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2. Choose one shape from the pile (e.g., a rhombus), hold it up, and describe it. You could say, "I have a rhombus. A rhombus is shaped like a diamond. It has four sides and four vertices."



"Look at all of our shapes here on the table. Can you find the exact match of my rhombus? Find a shape that is exactly the same as my rhombus." Wait for the child to look through the shapes and select a matching rhombus.



3. Once the child finds the match, have them explain how they know it's an exact match.

*Note*: At first, children may match based on color. That's okay! Ask questions to help them notice and talk about the sides, vertices, and angles of the shapes.

"Is your shape an exact match of my shape? How do you know?"

"How many sides does your shape have? Can you point to each side?"

"How many vertices? Can you point to each vertex?" "How is the rhombus different from a square? How is it different from a triangle?"

4. Add the shape back to the pile and continue finding the exact matches of the other shapes.

#### WHAT CHILDREN ARE LEARNING

- Exact matching is an important beginner sorting skill! Exact match activities help children recognize the attributes of objects. With practice, children can use their knowledge of attributes to sort and compare sets of objects and to create patterns.
- Exact match activities can use all different items! Have children find the exact matches of socks in the laundry or treats in a trail mix. Make sure children explain their match using attribute words; "the chocolate chips match because they are *small* and *pointy on top* and the peanuts match because they are ovals."

### MATH TOPICS

Sorting and Attributes

Shapes and Geometry

VIDEO



## Watch Game Video

View the QR code in your smartphone's camera app or QR code reader to watch a video that shows how to play The Exact Match.



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Pick up two shapes and ask, "What do you notice about these shapes? What is the same? What is different?"



Encourage children to talk about the attributes, like the number of sides or vertices, that they will use to find a shape by feel.

Then, choose 2 new shapes for the children to talk about.

- 2. When children are ready, have them take turns holding the bag of shapes. Point to one of the shapes on the table and ask the child holding the bag to find that same shape in the bag. Make sure they find the shape by feel only, no peeking!
- 3. You could say, "Okay, I put all of our extra shapes in this bag. I'm going to point to one of the shapes on the table and I want you to think to yourself, what do you notice about that shape. Then, put your hand inside the bag and find that shape by feeling it. You can only use your hand to feel, not your eyes to look. When you think you've found it, describe it to us before you take it out. Then, you can take it out of the bag so we can all see it and talk about your shape."
- 4. Hand the bag to the next player and choose a new shape for them to find by feel.

#### **TIPS FOR PLAYING**

- You can use lots of different types of objects to play the game, such as toys, utensils, art supplies, anything that children can touch. Ask children to describe the objects (soft, fuzzy, pointy, round).
- As children get more practice with noticing and describing the attributes, or characteristics, of shapes and objects, they will be ready to take on more challenge in this game. You might want to start with only three shapes and, as children are ready, add more shapes.

#### WHAT CHILDREN ARE LEARNING

SHAPE ATTRIBUTES

- Knowing about a shape is more than just knowing the shape's name. This game helps children pay attention to the attributes, or characteristics, that define a shape.
- By describing the shapes, children are building their language and vocabulary skills. And, they are practicing an important mathematical habit of mind--giving precise descriptions of what they see using evidence.

# Circle No vertices or corners, the curve is always the same distance from a center point Triangle Exactly 3 straight sides Rectangle Exactly 4 straight sides, 4 right angles (like the corner of a piece of paper) Square Exactly 4 straight equal sides and 4 right angles Trapezoid Exactly 4 straight sides, one pair of opposite sides is parallel (like train tracks) Rhombus Exactly 4 straight equal sides, both pairs of opposite sides are parallel (like train tracks) Exactly 5 straight sides Pentagon Exactly 6 straight sides Hexagon Octagon Exactly 8 straight sides

\* A note about the vocabulary: A vertex (plural vertices (vur · tuh · seez)) is where two sides meet. An angle is the space between where two lines meet. Angles are usually measured in degrees. For example, a square has four vertices and four 90° angles.

