Shaping the Movement

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This curriculum unit is recommended for:
Grades K-5 Geometry

Keywords: Movement in Math, Geometry, Quadrilateral, Triangles, Building 2D Shapes, Building 3D Shapes, Lines, Angles, Rays

Teaching Standards: See Appendix 1 for teaching standards addressed in this unit.

Synopsis: This unit is based on the idea that movement in the classroom needs to be a vital part of our everyday lesson planning. Throughout this unit, students will experience a variety of activities that allow them to not only access the grade level content standards, but also to get their blood flowing and help their brain become activated for the day's lesson. A menu-like option of lessons allows for teachers to pick and choose from the lessons provided to supplement the current curriculum with what their students may need. In addition, these lessons are also great replacements for indoor recess or can be shared with your special area teachers for a content-focused lesson!

The lessons within this unit focus on key geometry skills such as:

- building and identifying 2D and 3D shapes
- identifying lines, line segments, points, rays, and angles
- utilizing attributes of quadrilaterals, triangles, and three-dimensional shapes to describe geometric figures

I plan to teach this unit during the coming year to 60 students in **4th grade Math.**

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Demographics

My school is located in the heart of Charlotte, NC on a 120-acre campus which includes an elementary school, middle school, and high school, all within walking distance. We have about 650 students making up the population of our school, approximately 72% Caucasion, 11% African American, and 7% Hispanic. Approximately 32% of our student population are certified as Gifted and Talented, 15% as Students with Disabilities, 3% as McKinney-Vento, and 4% English Language Learners. Because of its location, our school is relatively high-performing. In an average year, approximately 80% of the students perform at or above grade level on the End-of-Grade tests given throughout grades three through five.

Rationale

My classroom teacher position was exchanged last year for a math teacher position. In this role, I assist teachers with math content during PLC planning time and pull students who are struggling with math in grades 3-5. This has by far been the most meaningful part of my position! For a long time, our district has insisted on a push in the area of literacy, leaving math on the back burner. Eventually, as one can imagine, math achievement started to take a plunge, just as literacy had done in the past. At my school, the administration realized a need for a more intense focus on math instruction in order to get our students back on track, thus creating my position!

While much of our school is considered "on-grade level" there are always about 20% of students who fall beneath this line in Mathematics. Though it may seem fairly simple to suggest that at 20% of the population these students should have access to all of the help they need, teachers are
tasked with growing all of their students at least one years span from the time they entered their classroom. In addition, classroom teachers struggle to find the time in the rigorous pacing guides to include basic, but off-grade level, instruction for students who are behind.

With all of this in play, my position has allowed me to focus on the 20% of students who need additional support in Mathematics, but do not (maybe, yet) qualify for any other specialized services. I work with students who fall below the 25th percentile in their grade level cohorts nationally, to ensure they are on MTSS plans and receiving interventions that will hopefully bring them up to speed with their peers. In addition, I pull a grade level group for 3rd, 4th, and 5th grades that consist of students who are at grade level, but the data suggests they may need additional support to keep them there.

Because of the nature of my position, it is extremely important that I am able to find a variety of ways to provide instruction to my students that will help them to internalize it. Moving to Learn sparked my interest because I know that students need to be able to move around in the

classroom and are more engaged when this is happening. Throughout the year, I have sat through grade level PLC's from Kindergarten to Fifth grade where teachers have discussed the struggles students have had with geometric terms in math class. While the terms are used widely from the start of Kindergarten on, it was alarming how many students struggled with geometry as they progressed to a new grade level. Students need consistency throughout their elementary years, to better allow them to carry information from one grade to the next. Teachers need to know how the content and vocabulary changes from one grade level to the next in order to be prepared for the misconceptions students may have. For example, the terms themselves are different from grade level to grade level. In younger grades, they refer to parallel lines as simply lines that never cross. As students get older, they suddenly turn this into the term, "parallel lines". If teachers are not aware of the sudden change, and given the opportunity to make the connection for students, it may seem like a child has never heard of parallel lines, when in fact, they have. Using developmentally appropriate vocabulary for the grade level you teach is vital, however, I don't think there is any harm in mentioning the more advanced name for these terms as they will see it in the coming years. As a teacher, Kindergarten to 5th grade, it is so important for us to understand the content we teach and the vertical alignment of these skills from one grade level to the next.

