



FOSTERING CHILDREN'S MATH DEVELOPMENT

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Counting & Cardinality

Ask: "How many _____?"

Say: "Let's count _____."

Get kids to.... **TALK MATH**



Operations & Algebraic Thinking

Ask: "How many _____ do you have now?"

Say: "Let's count how many we have left."

Number & Operations in Base 10

Say: "You have 10 fingers. Let's count each one of your fingers."

Measurement & Data

Ask: "Which one is heavier? Lighter? More? Less?"

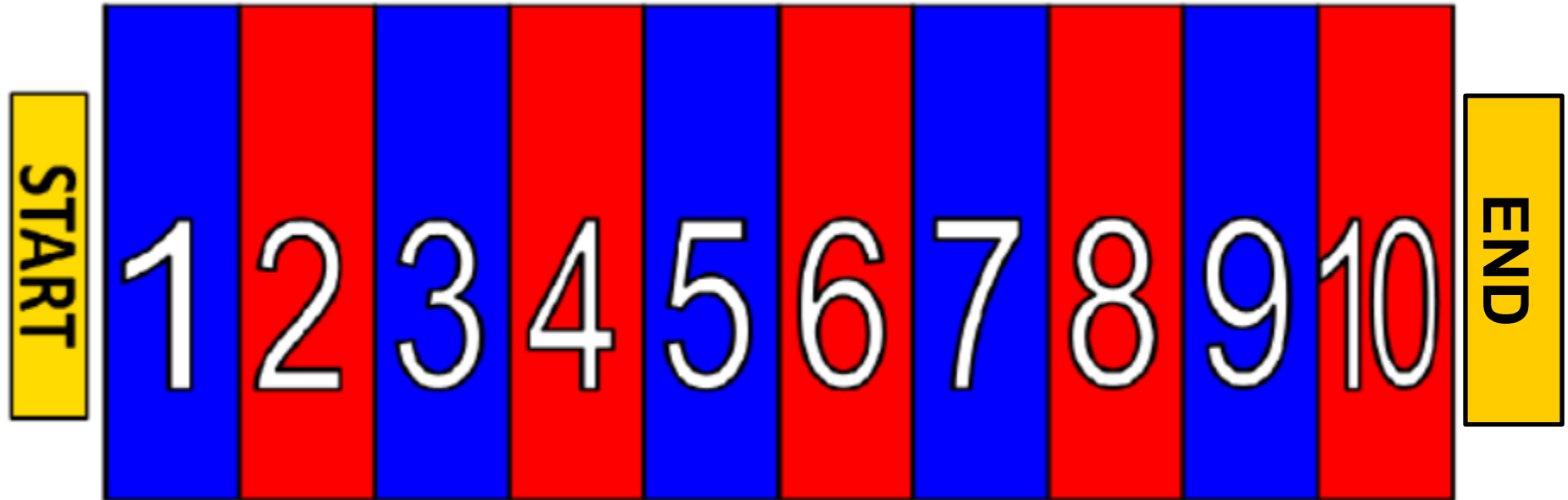
Say: "Let's measure _____."

Geometry

Ask: "What shapes do you see?"

Say: "Look at that. That is a _____."

The Great Race



The Great Race Instructions

How to play:

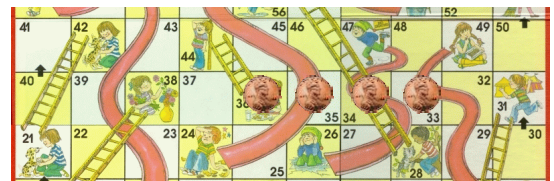
- Each player takes a turn with the spinner. S/he calls out the number spun and moves the game piece that number of spaces. The first player to get to the end wins.
- ***But here's the most important part:***
 - When you move your piece, don't count the number of spaces you are moving. Instead, count the numbers on the spaces.
 - Example: If you are on the "3" space and spin a 2, as you move your piece, say "4, 5." If you spin a 2 on your next turn, move your piece and say "6, 7."
- If a child makes a mistake or forgets the name of a number, give her/him a reminder and help her/him count the right way.

How to make your own spinner:

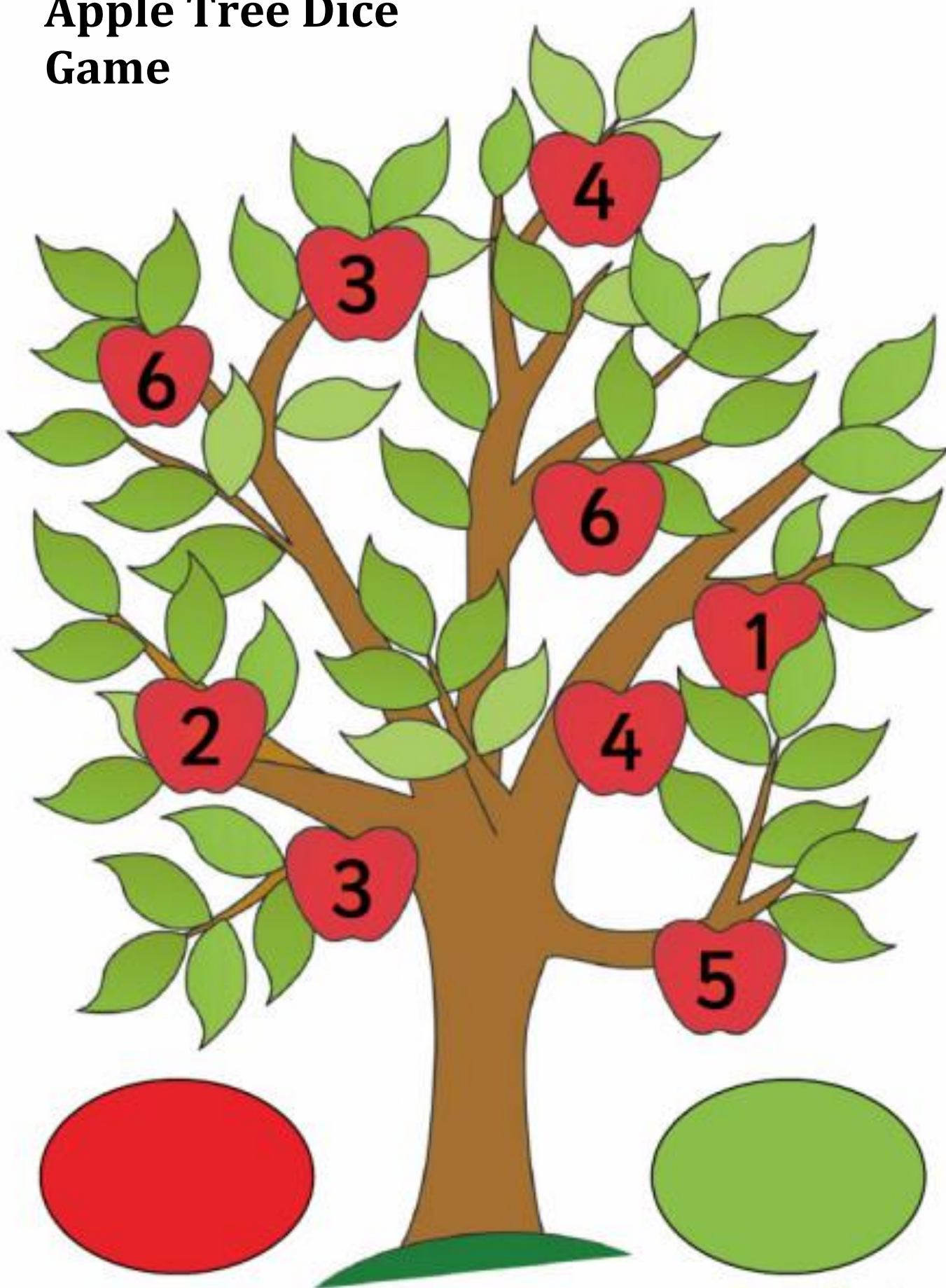
- You'll need a spinner or dice with two outcomes: 1 or 2.
 - You can use a spinner or dice from another board game. Cover any extra numbers with 1s and 2s, using reusable stickers or paper with tape.