#### MATH TOPICS

Shapes and Geometry





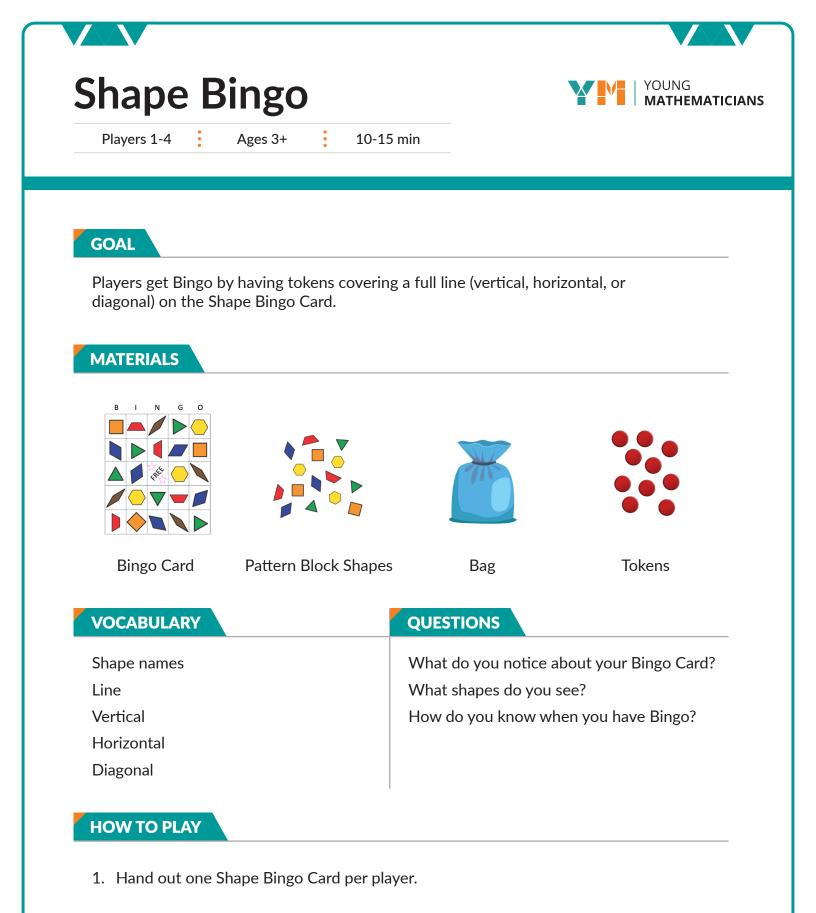
## Watch Game Video

View the QR code in your smartphone's camera app or QR code reader to watch a video that shows how to play Feel for Shapes.



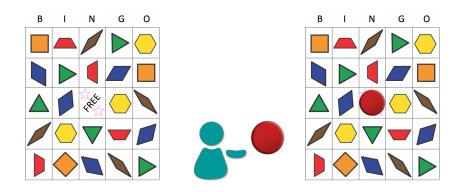
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2. Pass out tokens to each player. Make sure each player has enough tokens to cover their Bingo Card.

3. If using 5x5 cards, have each player place one token on their "FREE" space.

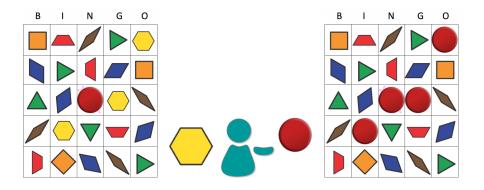


- 4. Place the pattern block shapes in a bag or basket.
- 5. Reach into the bag and select a shape.

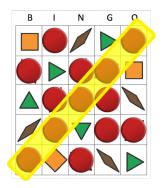


Hold up the selected shape for all to see. Have children name the shape.

6. Have each player look at their Shape Bingo Card and place a token on each square that matches the selected shape.



7. Continue pulling shapes from the bag and having children place tokens on the matching shapes on their cards. Once a player has shapes or tokens covering a full line (vertical, horizontal, or diagonal) on their card, they shout "Bingo!"



8. Have the player name all of the shapes in their Bingo line, and name the Bingo direction (vertical, horizontal, or diagonal).

#### **TIPS FOR PLAYING**

• You can use anything for tokens--other game pieces, little scraps of paper, etc.

#### WHAT CHILDREN ARE LEARNING

- This game helps children connect shape names, like "hexagon" and "triangle," with what the shapes look like.
- As children search their Bingo Cards for a particular shape, they are identifying the shape in all different configurations (e.g., flipped and rotated). This helps children recognize that a shape is a shape because of its attributes. For example, a triangle is a triangle because it has three straight sides, even if it's upside down!

## MATH TOPICS

Shapes and Geometry





# Watch Game Video

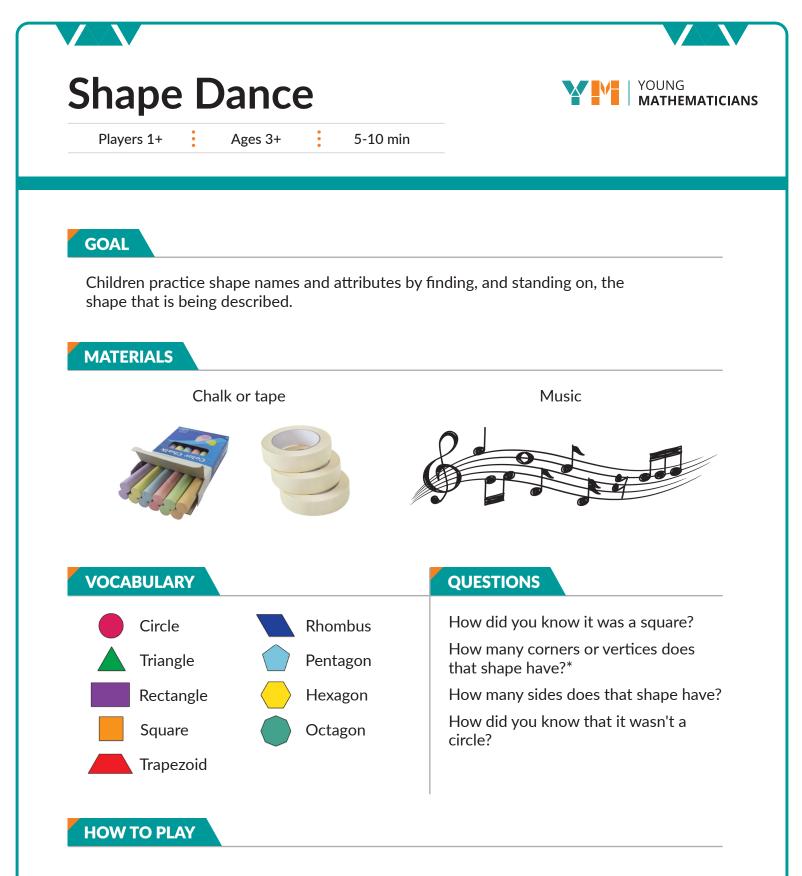
View the QR code in your smartphone's camera app or QR code reader to watch a video that shows how to play Shape Bingo.



