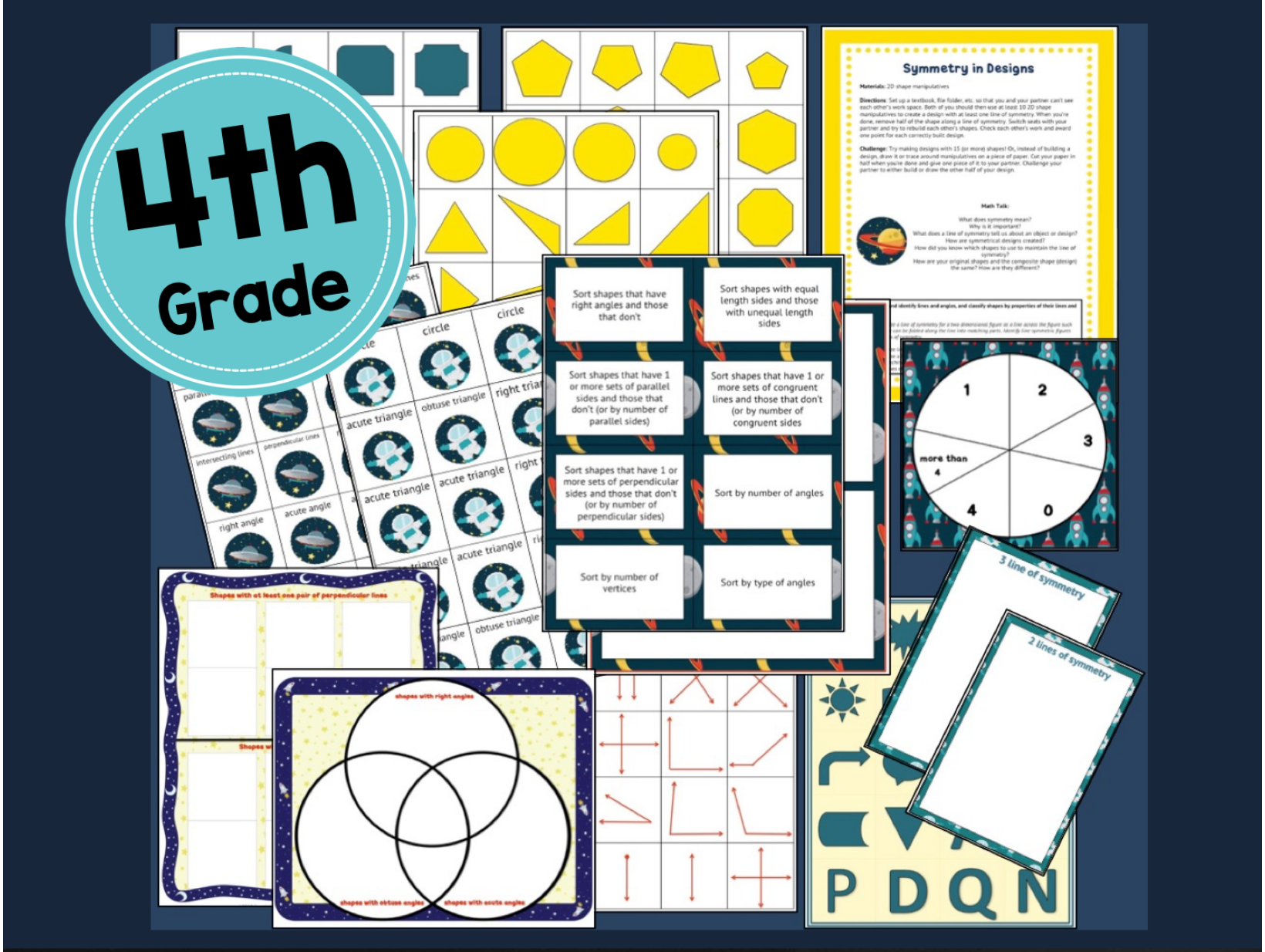
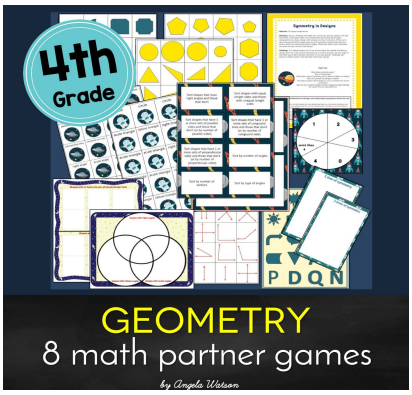


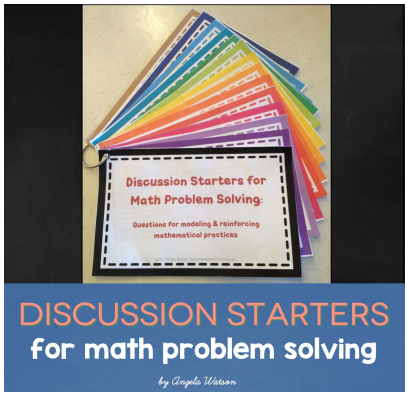
GEOMETRY

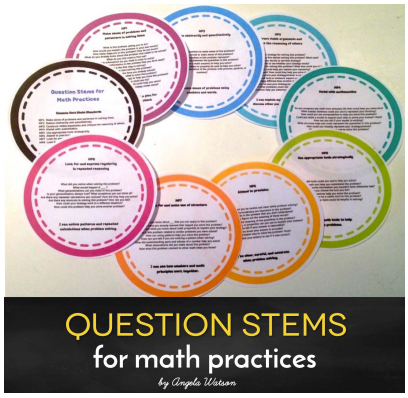
8 math partner games

by Angela Watson

Check out the complete product line for 4th grade math!