Chutes and Ladders Instructions

- Use the directions provided in the game box.
- **Use the special counting rule!**
 - When you move your piece, don't count the number of spaces you are moving. Instead, count the numbers on the spaces.
 - For example, if you are on space 32 and spin a 4, count out loud "33, 34, 35, 36". Do NOT count "1, 2, 3, 4."
 - On your child's turn, have her/him count with you. Say: *"Count with me, 33, 34, 35, 36."*
 - Counting this way will be a little challenging for younger children. You can use pennies, bingo chips, or shredded pieces of paper to help. After your child spins, to help figure out where her/his game piece will land, have her/him place the appropriate number of markers on each space (e.g., spin a 4, place a penny on 4 spaces), then have your child use the special counting rule.
- To keep the game engaging, you don't have to play to 100. Just play as long as your child is interested and paying attention!



Apple Tree Dice Game



Apple Tree Dice Game Instructions

- **What you need:**
 - 10 red counters and 10 green counters (or pieces of paper, different coins)
 - 1 die
- Put the board on the table between the players and let each player choose a set of counters, which s/he places in a pile beside the board.
- On each turn, a player rolls the die, looks for an apple with a matching number that does not have a counter on it yet, and places a counter on that apple.
- If a player rolls the die and cannot find an available number, s/he places a counter into the red or green space at the bottom of the tree.
- Play continues until all the apples are covered, or all the counters have been used.
- Now you can count how many red and green counters there are on the tree and how many red and green counters are under the tree!
- If you like, you can declare a winner – the player who covered the most apples – but this isn't necessary.

What's One More? Dice Game

2	3	4	5	6	7
3	4	5	6	7	2
4	5	6	7	2	3
5	6	7	2	3	4
6	7	2	3	4	5
7	2	3	4	5	6

What's One More? Instructions

- **What you need:**
 - 1 die
 - Counters (or pieces of paper, pennies)
- Player 1 rolls the die and places a counter on one of the numbers that is “one more” than the number rolled.
- Have the player say the number s/he rolls and also the number that is “one more” than the number rolled.
- The winner is the first player to get four counters in a row (horizontal, vertical, or diagonal).

What's Two More? Dice Game

3	4	5	6	7	8
4	5	6	7	8	3
5	6	7	8	3	4
6	7	8	3	4	5
7	8	3	4	5	6
8	3	4	5	6	7

What's Two More? Instructions

- **What you need:**
 - 1 die
 - Counters (or pieces of paper, pennies)
- Player 1 rolls the die and places a counter on one of the numbers that is “two more” than the number rolled.
- Have the player say the number s/he rolls and also the number that is “two more” than the number rolled.
- The winner is the first player to get four counters in a row (horizontal, vertical, or diagonal).

Simple Subtraction Game

0	1	2	3	4	5
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0	1	2	3	4	5
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0	1	2	3	4	5
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0	1	2	3	4	5
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Simple Subtraction Game Instructions

- **What you need:**
 - 2 dice
 - 6 counters (or pieces of paper, pennies) for each player
 - 0-5 number line for each player (on previous page)
- Each player puts a counter on each space (under each number) on the number line.
- On each turn, the player rolls the dice and subtracts the smaller number from the greater number. Then s/he removes the counter from under the number that is the difference.
 - *For example, if player 1 rolls a 3 and a 5, s/he subtracts 5-3 to get 2. Then s/he removes the counter from underneath 2 on the number line.*
 - **HINT:** players can use additional counters, pennies, or other small objects to help them solve the subtraction problems.
 - In the above example, a player could use 5 pennies and then take away 3 pennies. S/he can count the remaining pennies to find the answer!
- The first player to uncover all the numbers on her/his number line is the winner.

Teasing Mr. Crocodile

Five little monkeys (hold up 5 fingers)
Sitting in a tree
Teasing Mr. Crocodile,
"You can't catch me."
Along came Mr. Crocodile,
Quiet as can be
SNAP (clap your hands together)

Four little monkeys (hold up 4 fingers)
Sitting in a tree
Teasing Mr. Crocodile,
"You can't catch me."
Along came Mr. Crocodile,
Quiet as can be
SNAP (clap your hands together)

Three little monkeys (hold up 3 fingers)
Sitting in a tree
Teasing Mr. Crocodile,
"You can't catch me."
Along came Mr. Crocodile,
Quiet as can be
SNAP (clap your hands together)

Two little monkeys (hold up 2 fingers)
Sitting in a tree
Teasing Mr. Crocodile,
"You can't catch me."
Along came Mr. Crocodile,
Quiet as can be
SNAP (clap your hands together)

One little monkey (hold up 1 finger)
Sitting in a tree
Teasing Mr. Crocodile,
"You can't catch me."
Along came Mr. Crocodile,
Quiet as can be
SNAP (clap your hands together)

No more little monkeys
Sitting in a tree

Five in a Bed

There were five in a bed (hold up 5 fingers)
And the little one said
"Roll over, roll over"
So they all rolled over
And one fell out

There were four in a bed (hold up 4 fingers)
And the little one said
"Roll over, roll over"
So they all rolled over
And one fell out