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 Outline some shapes on the floor with tape. Or, if you are outside, outline them with sidewalk chalk. Make sure your outlines are big enough for children to stand on. You can start by making outlines of 3 shapes, and add more shape outlines as children are ready.

- 2. Begin by saying, "I'm going to play some music. You can move and dance all around our shapes. When the music stops, stand on a shape with 4 sides."
- 3. Play music while children walk or dance around the shapes.
- 4. Stop the music and repeat the direction. Wait for everyone to find a shape that fits the clue of having 4 sides.
- 5. Ask, "Are you on a shape with 4 sides? How do you know? Are there any other shapes with 4 sides?"
- 6. Play again.

## **Suggested Clues**

- Stand on a shape that is a rectangle (hint: a square is a special kind of rectangle).
- Stand on a shape with three sides.
- Stand on a shape that is a circle OR a triangle.
- Stand on a shape that is a rhombus (hint: a square is a special kind of rhombus).
- Stand on a shape with no vertices or corners.
- Stand on a shape with only 4 vertices or corners.
- Stand on a shape with at least 3 vertices or corners.
- Stand on a shape that is a square.
- Stand on a shape that is NOT a square.

#### **TIPS FOR PLAYING**

• If you are in a small space, you can use shape blocks or shape cutouts to play this game. Spread the shapes out on a table or the floor and have children pick up the shape that matches your clue.

## WHAT CHILDREN ARE LEARNING

- Knowing about a shape is more than just knowing the shape's name. This game helps children pay attention to the attributes, or characteristics, that define a shape mathematically.
- Children may be at different levels with their knowledge of shapes. You can adjust the shapes you use and the clues you give to make it more or less challenging.
- Children need to listen carefully to your clues and remember them to find the correct shape. These are important skills to help them get ready for school.

#### SHAPE ATTRIBUTES

	Circle	No vertices or corners, the curve is always the same distance from a center point
	Triangle	Exactly 3 straight sides
	Rectangle	Exactly 4 straight sides, 4 right angles (like the corner of a piece of paper)
	Square	Exactly 4 straight equal sides and 4 right angles
	Trapezoid	Exactly 4 straight sides, one pair of opposite sides is parallel (like train tracks)
	Rhombus	Exactly 4 straight equal sides, both pairs of opposite sides are parallel (like train tracks)
	Pentagon	Exactly 5 straight sides
$\bigcirc$	Hexagon	Exactly 6 straight sides



Exactly 8 straight sides

\* A note about the vocabulary: A vertex (plural vertices (vur · tuh · seez)) is where two sides meet. An angle is the space between where two lines meet. Angles are usually measured in degrees. For example, a square has four vertices and four 90° angles.

## **MATH TOPICS**

Shapes and Geometry





## Watch Game Video

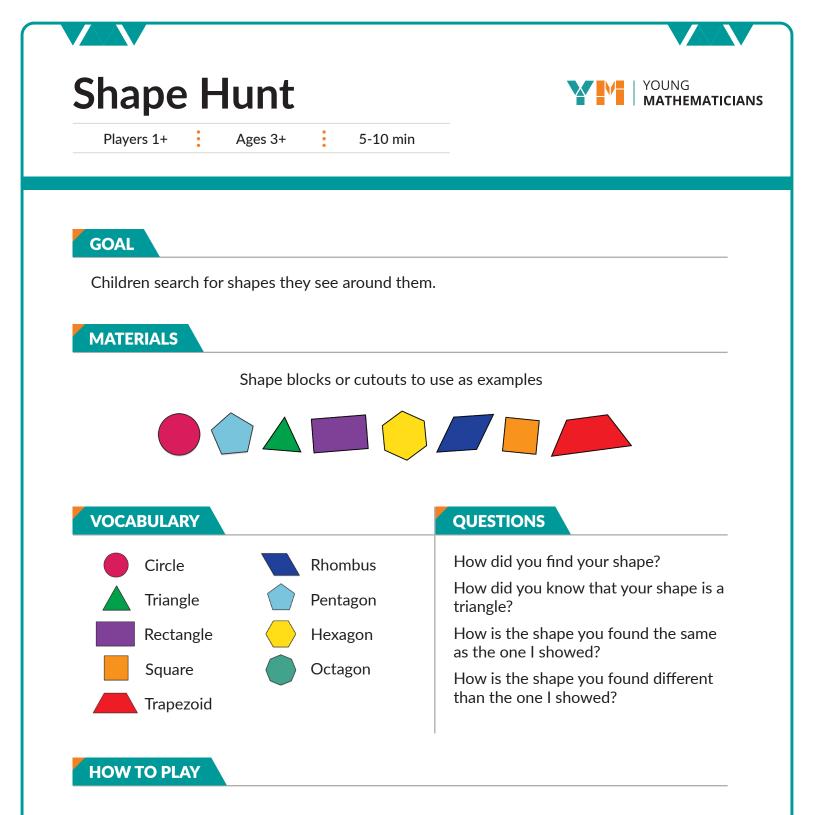
View the QR code in your smartphone's camera app or QR code reader to watch a video that shows how to play Shape Dance.