Symmetry Challenge

Materials: Symmetry Challenge game boards in plastic page protectors, Vis-à-Vis markers, felt squares or other erasers for the page protectors, spinner

Directions: Each player gets one game board. Take turns spinning the spinner and drawing lines of symmetry on a shape. For example, if you spin 4, you must find a shape on your board that has 4 lines of symmetry and draw them. There might be times when you can't draw the necessary number of lines of symmetry for any shape on your board, and play passes to your partner. The first person to draw lines of symmetry on every shape on their board wins the game! You can play again until time is up.

Challenge: Create your own game boards! Draw 20 (or more) shapes, making sure that you have at least one shape for each of the numbers on the spinner (0, 1, 2, 3, 4 and more than 4 lines of symmetry.) See if you can create a game board that will be completed faster than your partner's!

Math Talk:

Why do you think the spinner's sections are unequal?
How can you tell where the lines of symmetry are?
What are some ways you could prove the lines of symmetry?
Which shapes have the most lines of symmetry? The least?
How can two shapes look different but have the same number of lines of symmetry?
What do you notice about all the shapes with 0 lines of symmetry? With 4 lines of symmetry?

CCSS: Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

4.G.3 Recognize a line of symmetry for a two dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

I can recognize lines of symmetry for a two-dimensional figure.
I can recognize a line of symmetry as a line across a figure that, when folded along, creates matching parts.
I can draw lines of symmetry for two-dimensional figures.

Line & Angle Drawing

Materials: Line and Angle Word Name cards, paper or math journals, pencils, crayons/colored pencils

Directions: Put all the cards in a face down stack. Each player picks one card without letting their partner see it, and secretly draws a picture of a line or angle that matches their card. When both players are done, show the drawings to each other and try to guess what was on each other's cards. Be sure to explain your guesses. ("I see two lines that meet at 90 degrees, so I think it's a right angle!") You can score if you want, awarding one point for each correctly drawn line/angle, and one point for each correctly guessed line/angle. Keep playing until you run out of cards or time is up. The person with the most points wins!

Challenge: Instead of drawing the line or angle by itself, draw a shape that incorporates the line or angle on your card. Use a highlighter to mark the angle or line you want your partner to guess. Another idea is to play with the Line and Angle Picture cards, and try to draw the line/angle on your card in a different way. You can also choose your own line or angle and draw a picture to represent it. See if your partner can guess the line or angle you were thinking of!

Math Talk:

Are some angles harder to draw than others? Why?
Can an angle be represented in more than one way?
How and why?
How did you use your understanding of lines and angles to guess what was on your partner's card?
How are lines and angles related?
How are your drawings of angles alike and different?

CCSS: Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

4.G.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse, and perpendicular and parallel lines. Identify these in two-dimensional figures.

I can draw points, lines, line segments, and rays.
I can draw right, acute, and obtuse angles.
I can draw perpendicular and parallel lines.

What's My Line?

Materials: Lines and Angles Picture cards, pencils, paper or math journals

Directions: Directions: Turn the cards face down and deal 5 to each player. Each player chooses two of his or her cards and uses the lines or angles shown to draw a 2D shape. When you're done, have your partner look at the 2D figure you drew and the 5 cards you had, and try to guess which two lines and angles cards you used when drawing your shape. You can a point for each correctly drawn shape and correct guess of your partner's shape. Keep playing until time is up. The person with the most points wins!

Challenge: Use the Lines and Angles Word Name cards instead. You can also try to incorporate 3 lines and angle cards into your drawing!

What are some different ways to show the same type of line or in a shape?
Which lines and angles are used most often in 2D shapes? The least often? Why do you think that is?
How is your shape alike and different from your partner's shape?
How would the game be different if we used 3D shapes?
How are 3D shapes different from 2D shapes?

CCSS: Draw and ... and angles, and classify shapes by properties of their lines and angles.

4.G.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse, and perpendicular and parallel lines. Identify these in two-dimensional figures.

I can draw points, lines, line segments, and rays.
I can draw right, acute, and obtuse angles.
I can draw perpendicular and parallel lines.
I can identify points, line, line segments and rays.
I can analyze 2 dimensional figures to identify right, acute and obtuse angles.
I can analyze 2 dimensional figures to identify perpendicular and parallel lines.

Geometry Go Fish

Materials: Line and Angle Picture cards and Line and Angle Word Name cards

Directions: Mix up the picture and word name cards so they are all in one stack. Deal 7 cards to each player, being sure not to look at each other's cards. Put the extra cards in a face down stack. Each player looks at his or her own cards and tries to make a match between a picture of a line/angle and its name. Lay down each of your matches face up for your partner to check and explain why you think the matches (i.e., "This picture goes with the parallel lines card because it has two lines that never cross.")

Once you've laid down all your pairs, it's time for Geometry Go Fish! Ask your partner for the type of line/angle you need. If your partner has it, he/she must give it to you, and you lay down the match for him or her to check. If your partner doesn't have it, s/he says, "Geometry Go Fish" and you must draw a card from the pile. The first player to run out of cards wins the game! Keep playing until time is up.

Challenge: Play the game using only the picture cards or only the word name cards, and try to match 2 examples of the same line or angle. These are both obtuse angles because the angles are greater than 90 degrees.) Or, make the game even more challenging by describing a line or angle's attributes when asking the other player for a match, instead of just naming the line or angle (i.e. "Do you have an angle that is exactly 90 degrees?").

Math Talk:

What strategy did you use to tell if two cards were a match?
How can two lines or angles be the same type but look different?
How ... angle and side measures help you classify shapes?
What properties do all lines have in common?
What properties do all angles have in common?
How did using math vocabulary help you play the game?

CCSS: Draw and ... and angles, and classify shapes by properties of their lines and angles.

4.G.2 Classify ... figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right ...

I can identify parallel lines in two dimensional figures.
I can identify perpendicular lines in two dimensional figures.
I can recognize acute, obtuse, and right angles.
I can identify right angles.
I can classify 2D figures based on parallel or perpendicular lines and angle size.
I can classify triangles as right triangles or not right.

