activity gets the players practicing matching two figures based on at least two attributes.

Collect the Set® cards.

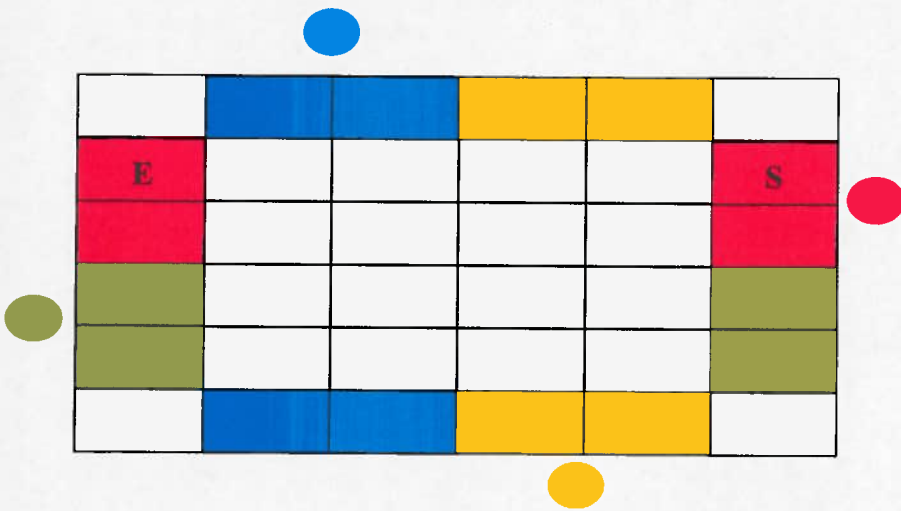
### Activity: Patterned Pathways

In this game, players must move their game piece from their starting point across the gameboard by matching one or two attributes of the figures displayed in order to form a pathway that ends at

**On Your Turn (Variation 2):**

1. Spin the spinner. If the spinner lands on 1, 2, or 3, you may move your game piece up to that many adjacent spaces. However, every space you move to must share the same two attributes with the figure you begin your turn on. (Exception: On your first turn, you may move to any of your two starting spaces.)
  - a. The attributes that can match are color, shape, shading, and number of shapes.
  - b. For example, if your piece is on a space with one shaded, red oval and you spin a 2, you may first move to an adjacent space that displays two shaded, red squiggles because both figures on the cards are shaded and red. Then for your second move, you may move to an adjacent space that displays one shaded, red diamond because the figure has shading and color in common with the space you began your turn on.
  - c. Game pieces can move back to spaces they have already occupied; however, this counts as one of your moves.
2. If the spinner lands on 4, you may move to *one* adjacent space, even if it shares no attributes with the space you are currently on.
3. After you have finished moving your game piece the correct number of spaces, your turn is done. The player on your right takes a turn.
4. Play continues in this manner until one player reaches their ending point on the opposite side of the game board.

**Game IV:** Shuffle Set® cards and deal out 6 cards to each player. Arrange the game pieces around the board as shown below.



The boxed spaces that match each game piece's color indicate that player's starting position and ending position. The player must begin on one of the two boxed spaces in front of their game piece and make their way across the board to a boxed space directly across from the starting space. For example, if Red started on the space marked "S", Red would have to end on the space marked "E." *Remember, every space on the game board would be empty at this point.*

**On Your Turn (Variation 1):**

1. Spin the spinner. You may lay down that many figure cards down anywhere on the board, move your game piece that many adjacent spaces, or do a combination of these. However,

you may only move your game piece to any adjacent space if it has two attributes in common with the space **you are currently on only**. (Exception: On your first turn, you may move to any adjacent space.)

- a. The attributes that can match are color, shape, shading, and number of shapes.
  - b. For example, if your piece is on a space with one shaded, red oval, you may move to an adjacent space that displays two shaded, red squiggles because both figures on the cards are shaded and red.
  - c. You cannot move your game piece to an open space on the board. You must land on a space that contains a figure card.
  - d. Game pieces can move back to spaces they have already occupied.
  - e. Since you may place a figure card anywhere on the board you desire, you may place a figure card down to extend your pathway, or you may place a figure card down near an opponents' pathways to block them.
2. After you have finished moving your game piece, your turn is done. The player on your right takes a turn.
  3. Play continues in this manner until one player reaches their ending point on the opposite side of the game board.