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- Begin by showing the children the shape they will "hunt" for. You can ask, "What do you notice about this shape? How many sides does it have? Are the sides straight or curved? How many corners or vertices?"
- 2. Once children are familiar with the shape, have them explore the space around them and find an object that has that shape.

- 3. If possible, ask children to bring their object or shape back to the group. Or, they could take a picture of it or draw it.
- 4. Have children describe their object or shape. Ask how their object is the same and how it is different from the shape you showed them.
- 5. Pick a new shape to find!

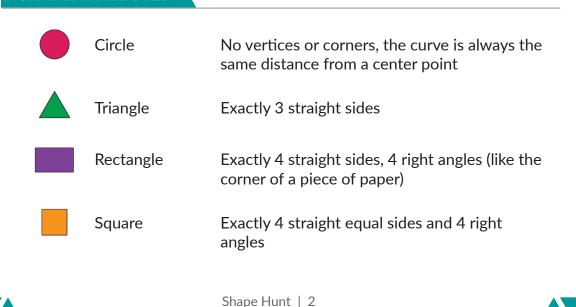
#### TIPS FOR PLAYING

• If you are in a small space you could have the shapes on a table and have children pick up the shape that matches your clue.

#### WHAT CHILDREN ARE LEARNING

- Our world is composed of shapes and children love noticing the shapes and talking about them. Artists, architects, and engineers use shapes to compose their work.
- Children are building their vocabulary and language skills. And, they are practicing an important mathematical habit of mind—giving precise descriptions of what they see using good evidence.

#### SHAPE ATTRIBUTES



	Trapezoid	Exactly 4 straight sides, one pair of opposite sides is parallel (like train tracks)
	Rhombus	Exactly 4 straight equal sides, both pairs of opposite sides are parallel (like train tracks)
$\bigcirc$	Pentagon	Exactly 5 straight sides
	Hexagon	Exactly 6 straight sides
	Octagon	Exactly 8 straight sides

\* A note about the vocabulary: A vertex (plural vertices (vur ·tuh ·seez)) is where two sides meet. An angle is the space between where two lines meet. Angles are usually measured in degrees. For example, a square has four vertices and four 90° angles.

**MATH TOPICS** 

Shapes and Geometry





## Watch Game Video

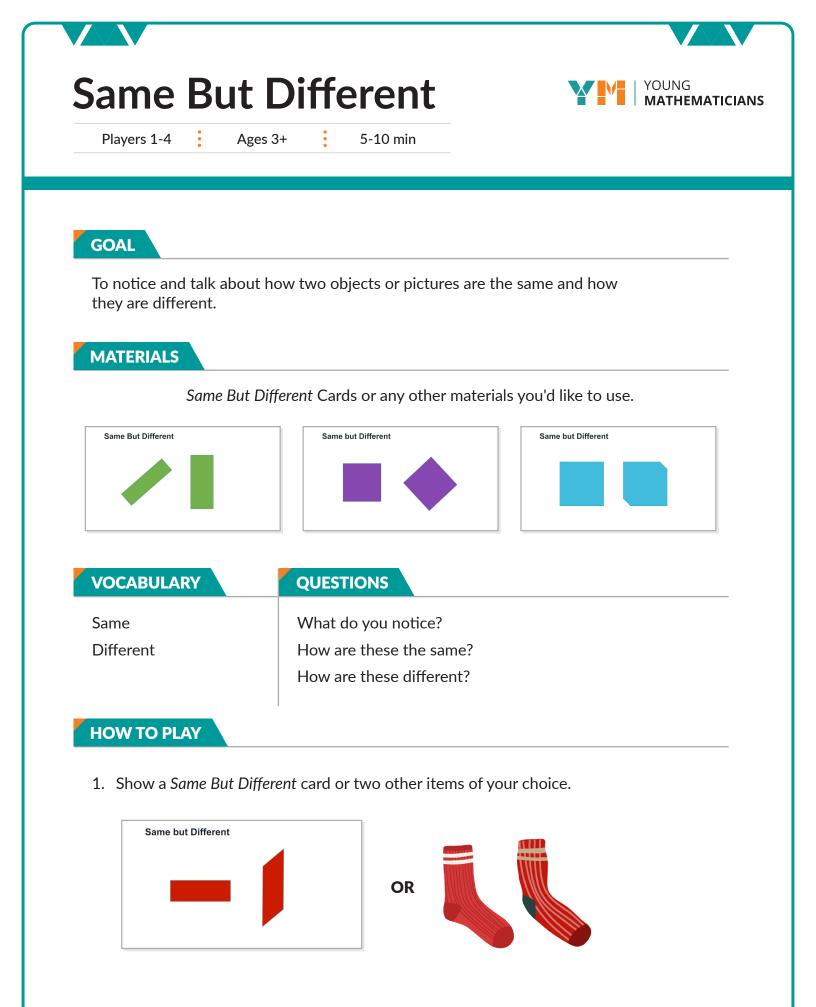
View the QR code in your smartphone's camera app or QR code reader to watch a video that shows how to play Shape Hunt.