The Attributes Game

Materials: 2 of the same game board for The Attributes Game, Line and Angle Picture cards, The Attributes Game cards (with aliens and "Take Me to Your Leader")

Directions: Give each player one game board. Mix up the Line and Angle Picture cards with The Attributes Game cards and put them in a face down stack. Take turns flipping over a card and deciding where it belongs on the game board. Some cards may be sorted into more than one category, so be sure to explain your thinking. ("I can put this shape in the Acute Angles section because this angle right is less than 90 degrees.")

If a card does not belong anywhere on the board, put it in the discard pile. Cards with aliens on them are "wild cards" that can go anywhere on the board, and cards with "Take Me to Your Leader" mean you skip a turn. The first player to get the required number of cards in each section of their game board wins! You can play again until time is up.

Challenge: Mix in the 2D Shape picture cards and ... too, and examine the lines and angles in the shapes. You can also create a different game board than your partner and see which board gets completed first. Or, create your own game board. Decide with your partner which attributes you would like to use during game play., and use blank sheets of paper to ... ns for each attribute.

Math Talk:

How did you decide where to place your cards on the board?
How can you check (or prove) your answers?
What ... es do all the shapes in a section have in common?
What other ways can 2D figures be classified and compared?

CCSS: Draw and ... and angles, and classify shapes by properties of their lines and angles.

4.G.2 Classify ... figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.

I can identify parallel lines in two dimensional figures.
I can identify perpendicular lines in two dimensional figures.
I can recognize acute, obtuse, and right angles.
I can identify right angles.
I can classify 2D figures based on parallel or perpendicular lines and angle size.
I can classify triangles as right triangles or not right.

Guess My Sort

Materials: 2D Shape Picture cards, two of the same Guess My Sort game boards, two Cards That Don't Belong boards, Sort Suggestions cards (optional), pencils and paper or math journals

Directions: Deal 8 2D shape cards to each player. Each player also gets a game board and a Cards That Don't Belong board. Players then look at their cards and figure out a way to sort them on their own game board; you can choose a Sort Suggestion card if you get stuck. Place some cards on your Cards That Don't Belong board if needed to ... sure your partner can see them.) Then write down the attributes you sorted by. ("Shapes with parallel lines" and "Shapes without parallel lines"). Don't let ... see what you wrote!

When you are both done sorting, look at each other's game boards and ... how your partner sorted. Write down your guesses without showing ... On the count of three, hold up your papers or math journals so you can ... what each other wrote. Explain your reasoning and make a decision together about whether each sort was done correctly and also if there is more than one right way to describe the sort. You can each get 1 point for each correctly sorted set of shapes, and 1 point for each correctly guessed sort. The person with the most points when time is up wins the game!

Challenge: Instead of using the Guess My Sort ... cards, make your own! Decide how you will sort your cards and draw a ... ions for sorting. You can also make your own game cards with more ... 2D shapes on them.

Math Talk:

What are some ways 2D figures be categorized and classified?
How did you decide how to sort your shapes?
How can you use a right angle to classify other angles?
How did your knowledge of attributes help you sort?
How did it help you guess your partner's sort?
When you use attributes to compare and contrast shapes?

CCSS: Draw ... lines and angles, and classify shapes by properties of their lines and angles.

4.G.2 Classify ... figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right ...

I can identify parallel lines in two dimensional figures.
I can identify perpendicular lines in two dimensional figures.
I can recognize acute, obtuse, and right angles.
I can identify right angles.

Symmetry in Designs

Materials: 2D shape manipulatives

Directions: Set up a textbook, file folder, etc. so that you and your partner can't see each other's work space. Both of you should then use at least 10 2D shape manipulatives to create a design with at least one line of symmetry. When you're done, remove half of the shape along a line of symmetry. Switch seats with your partner and try to rebuild each other's shapes. Check each other's work and award one point for each correctly built design.

Challenge: Try making designs with 15 (or more) shapes! Or, instead of building a design, draw it or trace around manipulatives on a piece of paper. Fold your paper in half when you're done and give one piece of it to your partner. Challenge your partner to either build or draw the other half of your design.

Math Talk:

What does ... symmetry mean?
Why is ... important?
What does a line ... symmetry tell us about an object or design?
How did you ... symmetrical designs created?
How did you ... how which shapes to use to maintain the line of symmetry?
How are the original shapes and the composite shape (design) the same? How are they different?

CCSS: Draw and ... lines and angles, and classify shapes by properties of their lines and angles.

4.G.3 Recognize a line of symmetry for a two dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

I can recognize lines of symmetry for a two-dimensional figure.
I can recognize a line of symmetry as a line across a figure that, when folded along, creates matching parts.
I can draw lines of symmetry for two-dimensional figures.

Symmetry Sort

Materials: Symmetry Square Off game boards (all 6), Symmetry cards

Directions: Take turns choosing game boards until you both have 3. Place all the cards in a face down stack. Then take turns flipping over one card at a time and deciding whose game board the shape belongs on. Explain your thinking to your partner and make sure you've found all the lines of symmetry. You can draw the lines of symmetry on the cards to be sure. The person with the most cards on their boards wins the game. You can choose different game boards and play again until time is up.

Challenge: Mix in the 2D shape cards to provide more shapes (they won't fit on your game board, but you can create stacks of cards instead of ... them out.) Or, use the blank cards to make your own shapes by drawing ... yourself, or by searching online for real world examples of symmetrical ... cutting them out, and gluing them on the cards.

Math Talk:

Which game board was the easiest to fill up?
Which are the ... Why do you think that is?
How would you ... shapes that have the most lines of symmetry? The least?
How can you ... where the lines of symmetry are?
What can you do to check or prove your thinking?
Why is symmetry important to understand?
How is symmetry important in real life?

CCSS: Draw and ... lines and angles, and classify shapes by properties of their lines and angles.