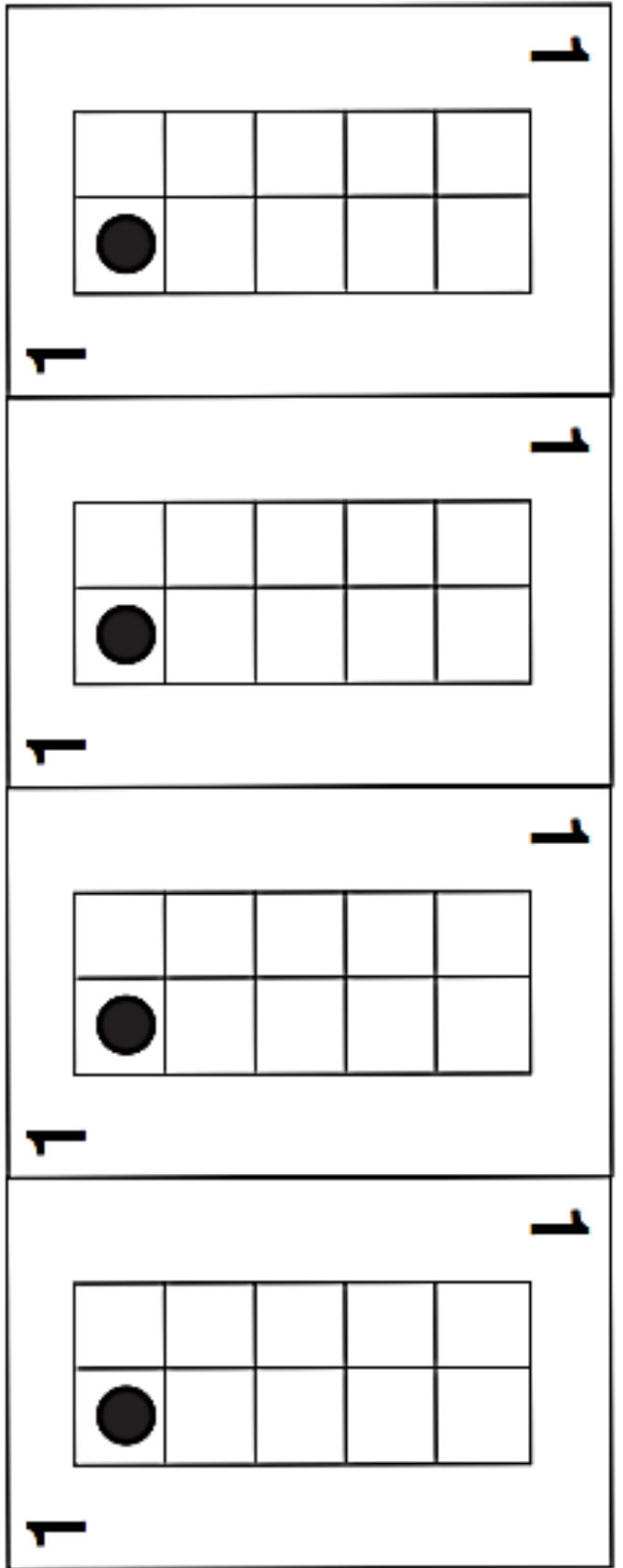
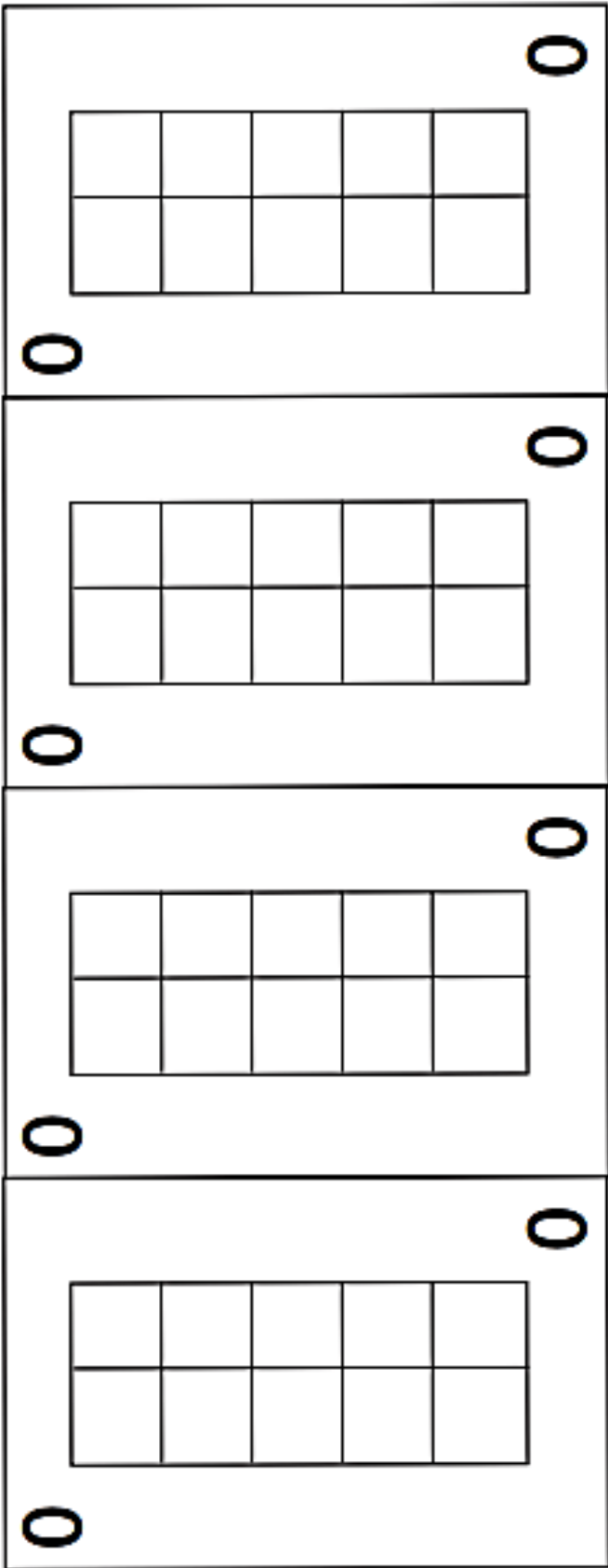
There were three in a bed (hold up 3 fingers)
And the little one said
"Roll over, roll over"
So they all rolled over
And one fell out

There were two in a bed (hold up 2 fingers)
And the little one said
"Roll over, roll over"
So they all rolled over
And one fell out

There was one in a bed (hold up 1 fingers)
And the little one said
"Good night!"