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- 2. Ask, "How are these the same?"
- 3. Encourage children to share lots of ideas and share your own.
- 4. Ask, "How are these different?"
- 5. There can be many right answers. Encourage children to come up with as many ways as they can to describe how the objects are the same and how they are different. Have fun being creative.

Here are two examples:



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Same	Different
Both are liquids	One is orange, the other clear
Both liquids are in glasses	One glass is tall, the other short
Both are more than half full	The orange one is more full than the clear one
Both have circular tops and bottoms	One glass is narrow, the other is wider





Same	Different
Both have four sides	One is wider, the other is taller
Both have four vertices	One is smaller than the other
Both are green	One is a rectangle, the other isn't
Both have two long sides and two short sides	One has right angles, like a piece of paper, the other doesn't

#### **TIPS FOR PLAYING**

 Encourage players to use as many words as they can to describe what they see - smooshed, turned, side, corner, straight, colors, and so on. Some children might start out by pointing to what they notice about same and different. You can model how to use descriptive words to describe what they're pointing to. For example, "Oh, you're noticing that this triangle looks more stretched and narrow, compared to the other one that looks like it has three sides that are the same length."

#### WHAT CHILDREN ARE LEARNING

- By answering and asking questions, children are building their vocabulary and language skills. And, they are practicing an important mathematical habit of mind—giving precise descriptions of what they see using evidence.
- When describing shapes, encourage children to focus their attention on the shapes' attributes—straight or curved sides; number of sides; length of sides; number of corners or vertices; size of the angles; and other attributes. Identifying what is the same and what is different is key to sorting larger collections of objects into smaller sets.
- For more ideas, visit <u>Same But Different Math</u>.



Shapes and Geometry

# VIDEO



# Watch Game Video

View the QR code in your smartphone's camera app or QR code reader to watch a video that shows how to play Same But Different.



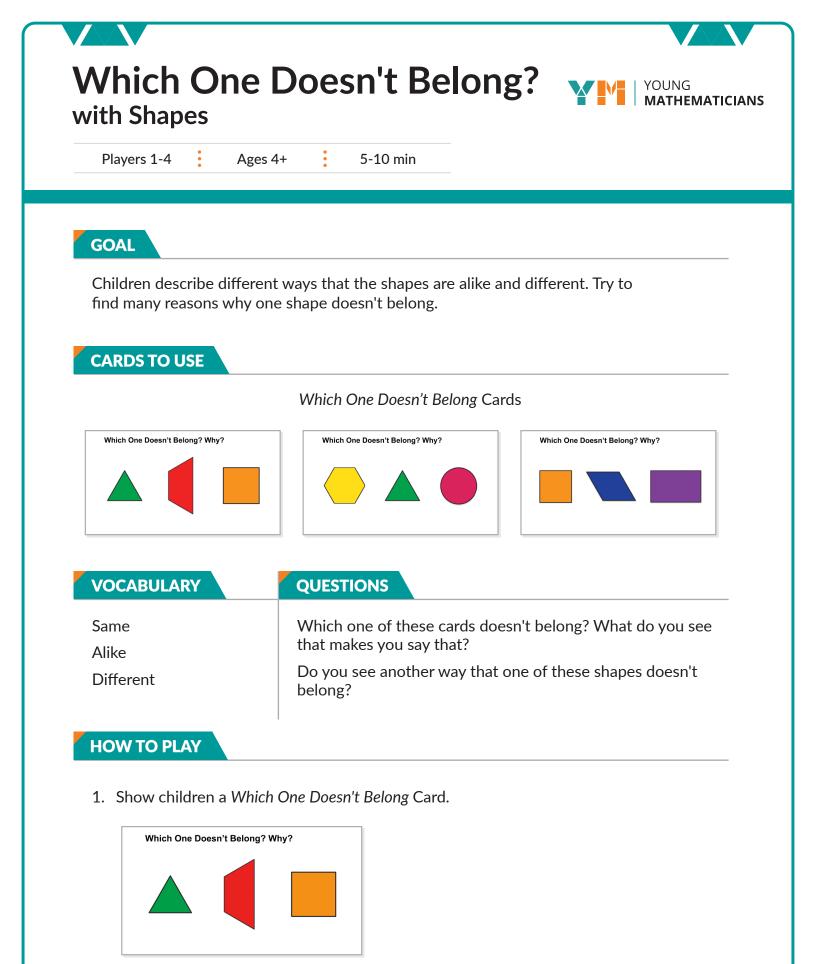
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- 2. You could start by asking, "What do you notice about these shapes?"
- 3. Encourage children to share all of their ideas.
- 4. Then, you can ask, "Which shape is different from the others in some way? Is there a way that one shape is special or unique? How?"
- 5. Once children share their ideas about how one shape is different in some way, you can ask, "Is there another way that one of the shapes is different? How?
- 6. Encourage children to share lots of ideas and share your own. Some of the differences that might come up are: color, size, number of sides, number of vertices or corners, whether a shape is turned or tilted, and so on.

#### **TIPS FOR PLAYING**

- You can use any three objects to play this game. Find objects around the classroom or at home and see how many different ideas you can come up with.
- There are many right answers in this game! Children might say that a circle doesn't belong because the square and trapezoid both have four sides. Or they might say that the triangle doesn't belong because the rectangle and square are their favorite building blocks. Accept any answers that children can reasonably justify. The important part is that they're thinking and talking mathematically and having fun.
- Children may not yet have the words to describe what they mean precisely. Encourage them to point to the shape that they think doesn't belong. You and other children can help them use new words to describe why they think it doesn't belong.