4.G.3 Recognize a line of symmetry for a two dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

I can recognize lines of symmetry for a two-dimensional figure.
I can recognize a line of symmetry as a line across a figure that, when folded along, creates matching parts.
I can draw lines of symmetry for two-dimensional figures.

Symmetry Challenge

Materials: Symmetry Challenge game boards in plastic page protectors, Vis-à-Vis markers, felt squares or other erasers for the page protectors, spinner

Directions: Each player gets one game board. Take turns spinning the spinner and drawing lines of symmetry on a shape. For example, if you spin 4, you must find a shape on your board that has 4 lines of symmetry and draw them. There may be times when you can't draw the necessary number of lines of symmetry for the shape on your board, and play passes to your partner. The first person to draw lines of symmetry on every shape on their board wins the game! You can play again until time is up.

Challenge: Create your own game boards! Draw 20 (or more) shapes, making sure that you have at least one shape for each of the numbers on the spinner (0, 1, 2, 3, 4 and more than 4 lines of symmetry.) See if you can create a game board that will be completed faster than your partner's!

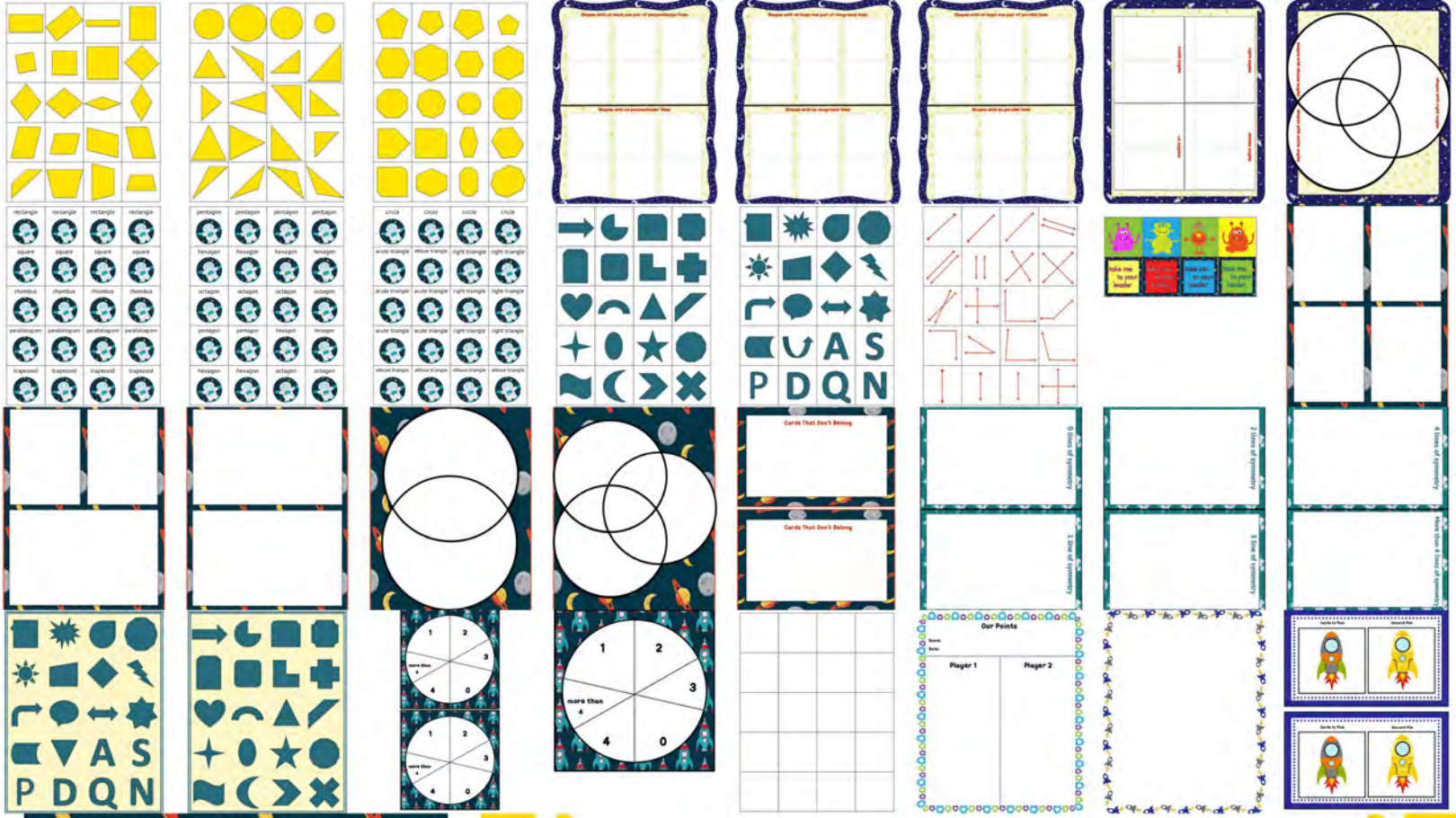
Math Talk:

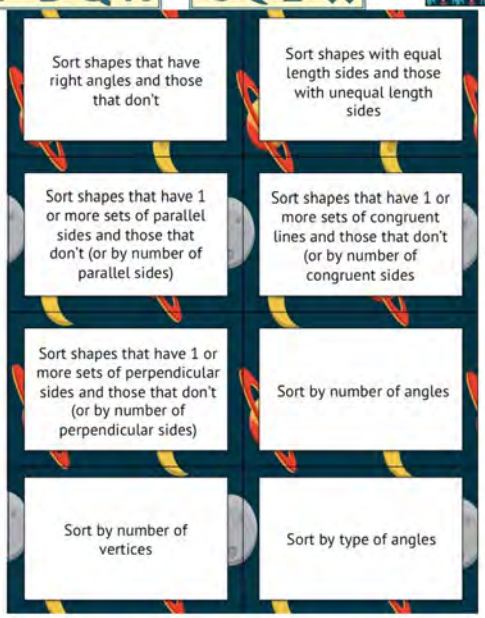
Why do you ... spinner's sections are unequal?
How ca ... where the lines of symmetry are?
What are som ... you could prove the lines of symmetry?
Which shapes ... ve the most lines of symmetry? The least?
How can ... apes look different but have the same number of lines of symmetry?
What do you notice about all the shapes with 0 lines of symmetry? With 4 lines of symmetry?