Throughout my unit, I want to use movement to create a series of kinesthetic motions for teachers to use throughout grades K-5 while reviewing Geometric terminology. This unit typically takes place during the second half of the year for most grade levels. It is my hope that these movements, when incorporated across grade levels, will allow students to easily recall the information being taught to them and in turn, allow them to be more successful throughout their schooling. The menu of options provided, are also intended to be fun ways to practice these skills at any point in the year.

Objectives

The North Carolina Standard Course of Study puts an emphasis on Geometry from Kindergarten to fifth grade. The foundational teaching that students experience as they progress across the grade levels truly lays the framework for much more advanced mathematics in future years. In grades K-2, students focus on three main aspects of Geometry:

1. Building understanding of shapes and their properties
2. Understanding the decomposition and composition of such shapes
3. Spatial structures and relations

In Grade 2, students begin to use measurement to further explore the properties of geometric figures and spatial relationships. As students progress into 3rd, 4th, and 5th grade, they are expected to use these measurement skills to identify line types, angles, and classify figures based on their attributes. In addition, students utilize their ability to compose and decompose shapes in order to better understand how to calculate area and volume.

In 5th grade, all of the foundation that has been laid in years past is put to the test. Students are expected to be able to identify various figures and also categorize them based on their properties. Using a hierarchy, students show their understanding of each shape's

attributes as they form groups to classify shapes with others with whom they share similar characteristics. This, in my experience, can be one of the hardest tasks for students to complete.

In order to create the hierarchy, students need to know the attributes of all of the quadrilaterals they have learned about since Kindergarten. Students take these quadrilaterals and put them in categories based on their properties, and then potentially even further in subclasses within that category. For example, within this hierarchy, a student will need to understand that a square is considered a rectangle because a rectangle simply needs to have 4 right angles, but a rectangle is not a square because a square must have 4 equal sides AND 4 right angles. As you can imagine, this is quite hard for a student to do if he/she does not have a good foundational understanding of these concepts from Kindergarten on.

Within this unit, I hope to give teachers the resources they need to provide a brief, but impactful, review of students' prior learning, while adding additional support for students to move forward in their mathematical understanding along that way.

Content Research

Teachers Perceptions of Movement in Learning

While conducting my research, it was interesting to come across an article regarding teachers' perception of movement in the classroom. The findings come as no surprise to me, as I'm sure they will to you as well. Most teachers knew that movement in the classroom was a must. They shared their knowledge of how it affects the brain, as well as an understanding of the overwhelming research that states it helps students to learn better. However, these teachers were still not implementing movement into their classroom routines.

It is said that 43 million preschool children throughout the world are estimated to be overweight or obese, and 92 million are at risk for being overweight. With these numbers being staggeringly high, it becomes increasingly apparent that our children are not getting as much exercise as they need. Students spend over 7 hours a day at school and most get home with enough time for dinner, homework, a shower, and potentially an hour to play. With that being said, it seems obvious that our school system needs to make a better effort to incorporate additional physical activity throughout the day. While schools have been identified as the ideal setting for young people to get active and learn healthy habits, this just doesn't seem to be happening.

Although the school system is considered, "the most influential institution in children's social, emotional, and cognitive development" and "the most promising opportunity to address the global issue of physical inactivity" (Teacher's Perceptions of), other legislative policies have made it feel impossible for many. In 2001, the No Child Left Behind program was passed by the United States Congress. NCLB required states to adopt new standardized tests for students and to ensure that all of their teachers were highly qualified. In order to maintain funding, states were required to take these standardized tests at certain grade

levels. NCLB gave teachers further pressure to grow their students and make sure that all students were performing at or above grade level. Throughout this time, administration continued to add instructional pressures and curriculum requirements, decreasing recess and physical education time within schools by almost half. (Incorporating movement)

Why Movement?