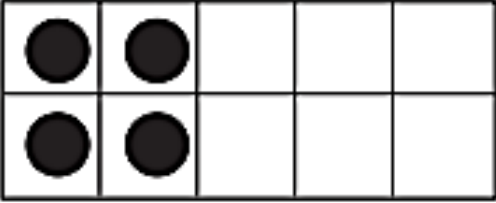
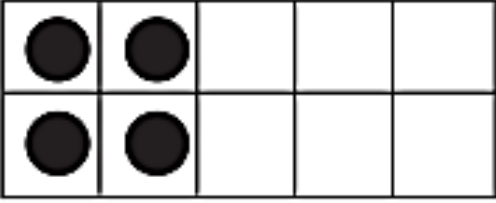
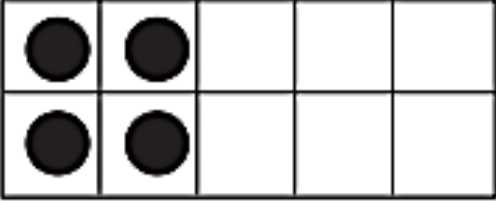
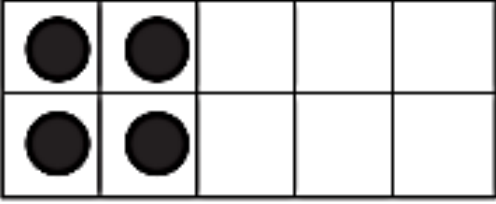
Ten-Frame Cards

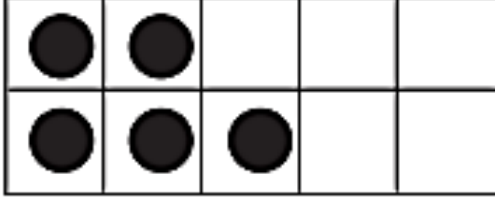
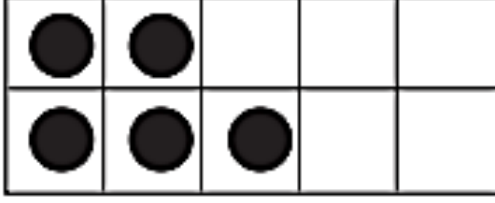
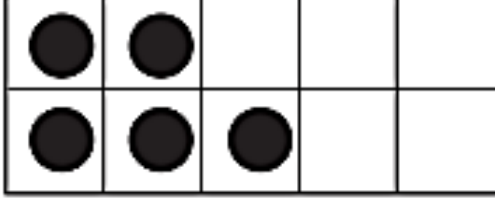
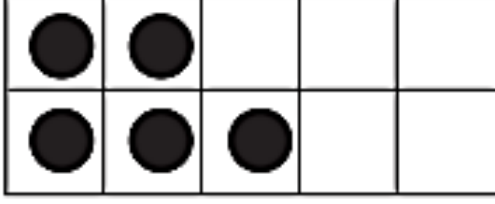
- **How to play:**
 - Cut out the cards on pages 15-20.
 - These cards can be used to play any card games you would use a typical deck of cards for.
 - For example, you could play War or Go Fish.
- **New games to try:**
 - Speed Sort
 - The player should shuffle the deck of cards and place them in a pile.
 - Say, “ready, set, go!” Then players should sort her/his deck of cards into piles of matching numbers (i.e., all the ones, all the twos, etc.).
 - Then the stacks of cards should be put in order from 1-10.
 - Make 10
 - Players should place all of his/her cards face up in front of them.
 - Then players should match the cards together to make pairs that equal 10 (i.e., 2 and 8, 6 and 4, etc.).



3	3	3	3
3	3	3	3
3	3	3	3
3	3	3	3

2	2	2	2
2	2	2	2
2	2	2	2
2	2	2	2

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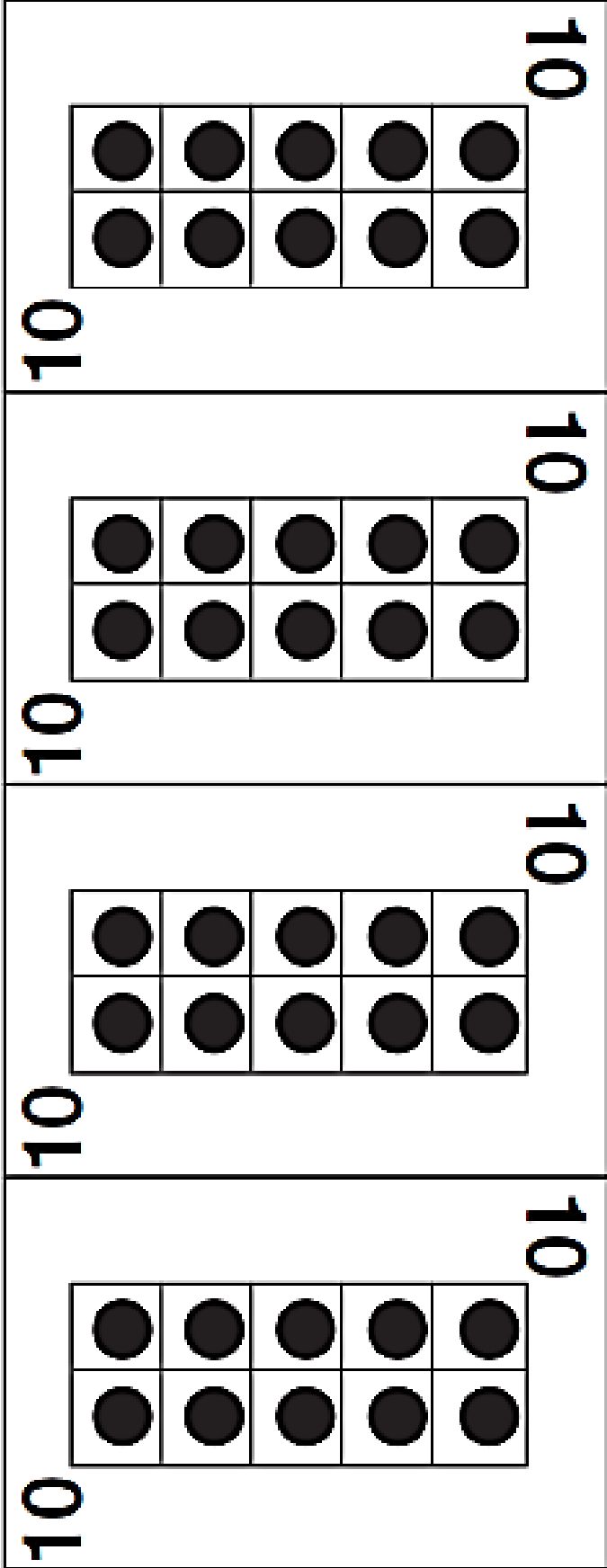
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Unscramble Cards (1-30)

5	10	15
4	9	14
3	8	13
2	7	12
1	6	11

Unscramble Cards (1-30)

16	17	18	19	20
21	22	23	24	25
26	27	28	29	30

Unscramble Cards Instructions

- **What you need:**
 - Unscramble cards (pgs. 21-22)- Cut along the black lines around each number. You should have 30 cards in total.
- Shuffle the cards
- Say, “On your mark, get set, go!” Players should then try to put the cards in order from 1-30.
 - **HINT:** Start with the cards 1-10. As your child becomes more familiar with numbers, add more numbers for her/him to put in order.