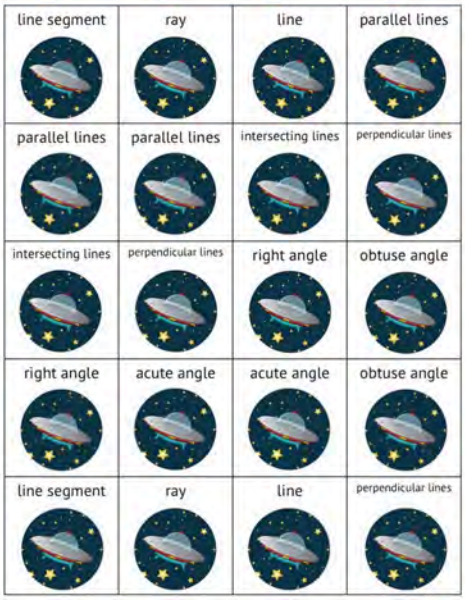
CCSS: Draw ... lines and angles, and classify shapes by properties of their lines and angles.

4.G.3 Recognize a line of symmetry for a two dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

I can recognize lines of symmetry for a two-dimensional figure.
I can recognize a line of symmetry as a line across a figure that, when folded along, creates matching parts.
I can draw lines of symmetry for two-dimensional figures.



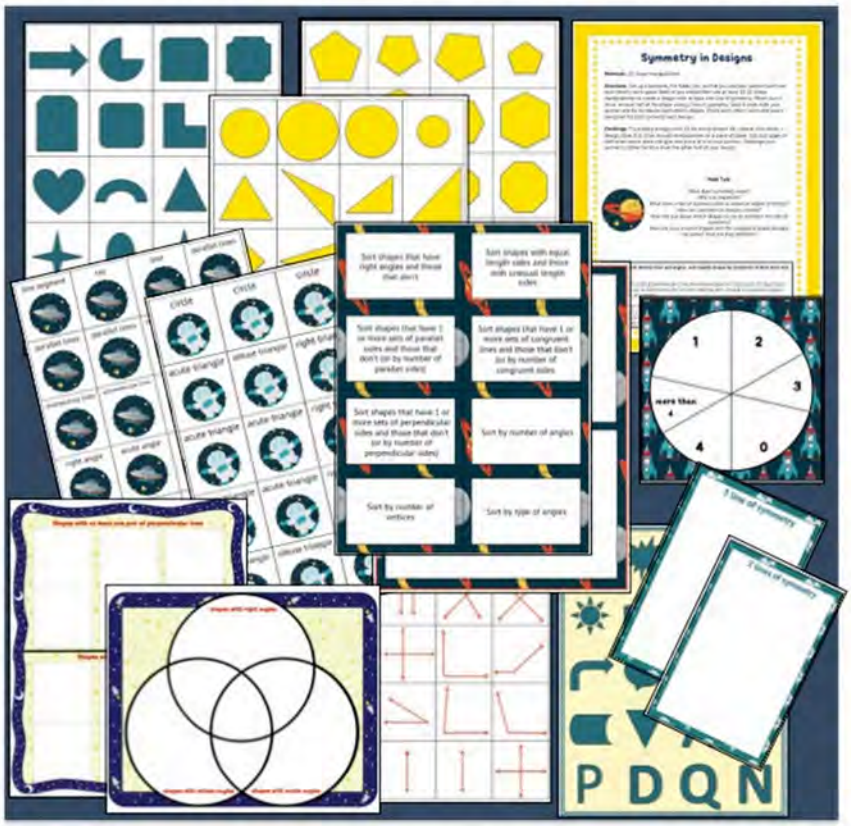




Math Partner Games:

4th Grade Geometry

8 games designed for Common Core



by Angela Watson
TheCornerstoneForTeachers.com

Table of Contents

List of Games and Skills Covered

Pg.	Game Title	Main Skills	CCSS
20	Line & Angle Drawing	Draw points, lines, line segments, rays, right/acute/obtuse angles, and perpendicular/parallel lines.	4.G.A.1
21	What's My Line?	Draw points, lines, line segments, rays, right/acute/obtuse angles, and perpendicular/parallel lines. Identify these in 2D shapes.	4.G.A.1
22	Geometry Go Fish	Identify the following in 2D figures: parallel lines, perpendicular, acute/obtuse/right angles.	4.G.A.2
23	The Attributes Game	Classify types of lines and angles.	4.G.A.2
24	Guess My Sort	Identify types of lines and angles in shapes and classify shapes based on those characteristics.	4.G.A.2
25	Symmetry in Designs	Recognize and create lines of symmetry for a 2D figure.	4.G.A.3
26	Symmetry Sort	Recognize and classify 2D figures by number of lines of symmetry.	4.G.A.3
27	Symmetry Challenge	Recognize and draw lines of symmetry for 2D figures.	4.G.A.3

Notes About Materials

Several games have multiple board game options. You can choose the ones that best meet your class' needs as a whole, or differentiate the games by selecting game supplies based on individual student needs.

There are also optional card organizers and work mats to help students keep their materials organized during game play.

Be sure to print the game cards on stock paper or mount them on construction paper so students can't see through them!