In the book, "The Kinesthetic Classroom", Traci Lengel and Mike Kuczala share research on how learning through movement can help students to better master the content they are learning. Not only does movement help to further engage students by keeping their attention for a longer period of time, but studies show that the more active your body is in learning, the more connections the brain can make with the content. Through repetition and practice, the neural pathways are strengthened within your brain, allowing them to more quickly transfer information from short-term to long-term memory. (Reinforcing math lessons)

Sitting for longer periods of time can cause students to lose focus and become inattentive. In the average classroom, a student sits for almost 6 hours a day! Studies show that after sitting for twenty to thirty minutes, eighty percent of the blood in one's body settles in the hips. Without fresh oxygen in the blood, it makes new learning increasingly harder. When moving, children learn best. The movement stimulates the neurons and electrical wiring in the brain, almost yelling at it to wake up! The part of the brain that processes movement is the same part of the brain that processes learning. When movement and learning is combined, it increases the number of neurons being used. Over time, this allows the neurons to become more efficient (think- work smarter, not harder). (Incorporating movement)

In general, studies show that children who are more active have faster cognitive processing, better focus and more successful memory retention. A study from Duke University in 2011, showed that the capacity to concentrate was one of the best predictors of a child's future success. The researchers studied over 1,000 children in New Zealand over a period of eight years, watching their ability to pay attention. Then, researchers followed up with these children as they entered adulthood to measure their health and financial stability. Their findings suggested that those with more self control were less likely to have financial or health struggles.

Benefits of Movement

There is an overwhelming amount of research that suggests incorporating movement into your classroom will yield positive academic outcomes. Through movement, blood flow in the brain increases, resulting in higher neural activity and nerve cell growth. As children move, they become more physically active. Studies show that children who are more physically active can concentrate better than their peers, which allows them to focus for longer periods of time.

Physical activity is also known to reduce stress, anxiety, and depression. We know that exercise is supposed to help adults in each of these areas, but the research is not different for

kids. A small activity break can help to wake students up, increase their self-esteem, and relieve their worries. The distraction of the movements allows students the ability to drown out their thoughts or brush off their fears.

Dance and Yoga in the classroom are great forms of natural movement that allow students to relieve stress, but also express themselves in creative ways. Dance breaks can create a space for students to recollect their thoughts and feelings or express their emotions in a way other than words. Yoga exercises can help children practice mindfulness, using breathing exercises to release negative energies. Yoga assists in lowering blood pressure, the risks of heart disease, increases balance, and provides guidance in reducing depression. (effect of movement)

Lessons that include physical activity have proven to create a higher level of engagement in students, more enjoyment from students, and an overall deeper level of understanding. Students who show signs of ADHD are more often on-task and engaged in the lesson than those who are not learning with movement. Many other countries around the world have begun incorporating movement breaks into their daily lessons. The breaks happen for ten to twenty minutes for every forty to fifty minutes of instructional time. Because of this, these countries have shown higher academic success than that of the United States.

Math lessons which incorporate physical movement like hand motions or gestures have also proven to have higher success rates. The movements attached to their content allow them to more easily retrieve this information from their memory later on. In turn, this leads to a higher retention rate of what is being taught. (Incorporating movement)

All in all, movement within the classroom is undoubtedly a routine we need to integrate into our daily plans. When we stop to think about what's best for kids, it is apparent that movement throughout the day will inevitably hold the most weight. Daily activity helps boost balance, motor function, brain function, cognition, attention, physical health and mental well-being.

Strategies to Incorporate Moving into your Teaching

Maybe you are a teacher who knows this is what's best, but really struggles with adding this implementation to the laundry list of to-dos you already have. Here are a few tips:

1. Set ground rules. One of the biggest reasons teachers struggle with implementing movement is the lack of control this promotes. Making sure students understand your expectations throughout this time is key. Be sure to go over what you expect, the do's and don'ts of moving around the room, and the overall objective of your movement! In the lessons in the unit specifically, students will need to be able to work collaboratively with their group members, but also respect their space. Using music or a beat can help guide students in moving in a controlled way and also help you maintain control throughout the lesson.
2. Make learning activities more active. Find ways to incorporate movement in the things you already do. Create gallery walks for students, have them travel throughout

the room to turn in work, give them work that requires them to build, and have them identify math terms throughout the room!