"I Have the Greatest" Dice Game

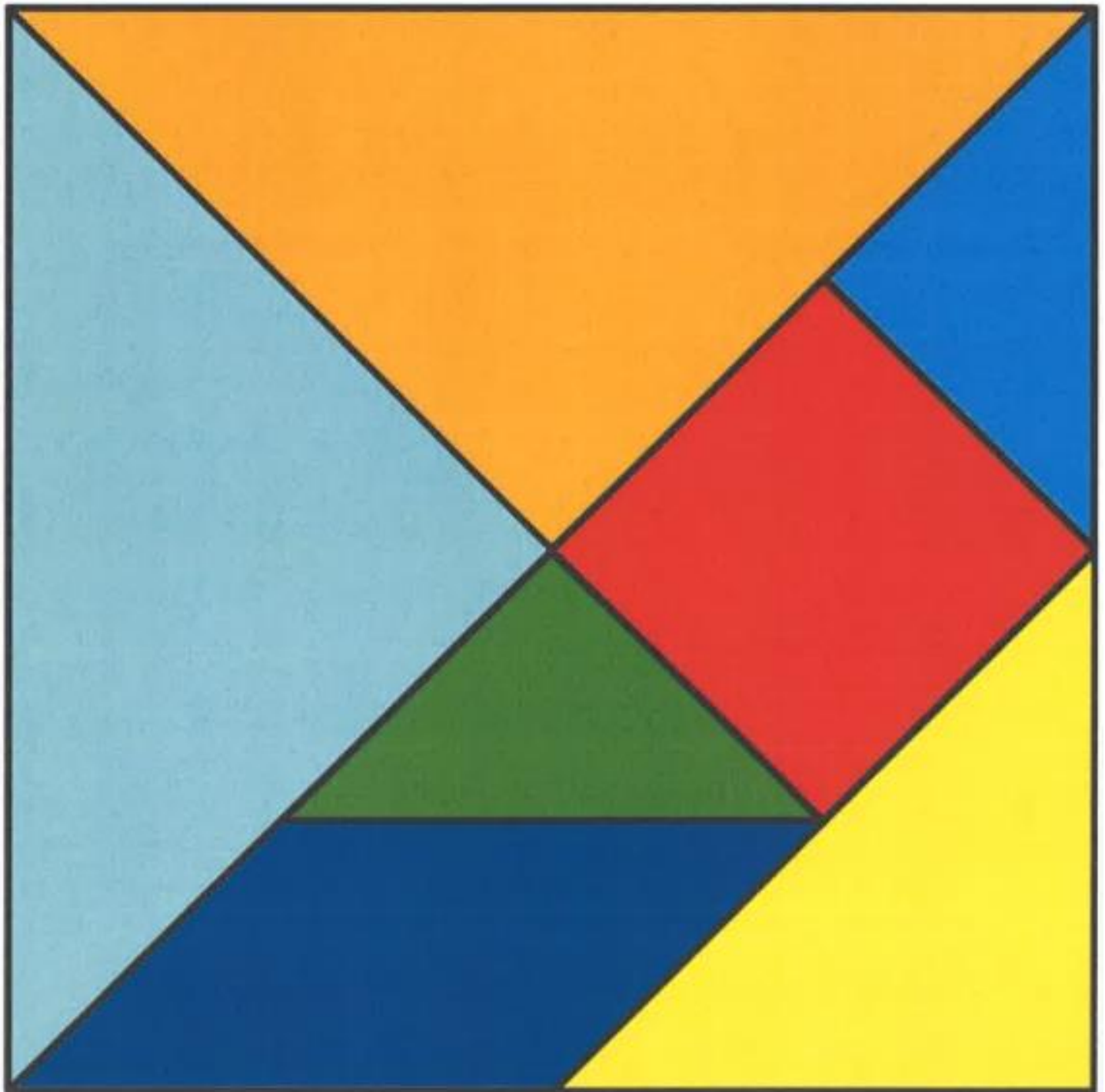
Round	Player 1	< > =	Player 2
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