The only items you need to supply in addition to the printables from this packet are:

- ❑ Class set of page protectors (or you can laminate items)
- ❑ Class set of Vis-à-Vis (or dry erase) markers for writing on page protectors
- ❑ Class set of felt squares, socks, or other "erasers" for page protectors
- ❑ Class set of pencils, crayons/colored pencils, and paper or math journals (or use individual dry erase boards)
- ❑ Class set of 2D shape manipulatives (such as attribute blocks, pattern blocks, or tangrams)

Game Assembly Instructions

Pg	Game	Materials	Special Instructions
20	Line & Angle Drawing	Line and Angle Word Name cards, paper or math journals, pencils, crayons/colored pencils	Print and cut out pg 36.
21	What's My Line?	Lines and Angles Picture cards, pencils, paper or math journals	Print and cut out pg 35.
22	Geometry Go Fish	Line and Angle Picture cards and Line and Angle Word Name cards	Print and cut out pgs 35-36.
23	The Attributes Game	2 of the same game board for The Attributes Game, Line and Angle Picture cards, The Attributes Game cards (with aliens and "Take Me to Your Leader")	Print and cut out pgs 34-35, and the game board(s) you want students to use from pgs 38-42.
24	Guess My Sort	2D Shape Picture cards, two of the same Guess My Sort game boards, two Cards That Don't Belong boards, Sort Suggestions cards (optional), pencils and paper or math journals	Print and cut out pgs 28-30 and the game board(s) you want students to use from pgs 43-49.
25	Symmetry in Designs	2D shape manipulatives (pattern blocks, attribute blocks, tangrams, etc.)	Nothing to print or assemble.
26	Symmetry Sort	Symmetry Sort game boards (all 6), symmetry cards	Print and cut apart pages 50-54.
27	Symmetry Challenge	Symmetry Challenge game boards in plastic page protectors, Vis-à-Vis markers, felt squares or other erasers for the page protectors, spinner	Print and cut apart pages 55-57. Put game boards in plastic page protector and assemble the spinner.

4th Grade Geometry

7 Common Core-aligned games for teaching lines, angles, and symmetry!

How do math partner games align with CCSS?

The games in this PDF were created for (not retro-fitted to) the Common Core State Standards (CCSS) for fourth grade math. There are 2-3 games for each of the geometry standards. The table on page 15 shows you which standard(s) are addressed in each game.

The standards as well as "I Can" statements with child-friendly language are included in each game's instructions. Since there isn't one set of "I Can" statements that all states use, I've chosen terminology that I think is simple and easy for you to make sense of.

Additionally, the "Model and reinforce mathematical practices" domain of the CCSS is integrated in each and every game through the actual game play, the "math talk" discussion/reflection prompts, or both. (You can find more math talk questions here.) The standards for math practices are:

MP1 Make sense of problems and persevere in solving them.
MP2 Reason abstractly and quantitatively.
MP3 Construct viable arguments and critique the reasoning of others.
MP4 Model with mathematics.
MP5 Use appropriate tools strategically.
MP6 Attend to precision.
MP7 Look for and make use of structure.
MP8 Look for and express regularity in repeated reasoning.

What's a math partner game?

Similar to math tubs, the math partner games I use are two-player games that reinforce a variety of math skills, including problem solving and logical thinking. The games are open-ended and easily differentiated and individualized.

Are math partner games the same as math centers?

It depends on your definition. Typically in my classroom, partner game time is separate from center time because centers are independent activities while math games are multi-player and encourage discussion and collaborative problem solving. However, if you have students complete math centers cooperatively, then math partner games would be a perfect fit!

There IS one major difference between the partner game arrangement I describe here and typical centers. When kids are in centers, usually you (the teacher) are working with a small group. Since you're busy teaching, it's hard to tell whether the rest of the class is actually learning anything in their centers and games or if they've just mastered the art of looking busy.

During the math partner game set up I recommend here, you are *not* responsible for small group instruction, so you're free to facilitate students' thinking and engage kids in conversations about what they're learning.

What are the advantages of using math partner games?

Math partner games are a great opportunity for the teacher to:

- Take anecdotal notes and/or assess children in meaningful scenarios
- Support students who are struggling academically as well as socially, because you'll have the time to help solve disputes and model social problem solving skills
- Challenge high-achievers who are easily bored
- Allow students to actively construct knowledge through collaborative hands-on activities
- Model logistical thinking and encourage discussion (connecting words and math is difficult for many students)
- Provide problem solving and math skill practice that kids really enjoy

How many times do kids play the same game?

Generally, students play the same game for an entire week so that they have time to master the rules. Once they understand the basics, they can really start focusing on the targeted math skills, determining patterns and strategies, and engaging in higher-level thinking discussions.

For how long do kids play the games?

I prefer to have pairs of students work with each game for 7-15 minutes daily. Though some games naturally lend themselves to the shorter or longer end of that range, ten minutes is pretty optimal and a good target to aim for.

Though most of the games end only when time is up, ALL of the games are open-ended enough that students won't need to ask, "I'm done, now what should I do?" The instructions also provide Challenge activities which you can have students do if they have time, or you can assign them to certain students for differentiation. I usually have the class do the extra challenge for the last two or three days of the week, unless they haven't yet shown proficiency with the basic level of game play.

There are also Math Talk questions which you can have students reflect on in writing using math journals or other formats. Once a week (or even more often), you may want to allow several extra minutes for students to talk or write about the Math Talk questions.

How do I make time for math partner games?

There are many ways to incorporate game time into your schedule. I prefer using them daily for up to 15 minutes, but I've also used them as fun math practice on Friday afternoons for about 25 minutes each week.

For awhile, my district required that I conduct standardized test prep/spiral review practice with the kids for 20 minutes at the start of the math period. I chose to follow that with 10 minutes for math partner games, and then launched into my math concept/skill lesson for the day. The active, hands-on partner games were the perfect way to clear students' heads before instruction resumed.

The fact that math partner games are great for breaking up long periods of direct instruction and guided practice is increasingly important as the CCSS

moves us toward deeper study of math concepts. Many teachers now have longer math periods and are expected to spend several weeks on the same topic (whereas before, we might have only had several days per concept). Math partner games are a way to fill that extra time with meaningful opportunities for students to explore and talk about math concepts.

How are kids paired up?