3. Encourage breaks. Make time for short brain breaks throughout the day. Play a Go Noodle game, Simon Says, or just stretch it out! Allow time for students to eat snack during the day so hunger doesn't fog their brain.
4. Go for midday walks. As much as we can benefit from this as adults, so can children. Make time to read outside, walk through the playground to get back to class, or let the kids race from one side of the field to the other. Giving students just a few minutes to get their bodies moving allows for another focused session of learning time!

If all this sounds overwhelming, hang in there! You, like many other teachers throughout the country, are doing the best you can! Start small. Begin by simply getting kids out of their seats. Whatever your lesson is, find ways for your students to work together and/or move throughout the room. When convenient, let the students stand up. Standing burns more calories than sitting and expends more energy. It's definitely a good way to get their blood flowing! Allow students to "walk and talk". Encourage students to share their work or ideas while walking throughout the room, or maybe even the school, if that's possible in your space. If you can take the kids outside, do it! Even just the walk there will allow students to get their blood moving and create oxygen uptake.

Throughout the lesson, think of ways you can encourage students to work together or move about. See the list below for a few tips on how you might be able to incorporate some movement into your everyday lessons, without making drastic changes to what you already do!

Simple movements can include:

- writing on an easel
- spelling words with pool noodles or magnets
- acting out a story
- responding to questions in different way, by doing something
- gesture or motion for vocabulary words
- answer multiple choice questions using four corners
- sing and dance to an upbeat song
- Go noodle activity
- Create gallery walks
- play board games
- Do push-ups or jumping jacks

Building and Identifying 2D Shapes

Objective:

- ❖ Students will be able to identify 2D shapes.
- ❖ Students will be able to combine two 2D shapes to create another 2D shape.

Materials Needed:

- resistance exercise bands (1 per student pair)
- shape posters
- student notebook
- shape attribute anchor chart

Set-up prior to lesson:

- Have the 2D shape anchor chart readily available to show students.
- Hang the shape posters around the room, spaced apart. (You will need to hang enough posters for all of your students to pair up at separate stations.)
- Set a resistance band at each station.
- Create sentence starters for students that say: *"The shape that was harder to make than the others was _____. It was harder because _____."*

Launch:

Ask students to think about the different shapes that they see around the room.

Have students name the various shapes that make up different items around them.

Review the shapes appropriate for your grade level with students (see Appendix 1). Use the anchor chart attached to introduce the various shapes you would like to introduce.

Explore:

Have students pair up and rotate from one station to the next.

At each station, students should review the attributes of each shape and then work with their partner to create the shape using their stretch bands.

Discuss:

Ask students to identify shapes that were harder to make than others? Why were they harder to make? (Encourage students to describe their shapes with the number of sides, vertices, length of sides, etc.)

Ask students if they can think of any shapes that we might combine to make another shape?

Evaluate:

Have students return to the last station they were at and create the shape with their partner and resistance band. Then, tell students that they need to pair up with another group to form another shape with the two shapes their groups have created. (For example, if one group made a triangle and the other group made a triangle, they might put their shape together to make a square or rectangle.) Have students work with their partner group to identify their new shape.

Building and Identifying 3D Shapes

Objective:

- ❖ Students will be able to identify 3D shapes based on their attributes.

Materials Needed:

- straw connector pieces
- 3D shape posters
- student notebook
- 3D shape attribute anchor chart
- Captain Invincible and the Space Shapes by Stuart J. Murphy

Set-up prior to lesson:

- Have the 3D shape slides readily available to show students.
- Create student groups of 4 students.
- Set straw connector pieces at a station for each group.
- Create sentence starters for students that say:
  "_____ has ____ vertices."
  "_____ has ____ faces."
  "_____ has ____ edges."

Launch:

Read Captain Invincible and the Space Shapes aloud to students.

Throughout the read aloud, assist students in writing notes on each 3D figure, based on your grade level standards. (See Appendix 2.)

Use the anchor chart attached to introduce the various shapes you would like to introduce.

Explore:

Put students in groups of 4 at a station with straw connector pieces.

Turn to page 7 and remind students that 3D shapes have "faces". Some of these shapes have square faces, some have circular faces, some have triangular faces, and some have rectangular faces. (Connect this to our 2D shapes!)