#### On Your Turn (Variation 2):

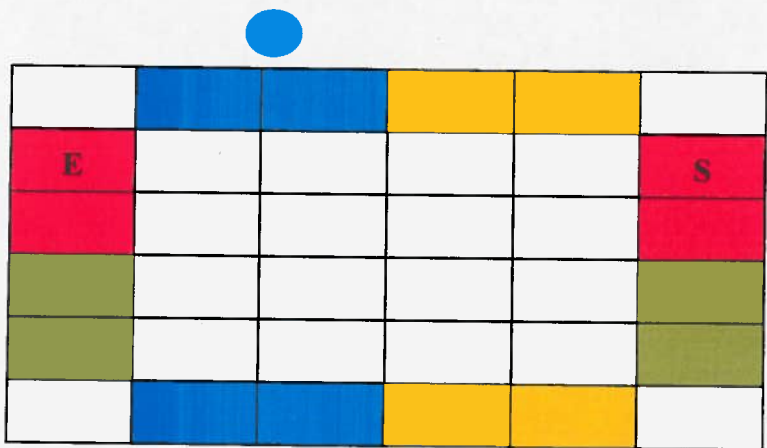
1. Spin the spinner. You may lay down that many figure cards down anywhere on the board, move your game piece that many adjacent spaces, or do a combination of these. However, every space you move to must share **the same two attributes with the figure you begin your turn on**. (Exception: On your first turn, you may move to any of your two starting spaces.)
  - a. The attributes that can match are color, shape, shading, and number of shapes.
  - b. For example, if your piece is on a space with one shaded, red oval, you may first move to an adjacent space that displays two shaded, red squiggles because both figures on the cards are shaded and red. Then, you may move to an adjacent space that displays one shaded, red diamond because the figure has shading and color in common with the space you began your turn on.
  - c. Game pieces can move back to spaces they have already occupied.
2. After you have finished moving your game piece, your turn is done. The player on your right takes a turn.
3. Play continues in this manner until one player reaches their ending point on the opposite side of the game board.

Winning the Games III and IV: Once a player lands on the space on the opposite side of the game board that matches their starting space, that player wins the game.

their indicated ending point. These games are for 2 to 4 players. The object of the game is to be the first player to move your game piece from your starting point across the board to your ending point. **If there is just 1 player, move directly to the Extension.**

There are several possible games that can be played. These games, along with their rules, are below:

**Game III:** Shuffle Set® cards and deal out cards onto the 6 by 6 gameboard (one card per space). Arrange the game pieces around the board as shown below.



The boxed spaces that match each game piece color indicate that player's starting position and ending position. Players must begin on one of the two boxed spaces in front of their game piece and make their way across the board to a boxed space on the other side that is directly across from the chosen starting space. For example, if Red started on the space marked "S", Red would have to end on the space marked "E."  
*Remember, every space on the game board has a Set® card on it.*

**On Your Turn (Variation 1):**

1. Spin the spinner. If the spinner lands on 1, 2, or 3, you may move your game piece up to that many adjacent spaces. However, every time you move to a new space, the figure on that space must share two attributes with the figure of the space you are moving from. (Exception: On your first turn, you may move to any of your two starting spaces.)
  - a. The attributes that can match are color, shape, shading, and number of shapes.
  - b. For example, if your piece is on a space with one shaded, red oval, you may move to an adjacent space that displays two shaded, red squiggles because both figures on the cards are shaded and red.
  - c. Game pieces can move back to spaces they have already occupied; however, this counts as one of your moves.
2. If the spinner lands on 4, you may move to one adjacent space, even if it shares no attributes with the space you are currently on.
3. After you have finished moving your game piece the correct number of spaces, your turn is done. The player on your right takes a turn.
4. Play continues in this manner until one player reaches their ending point on the opposite side of the game board.

**Variation for all games:**

Instead of being able to move to an adjacent space if it shares at least two attributes, play where you may only move to an adjacent space if it shares *no* attributes in common.

**Extension:** Have the students try to find the shortest route possible from their starting space to the corresponding ending space. If Game IV was played, make sure any open spaces left over after winner has been determined are filled in randomly with left over cards.

**Suggested Timeline:**

5 minutes for Launch; 5 minutes for Pre-Activity; 10-15 minutes for each round Patterned Pathways ; 5-10 minutes for Extension

**Wrapping Up:**

If time allows, summarize and review the game. Ask:

- What were the easiest attributes for you to match? Which were the most difficult?
- I noticed that the more we played, the less backtracking you had to do. Why do you think this was the case?
- (If Game IV was played) How did you decide where to place your figure cards?
- What tips would you give other students if they were to play this game?

Collect all game pieces, gameboards, spinner, and figure cards.