I recommend that math game partners be selected by the teacher (rather than self-selected) so that students are paired homogeneously. This is important because if you have heterogeneous pairs (mixed ability levels), the less advanced child will lose frequently and get frustrated. Kids only enjoy playing the games if they regularly experience success and feel like they have a fair shot at winning.

Another reason why I think it's better to pair kids with similar ability levels for math partner games is so that game play can be differentiated. You'll be able to spend more time supporting your struggling students since they'll be working together. And having your highest-performing kids paired together will be extremely valuable for them because they can play quickly and enjoy being challenged in a way that doesn't always happen during the average mixed-ability cooperative activity. Since most of us have students work in mixed-ability groups throughout the school day, math partner games can be a rare opportunity for students to work one-on-one with another child who's learning at a similar pace.

I also think it's important to consider students' personalities when pairing. I don't like to pair kids who know each other too well because they'll play around, but if they don't like each other or are both very shy or competitive, there can be problems as well.

Math Game Partners

Partner 1	Partner 2
Gabriella	Fadlaine
Angel	Claritza
Rolando	Lucas
Mabelin	Ana Jennsy
Nickolas	Jerrell
Manny	Peterson
Amy	Keisha
Carlo	Anna
Isaiah	

6 Minute Solution Partners

	Partner 1	Partner 2
A	Gabriella	Angel
B	Claritza	Amy
C	Fadlaine	Keisha
D	Peterson	Manuel
E	Isaiah	
F	Rolando	Lucas
G	Nickolas	Mabelin

Pages 18 and 19 are blank partner lists which you can fill out and display so students know who their partners are. Before sending students off to play the games, I usually have the class look at the list and raise their hand if their partner is not in the room so that I can re-partner students for the day as needed.

I generally make changes to the partner list based on my observations and student input. I've found that some kids want to keep the same partner for months, but most kids want to change partners every few weeks, and I try to accommodate them either way so they enjoy the games more.

For variety, I do allow students to pick any partner they want on special occasions (short weeks, days when we have an assembly and the math block is cut short, etc.) as well as when we go back to review previously taught skills. Some kids choose to play with friends that are more or less advanced than them, and that allows them to experience the game in a different way. Interestingly, I've found that about half the students still choose their regular math game partner: the kids tend to get into certain rhythms and playing styles and enjoy the familiarity.

Can students choose the game they want to play?

Yes! After a few weeks when you have introduced several games, you can let each set of partners choose one of the games to play, and have the class practice playing different games at the same time. I highly recommend doing that occasionally throughout the year, such as:

- Short weeks when you only have school for 2-3 days and therefore don't want to introduce a new game.
- When you want to review a variety of skills and concepts. Do two or three 10 minute sessions back to back, and let kids change their games for each session.
- When a lot of students are absent: let kids pick their own partners and own games for a special treat.
- At the end of the year when you have already introduced all the games.

When students are all playing different games, you may need to have printed directions available in case kids forget the rules. You should also talk with students about what they should do if they get stuck.

How do I use the "Challenge" section of the games?

You can offer the challenge as an option for students if they'd like to try it, or assign it only to certain students to differentiate game play. Another idea is to use that section after students have played the regular way several times, or later in the school year when reviewing previously taught skills.

How do I use the "Math Talk" section of the games?

You can teach students to talk about these questions with their partners, or ask the questions yourself as an informal assessment while observing game play. Or, use the Math Talk questions to facilitate mini-lessons and/or debriefing sessions before and after game play. The questions also work well as math journal prompts and written reflection topics.

How do I introduce math partner games to my class?

I strongly recommend that you model how to play the games FIRST. Introduce the games one at a time to your class, one game per week. During the modeling, you can demonstrate the basics of the game by playing against a volunteer. I used an Elmo (document camera) to help with this, placing the pieces under the Elmo so the class could see what was happening. I then guided two other volunteers as they played together for the class. This technique is a great way to model mathematical thinking and reasoning and draw attention to the math strategies you want students to use.

Right after the modeling/demonstration, release students to try playing the game with their partners. If you see a lot of kids making the same mistakes or demonstrating major misconceptions, end the game time a little early. Talk about it afterward, and do more modeling the next day.

For younger students (and for most classes at the beginning of the year), I'd suggest modeling the game on the first *two* days students play it. The first day, your demonstration should be very in-depth and focus on what to do if kids get stuck or disagree with one another, as well as what to do when they're finished and how to clean up the game properly. The second day's demonstration can focus more on applying math skills and strategies. I often do two or three days of demonstrations/skill mini lessons with more complex games, even if it's just quick refresher with two student volunteers before releasing the rest of the class to play.

Why not have kids play all different games at once, like in math centers?

I like having the whole class play the same game because you can conduct mini-lessons/strategy discussions around shared experiences before and after game play. Also, since students play the same game for a week, you have lots of targeted opportunities for identifying and addressing misconceptions and scaffolding student learning.

Could the games also be used as centers?

Sure! Its totally your choice how to use the games—they'd work just fine in traditional centers, math tubs, math work stations, etc. You could choose to play some of the games using the system I describe here, and place the rest in centers for kids to explore independently. **I do still recommend you model game play for the students before expecting them to play on their own.**

How do I open the math partner game time?

When you first introduce a game at the beginning of the week, you'll start your math partner game time with modeling. By mid-week, you can start the time with a mini lesson focusing on the higher-order thinking skills you want students to develop. You can pose particular scenarios that might arise during game play and have students suggest strategies for solving them, or mention a challenge that one team of students experienced the day before and have students talk about what they would do. You can also mention any classroom management issues that arose, or remind students of skills and strategies you'd like them to apply.

How do I close the math partner game time?

You can end the math partner game time with a whole-class debriefing session. Students can talk about what strategies worked well and which didn't. Use the Math Talk questions provided for each game to help you facilitate the discussion. Students can also reflect on these questions in writing (i.e. in math journals), or by talking with their partner (or a different partner in a turn and talk or think-pair-share activity.)