#### WHAT CHILDREN ARE LEARNING

- Children are building their vocabulary and language skills. And, they are practicing an important mathematical habit of mind giving precise descriptions of what they see, using evidence.
- Children are practicing describing shape attributes, or characteristics—straight or curved sides; number of sides; length of sides; number of corners or vertices; size of the angles; and other attributes.

#### **MATH TOPICS**

Shapes and Geometry





#### Watch Game Video

View the QR code in your smartphone's camera app or QR code reader to watch a video that shows how to play Which One Doesn't Belong.

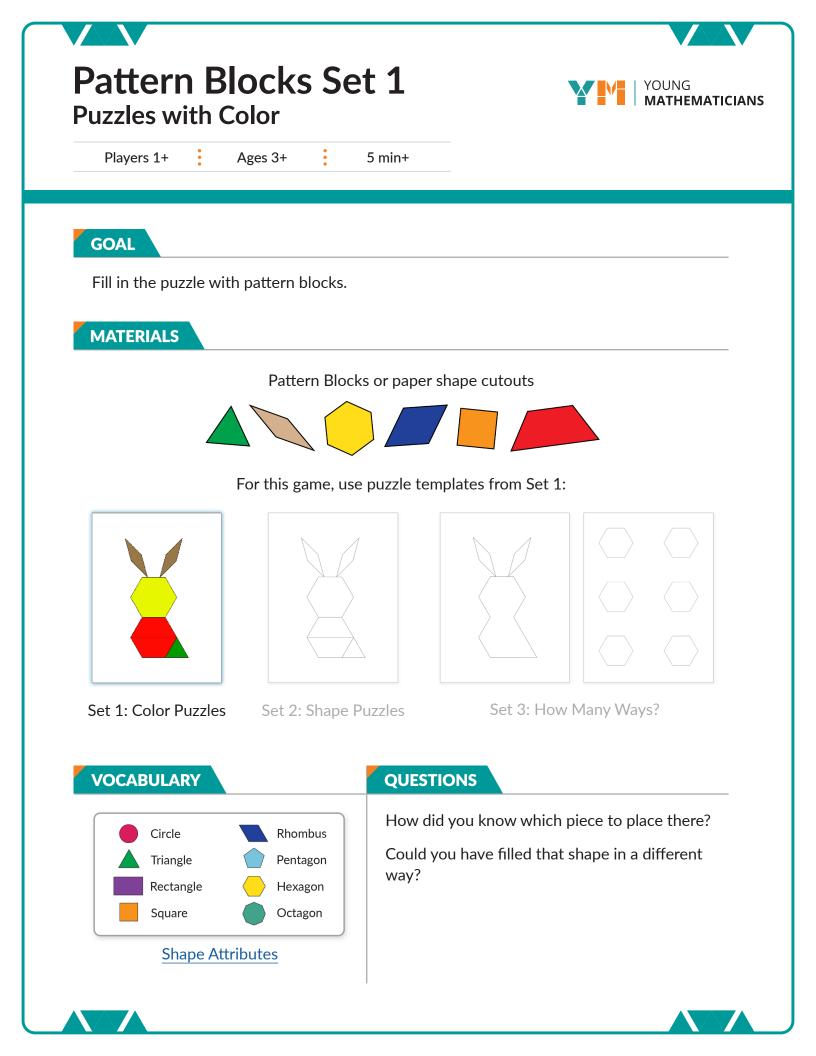


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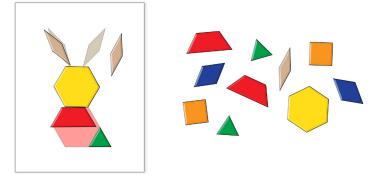


Which One Doesn't Belong? with Shapes | 3



#### HOW TO PLAY

- 1. Each child chooses a puzzle template.
- 2. Make sure the children have enough pattern blocks to cover their puzzle(s).
- 3. Have children place pattern blocks on top of each shape of the puzzle until the puzzle is completely assembled.



#### **TIPS FOR PLAYING**

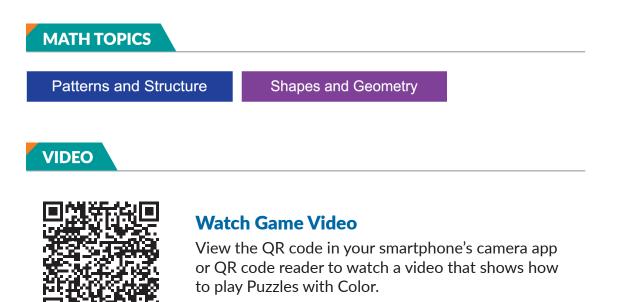
- Give children time to build their own designs with the pattern blocks as well as use the templates.
- Place the pattern blocks in a large open container, such as the top of a box, to help keep them on the table instead of on the floor.
- When children first begin, they may not place the blocks into the outlines precisely. As they gain experience, they may become more precise in placing their pattern blocks within the lines.