“I Have the Greatest” Dice Game

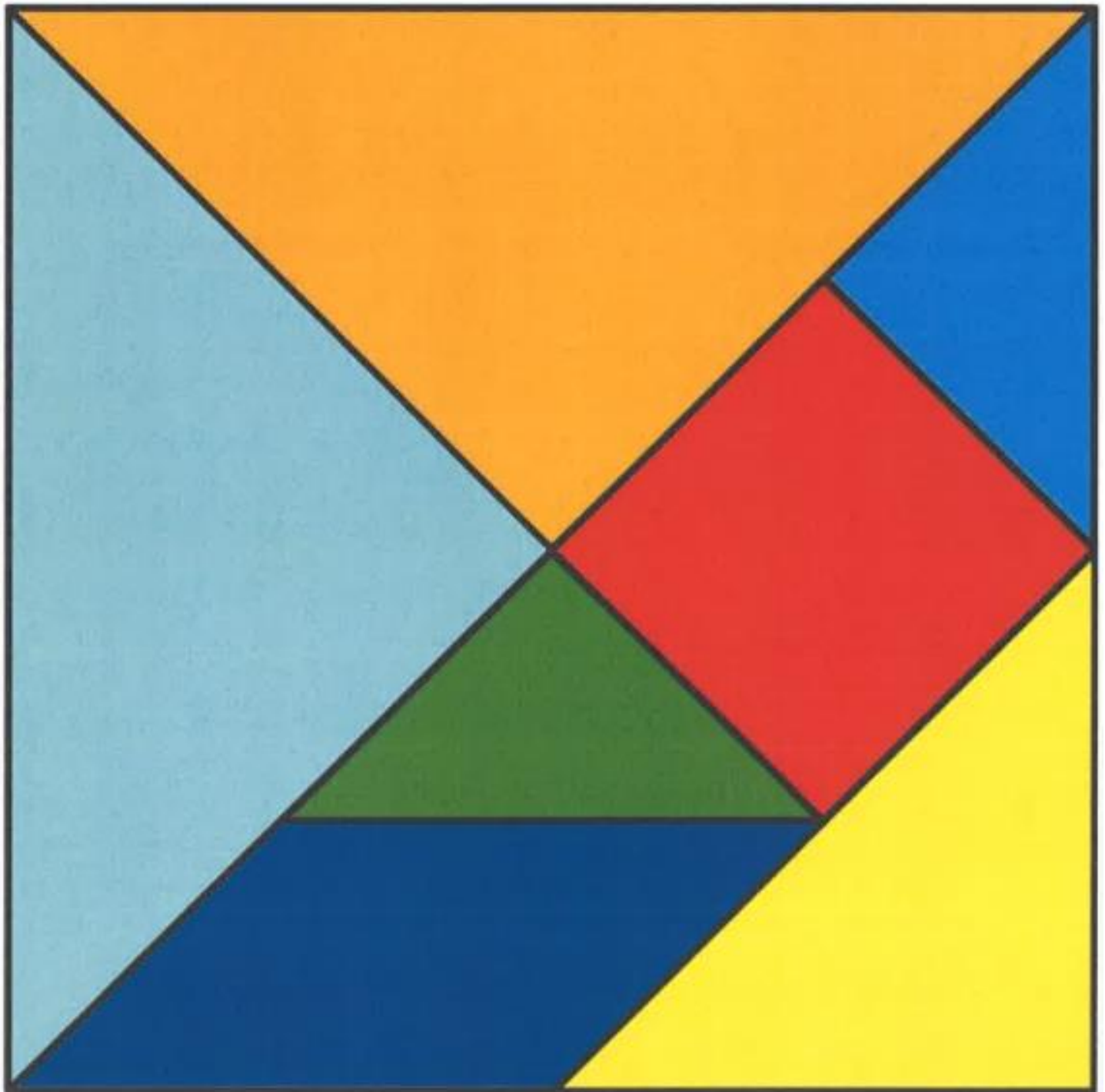
Instructions

- **What you need:**
 - 1 or 2 dice
 - Counters (or pieces of paper, pennies)
- Each player should roll a die.
- Write the number that player 1 rolled and the number that player 2 rolled on the scorecard.
- Have your child say whether the number they rolled is greater than ($>$), less than ($<$), or equal to ($=$) the number player 2 rolled.
- The player that rolled the highest number wins a counter.
 - Have your child say, “I have 3, you have 1. 3 is greater than 1, I get a counter.” or “I have 2, you have 5. 2 is less than 5, you get a counter.”
- After 10 rounds, count up each player’s counters to see who has more. The player with more counters is the winner.

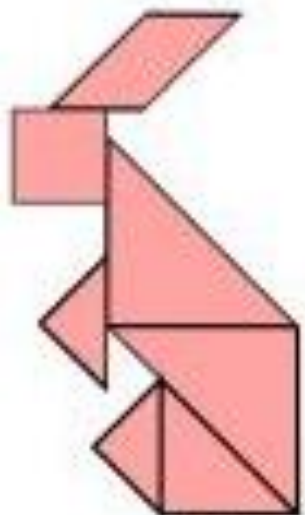
Tangrams (cut along black lines)



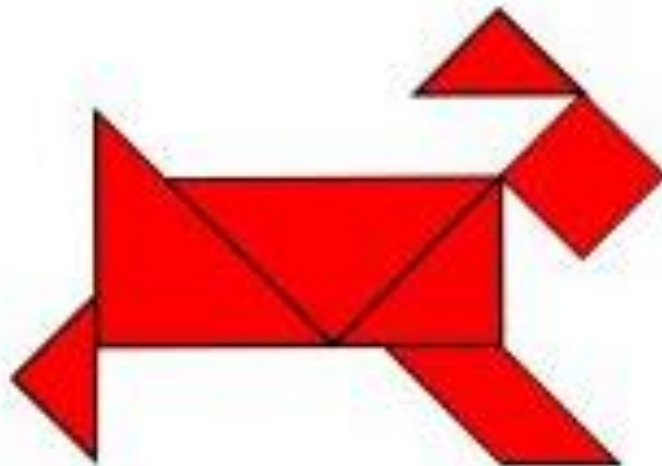
Tangrams (cut along black lines)