You can switch up your approach as needed, or make a schedule and debrief in a different way each day of the week. Again, the conversations will be more superficial at the beginning of the week and will move toward critical thinking as students have more experiences with the game.

How do I store and organize math partner games?

You'll need to have *half* a class set of all your game cards and most of the materials, such as spinners. In other words, if you have 26 students, you need 13 sets of each game. In many games, students share a game board, so you only need a half class set of those, but in other games, students will each need their own board.

The type of organizational system you choose should be based on the materials you have and the size/type of your math games. If you have lots of larger materials that you're using in addition to the games in this PDF, you'll need to consider that in your planning. I'll share with you the systems I've used over the years, and then explain what I think is the best way to organize and distribute this particular set of geometry games.

My first year using math partner games, I simply had a milk crate full of plastic baggies with materials inside. As my collection of games grew, I started keeping the plastic baggies in plastic tubs (containers). Some were the small kind you'd find at the dollar store and some were larger like dishwashing tubs, depending on the size of the materials that went inside.

Eventually I found the toy organizer you see pictured above. (Mine was from Big Lots, but I believe you can still get something similar at Target.) I used the large, colorful bins to hold the partner games my class was currently using. There was one bin for each game, and each bin held the set of materials for that game. For most games, I had a plastic baggie or manila envelope for each pair of students, so the bin for a certain game

usually had about a dozen baggies or envelopes inside. The games for units we weren't currently studying were hidden away in cabinets or other plastic containers.

I also kept one set of each game in a hanging shoe organizer, which you could see hanging on the door in the previous page's picture and as a close up below. Later in the school year, I'd allow students to choose the game they wanted to play. Each set of partners would simply walk over to the shoe organizer, pick a game and take out the materials, then return them after game play. I also allowed students to use the games in the shoe organizer at other times in the day (before and after school, during indoor recess, etc.) We called it "Free Choice Math Partner Games." I had a milk crate to hold the games that were too large to fit in the shoe organizer.

How do I pass out and collect the games?

For the games in this PDF, I recommend using just one baggie for each pair of students' cards. There will be times when you want kids to use multiple sets of cards during a single game, so having similar cards altogether makes sense and saves you plastic baggies. It's not a bad idea to mark some place on each card with a symbol, color, or number to indicate which bag it came out of, in case a stray piece is found on the floor.

Each day as you begin math partner games, write on the board which cards students should take out of the baggies. They can leave the rest of the cards in the bag (or even choose to include them if they decide with their partners to make the game more challenging.)

Each set of game boards could be kept in a single file folder or manila envelope: ditto with other materials needed, like the spinners. When you're ready for students to play a game, place the file folder full of game boards (or other materials) and the corresponding set of baggies on a table. Have all the "Partner 1s" in your math partner list (see pages 18-19) come up to the table in an orderly line and take one of everything. The Partner 2's are responsible for returning the materials to the same spot after game play.

If you practice your expectations for this, the system for distributing and collecting game materials will go very, very quickly. Sometimes it helps to set a timer for one minute: at the end of the minute, all the partner 1s should have the necessary materials and both partners should be in their "spot" in the room where they play the math partner games. If there is any pair of students who has not yet begun game play when the timer goes off, you can assist them with whatever they need to get started.

How can I save ink, paper, and time?

Some of the same cards and game boards can be used for multiple games, so that helps a lot. Here are some other tips to help you save ink, paper, and time as you create the games:

✓ **Pick the games you want to use, and THEN print**. You'll probably find that there are more than enough games here and you won't have time to implement them all, so don't print anything until you're sure you'll use it.

✓ **Be selective about the game resources you print.** There are multiple game boards and spinners for some games so you can differentiate game play for students. You might not need them all.

✓ **Use only a digital copy of the game instruction sheets**. You can use an LCD projector with a document camera or interactive whiteboard to project the directions for the class to see if needed. But the only time you'll need a printed copy (other than possibly for yourself) is if you decide to place one copy of the game in a Free Choice Math Partner Game area like the hanging shoe organizer I described, or if you want kids to use the games in math

centers/stations. In those instances, you could print a single copy of the instructions. But, for regular math partner game time, it's not necessary to print the instructions for each pair of kids. You will have already modeled game play for the class multiple times (which means they'll know the game far better than if they'd just read the directions), and you'll be walking around the room facilitating as kids play in case they need help.

✓ **Print most (or all) of the game resources in black and white and have students color them for you. Or, print onto colored paper!**. Black and white copies can still be very visually appealing, and you have the option of printing onto colored stock paper or using colored pencils/markers to add interest. You may want to print your class set in black and white, and then make one or two full color copies to use when modeling the game for the class and for later on if you place the games in your math centers or stations. You can let a different pair of students use the full color version each day as recognition of exemplary work in the previous day's math game time.

I'm ready! How do I get started?

Start by figuring out which standards you want students to practice through the games. The table on the next page of this packet tells you which games align to each standard.

Read the instructions for the games you're interested in, and check out the game resources (game boards, cards, etc.). Decide which ones are the best fit for your students' needs, and print! Use pages 16-17 to help you assemble the games and collect any extra materials you might need. Have fun!

ANGELA WATSON'S
truth *for* teachers

BUT WAIT! THERE'S MORE...

I'm Angela Watson, the creator of this resource. I'm a National Board Certified Teacher with a masters degree in Curriculum and Instruction, and have 11 years of classroom teaching experience and over a decade of experience as an instructional coach. I currently work as a Productivity and Mindset Specialist in the area of educational consulting. In practical terms, this means I author books, design curriculum, and provide professional development services. Everything I do is centered on sharing more effective, efficient, and *enjoyable* ways of teaching and learning!

I founded my website (**TruthforTeachers.com**) in 2003 to connect with other educators. You can now find thousands of ad-free articles and resources there from me and our K-12 teacher-writer's collective.

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