#### WHAT CHILDREN ARE LEARNING

• Observing children as they play with pattern block puzzles is a great way to see their spatial reasoning skills develop. Spatial reasoning is our ability to think about objects and shapes and to move them around into new and different positions.

- As children work on their puzzle templates, talk about the shapes that they're using. This will give them lots of opportunities to learn shape names and attributes. As you talk about the shapes, notice which attributes children seem interested in - color, size, number of sides, length of sides, etc.
- Help children learn to identify shapes even as the orientation of the shape changes. An 'upside down' triangle is still a triangle, and a square tilted on its corner is still a square!
- As children hear and gain practice using the vocabulary of shapes, you can point out similarities and differences in vertices or angles\*, number of sides, and length of sides. You can also use measurement words like same/equal, more/less, and shorter/longer.

\* A note about the vocabulary: A vertex (plural vertices (vur · tuh · seez)) is where two sides meet. An angle is the space between where two lines meet. Angles are usually measured in degrees. For example, a square has four vertices and four 90° angles.

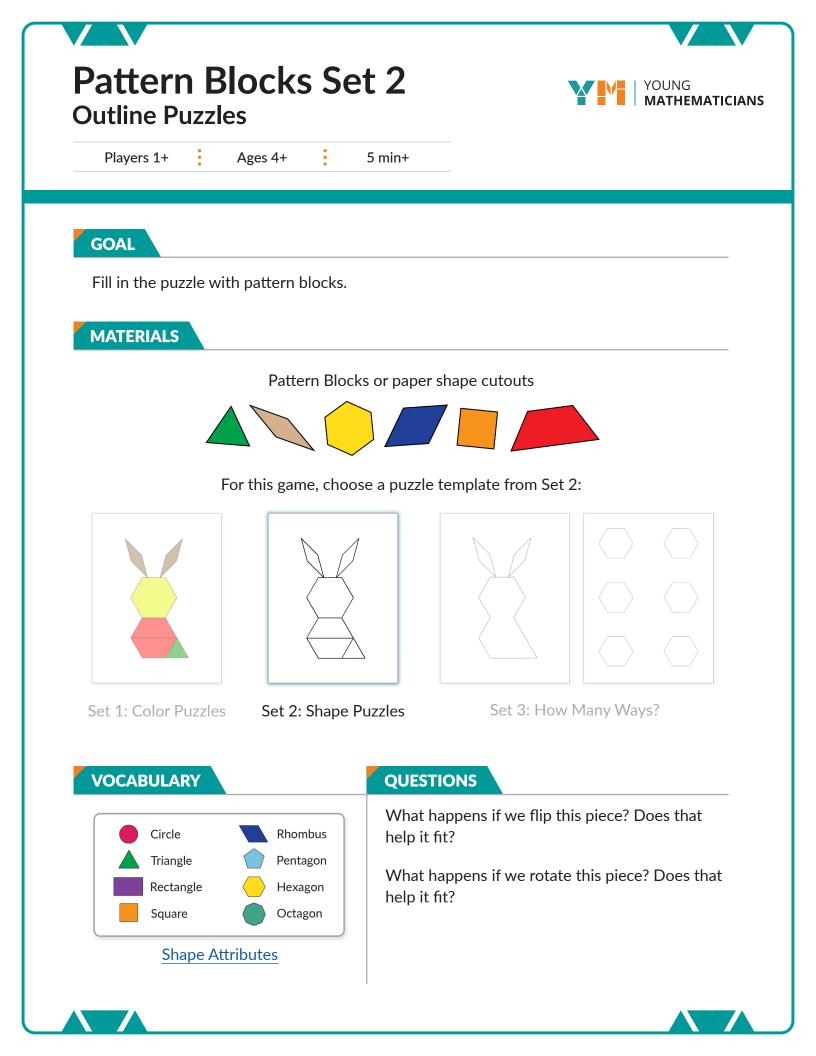




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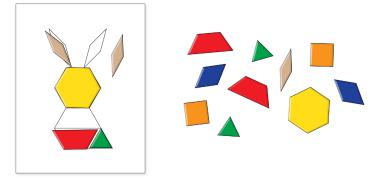






#### HOW TO PLAY

- 1. Children choose a puzzle template with each shape outlined in black.
- 2. Give everyone enough pattern blocks to fill in the puzzle.
- 3. Children then place the pattern blocks on each shape of the puzzle until it is completely filled in.



#### TIPS FOR PLAYING

- Give children time to build their own designs with the pattern blocks as well as use the templates.
- Place the pattern blocks in a large open container, such as the top of a box, to help keep them on the table instead of on the floor.
- For younger players, try starting with Set 1. For the highest level of challenge, try Set 3 where there are no outlines for individual shapes and children can try filling in the puzzle in multiple ways.

#### WHAT CHILDREN ARE LEARNING

• Observing children as they play with pattern block puzzles is a great way to see their spatial reasoning skills develop. Spatial

reasoning is our ability to think about objects and shapes and to move them around into new and different positions.

- As children fill in their shape outlines, notice whether they know right away which block to get or if they use trial and error with a few different blocks to see which ones fit.
- You can also notice whether children are able to shift, rotate, and flip the blocks to make them fit. Give children plenty of time to try on their own. Then, if needed, you can make suggestions about different blocks to try.