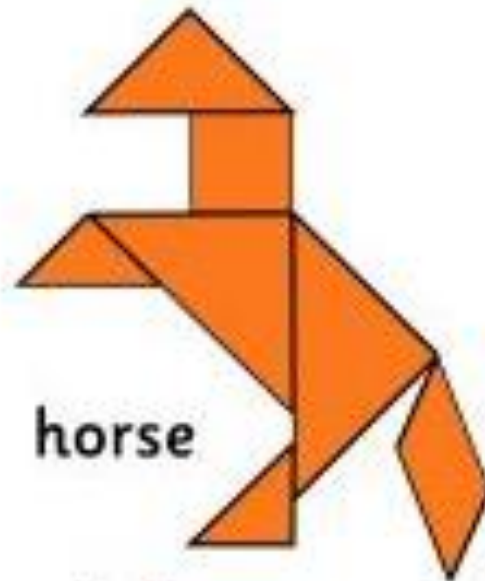
Tangrams Patterns



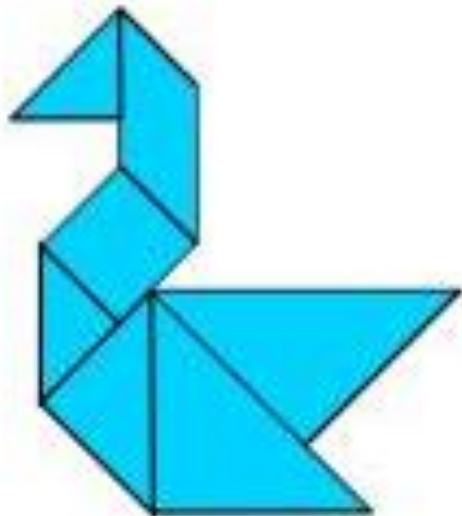
rabbit



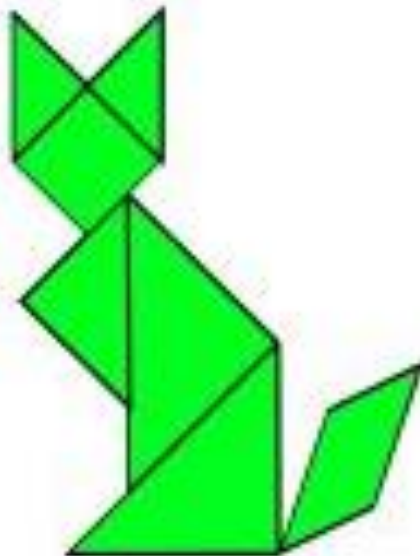
dog



horse



swan



cat

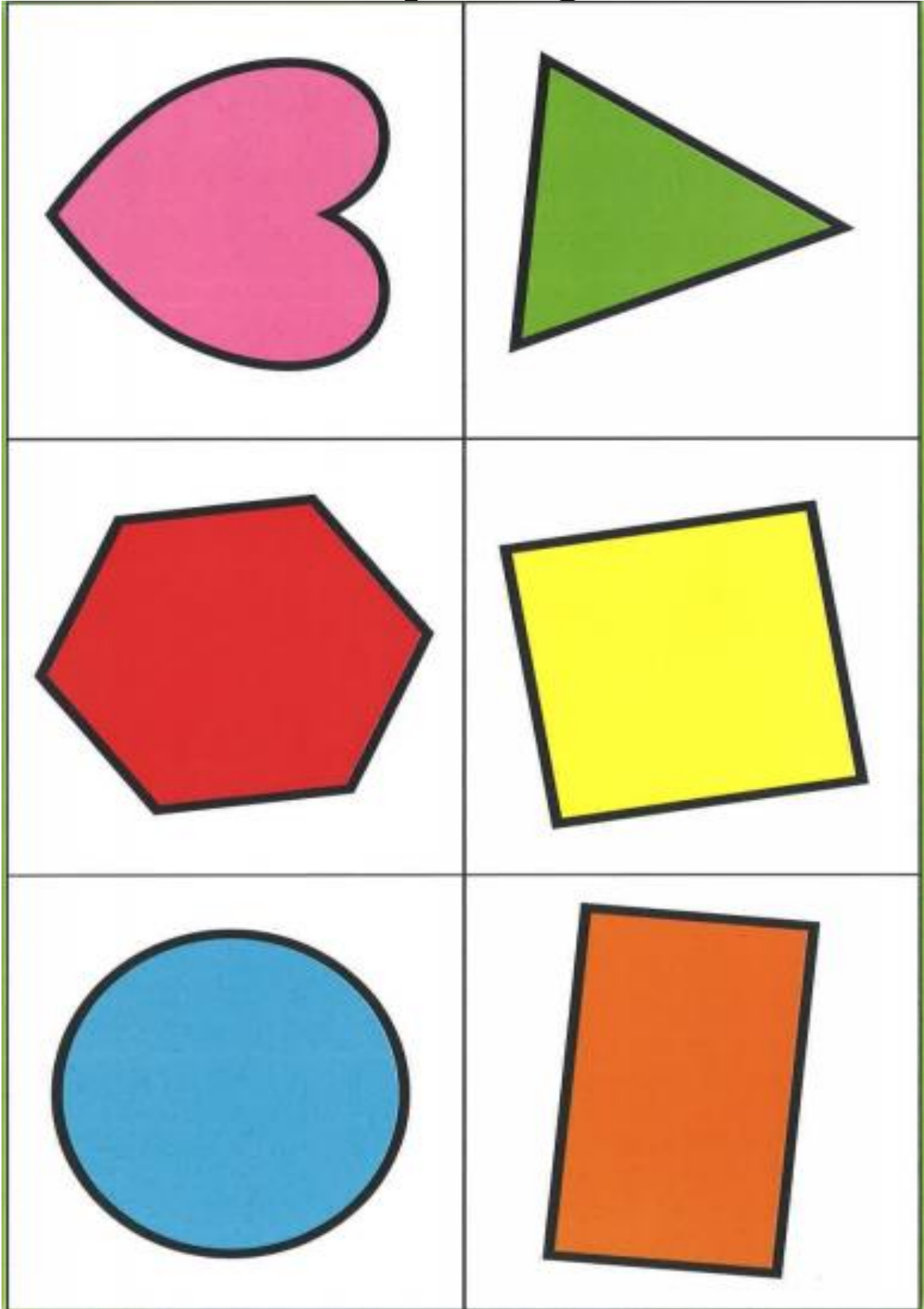


fish

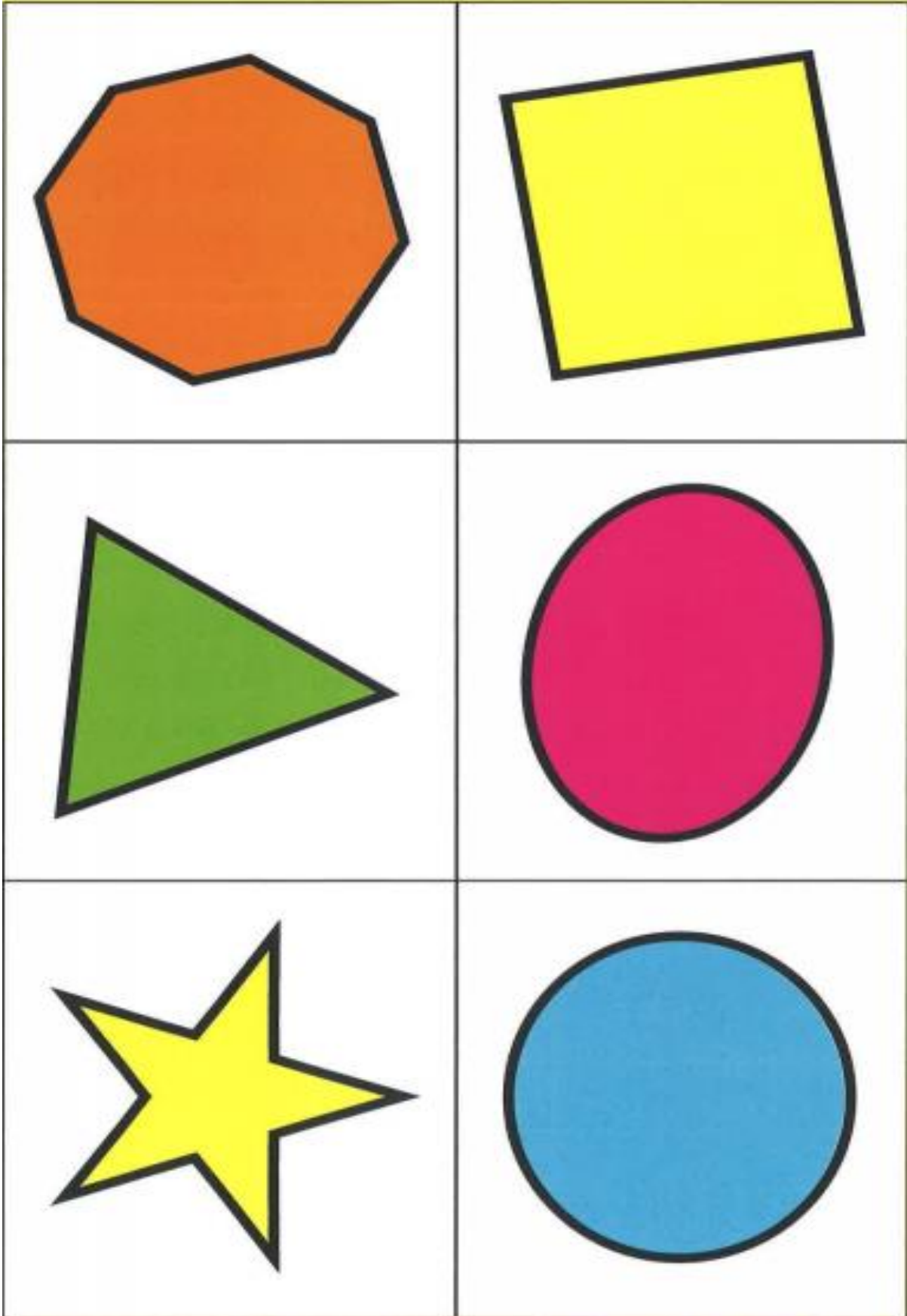
Tangrams Instructions

- Have children use shapes to try and create the animals pictured on the back of this page.
- Tangrams can also be used to make other designs. You can find more designs online.
- Be sure to talk with your child about the shapes s/he is using while playing.