#### **MATH TOPICS**

Patterns and Structure

Shapes and Geometry

## VIDEO



#### Watch Game Video

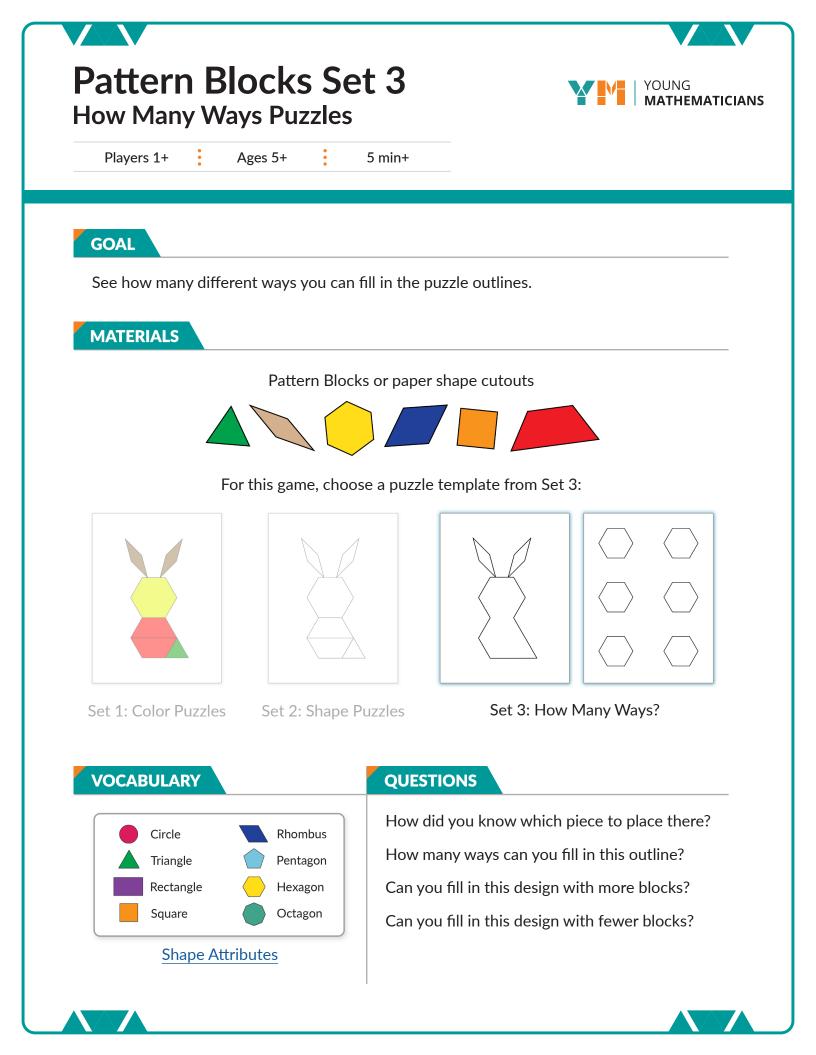
View the QR code in your smartphone's camera app or QR code reader to watch a video that shows how to play Outline Puzzles.



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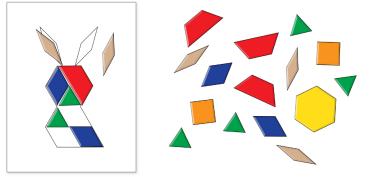


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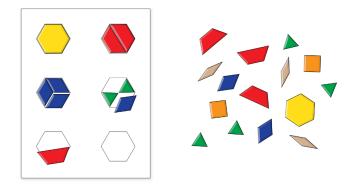


### HOW TO PLAY

- 1. Children choose a puzzle template with outline only.
- 2. Give everyone enough pattern blocks to fill in the puzzle.
- 3. Children fill in the puzzle with the pattern blocks.



- 4. Encourage children to explore and use different combinations of blocks to complete the designs.
- 5. For an additional challenge, we've included templates with several copies of the same outline. For example, these hexagons can be filled in using different combinations of blocks.



To help children get started with this you can ask questions like, "How many trapezoids make a hexagon? How many blue rhombuses? How many triangles? How can we make a hexagon using one trapezoid, one blue rhombus, and one triangle?"

#### **TIPS FOR PLAYING**

- Set 3 is the most challenging pattern blocks set because there are no shape outlines or colors to help children identify which block will fit where.
- Place the pattern blocks in a large open container, such as the top of a box, to help keep them on the table instead of on the floor.
- To compare different solutions of the same puzzle, you can either use multiple copies of the template or take a picture of one solution before trying another.
- Our puzzle sets are scaffolded so that each child can play at their "just right" level of challenge. Children at the beginner level can use Set 1's colors to help them figure out where their blocks should go. Then, at the intermediate level, they can solve Set 2's puzzles using shape outlines. When they're ready for the highest challenge, children can explore Set 3 and solve the puzzles with outer outlines only.

#### WHAT CHILDREN ARE LEARNING

- The puzzles in Set 3 are designed to push children's thinking about how to put together and take apart shapes. With practice, they may recognize that there are many ways that different shapes can be formed. For example, using one blue rhombus and one triangle to form a trapezoid.
- In Set 3, some templates have many copies of a single puzzle on the same page. By seeing different ways of composing the same puzzle, you can compare and discuss the different solutions.

**MATH TOPICS** 

Patterns and Structure

Shapes and Geometry

# VIDEO



# Watch Game Video

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