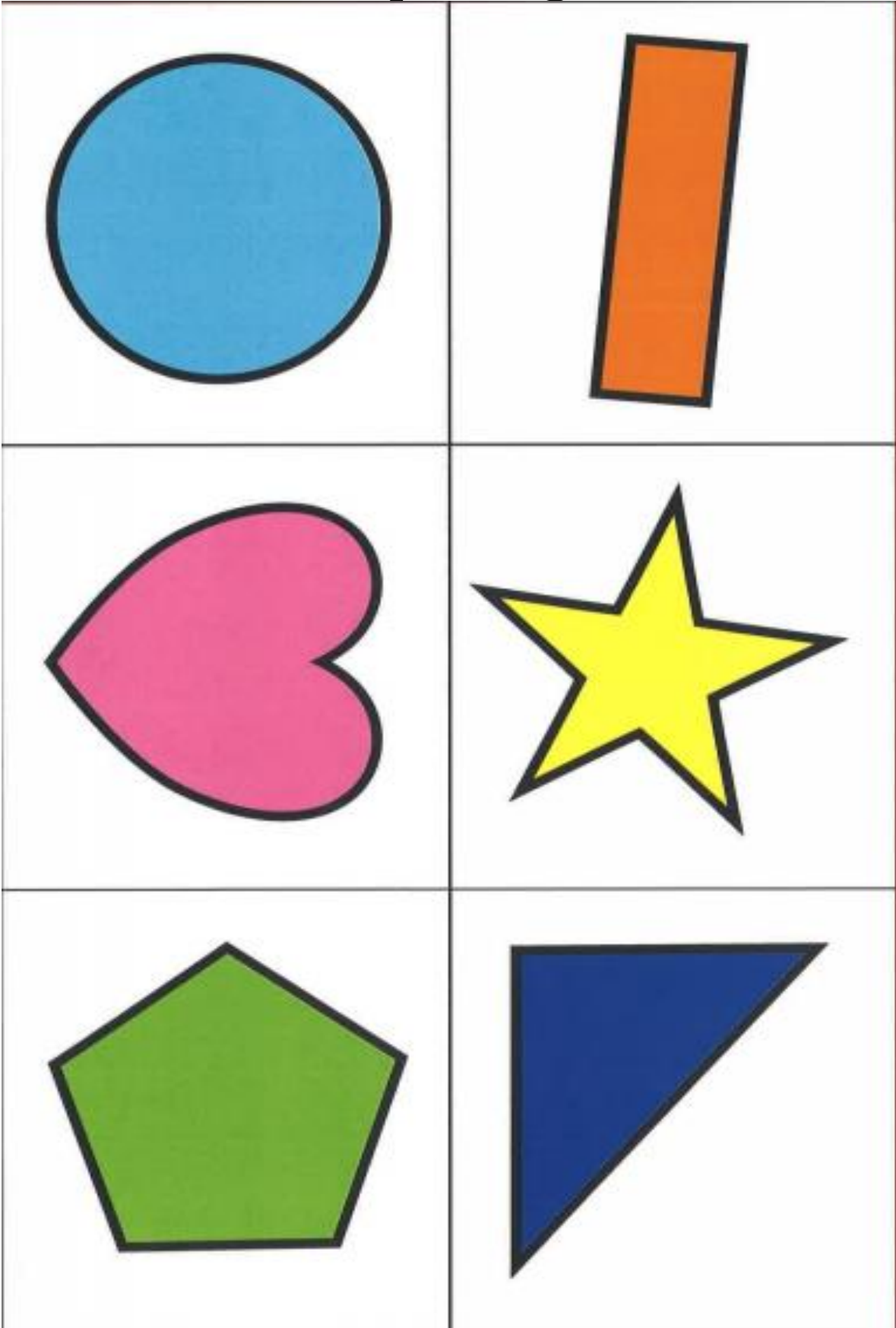
Shape Bingo



Shape Bingo



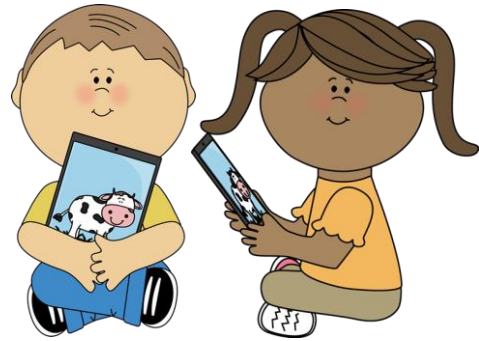
Shape Bingo



Shape Bingo Instructions

- Shapes included on these cards are:
 - Triangle (note: there are two different types- the green one is an isosceles triangle, and the blue one is a right triangle)
 - Circle
 - Oval
 - Rectangle (note: there are two rectangles, one is narrower than the other)
 - Square
 - Pentagon (5 sides)
 - Hexagon (6 sides)
 - Octagon (8 sides)
 - Heart
 - Star
- Call out different shapes and have players put counters (or pieces of paper, pennies) on the shapes which appear on their cards.
- The first player to cover her/his card is the winner.

What to look for in a math app:



Appropriate and relevant

- Games should be building skills relevant for preschoolers.

Engaging

- Children should enjoy playing the game.
- If a task is too easy or too hard children will be less engaged in the task.

Variety of tasks

- The best way to learn a skill is to explore it multiple ways!
- Look for games that ask new questions each time you play.

Clear feedback

- Look for games that provide children with feedback about their progress.
- But remember the best feedback comes from interactions with parents!

Decision-making

- Look for games that give children opportunities to make choices while they are playing the game.

Check out these websites for apps/games and other materials:

- ABCya
 - http://www.abcya.com/preschool_games.htm
- PBS Kids Lab
 - <http://pbskids.org/lab/research/>
- Math at Home Toolkit
 - <https://www.naeyc.org/math-at-home>
- Gracie and Friends
 - <http://first8studios.org/gracieandfriends/guide/>
- Lumi Kids
 - <http://www.lumikids.com/>
- Quick Math Jr.
 - <http://www.getshinythings.com/quickmathjr>
- PEEP and the Big Wide World
 - <http://www.peepandthebigwideworld.com/en/kids/>
- Advice for media use
 - <https://www.common sense media.org/early-childhood>