Have each student in the group make a square face with their straw connector pieces.
Reread pages 10-11 to students. Have groups work together to use their square faces to create a cube. As students complete their build, have students identify the number of faces, vertices, and edges for this figure using the sentence starters.

Read pgs. 12-14 to students. Have them work with their groups to create a cone, ensuring they begin with a circular face as the base. As students complete their build, have students identify the number of faces, vertices, and edges for this figure using the sentence starters.

Read pages 15-19 and have students create a pyramid. Be sure to emphasize the difference between a square pyramid and a rectangular pyramid is the shape of its base. As students complete their build, have students identify the number of faces, vertices, and edges for this figure using the sentence starters.

Discuss:
Ask students how we might identify a 3D shape?

What attribute would be helpful in determining a 3D shape?

How many faces does a (cube, cone, square pyramid, rectangular pyramid) have? How many vertices? How many edges?

Evaluate:
Have students create a figure with at least one square face and exactly 8 edges. (square pyramid)

Identifying Points, Lines, and Angles

Objective:

- ❖ Students will be able to draw and identify points, lines, line segments, rays, angles, and perpendicular and parallel lines.

Materials Needed:

- Lines anchor chart
- student notebook
- Linear terms signs
- Index cards
- Black marker

Set-up prior to lesson:

- Have the line anchor chart readily available to show students.
- Hang the signs for the linear terms you would like to introduce around the room.
- Draw examples of the various types of lines on index cards, making at least 3 for each term.
- Ensure you have an open space in your room, or between desks, to allow for students to stretch their arms apart.

Launch:

Begin the lesson by playing a game of Simon Says with students. Play enough so that students understand how to play the game.

Review the linear terms appropriate for your grade level with students (see Appendix 2). Use the anchor chart attached to introduce the various terms you would like to introduce. Have students take notes in their notebooks.

Explore:

Give each student (or pair, depending on how many cards you've made) an index card with an example on it. Tell them that they should review their notebook and then go to the sign in the room that identifies the example they have. When ready, tell students to go. Once students arrive at their destination, have them discuss their example with others in their group, explaining why they chose to stand where they did. Allow students to make changes, if needed.

Play music and have students travel around the room until it stops. You can use this time as a place to incorporate more movement by asking students to move in a certain way around the room. For example, move like a rabbit, move like you're stuck in mud, move like the snow is up to your waist, etc. Do this for 10 seconds.

When the music stops, have students switch cards with the person closest to them. Then, instruct students to go to the sign that represents their example. (Just like they did the first time.) Repeat these steps as necessary.

Discuss:

What is the difference between a line and a line segment?

Are there any similarities in a ray and an angle? What are they?

Evaluate:
Play Simon Says with students, using their arms to make the shape of the linear terms. Review the form for each term, emphasizing that a line has two arrows (or fingers pointed in both directions) and a line segment has two endpoints (or fists). Use the posters, as needed, to remind students of the term.

Classifying Quadrilaterals

Objective:

- Students will be able to classify quadrilaterals based on angles, lines, and sides.

Materials Needed:

- Quadrilaterals anchor chart
- student notebook
- 5 gallon buckets/laundry baskets
- "If You Were a Quadrilateral" by Molly Baisdell
- Quadrilateral signs: square, rectangle, trapezoid, rhombus, parallelogram
- painter's tape

Set-up prior to lesson:

- Have chart paper set up to create an anchor chart with students throughout reading the book.
- Set up the 5 gallon buckets/laundry baskets across the front of the room. Label each bucket with one of the quadrilateral signs.
- Use the painter's tape to make a line approximately 10 feet from the buckets (if available) for students to throw their bean bags from.
- Have the slideshow prepared to display during the activity.

Launch:

Begin the lesson by reading, "If You Were a Quadrilateral" by Molly Baisdell. Ask students to think about the different quadrilaterals from the book and record them on the anchor chart paper. Have students take notes during this time. Display the quadrilateral pre-made anchor chart on the board, if needed, for students to complete their notes.

Explore:

Put students in 4-5 equal groups. Each group should have one color of bean bags for their group. Give students a quadrilateral anchor chart to place at their group, if needed, for notes. They can also use their individual notebooks where they copied this information at the beginning of the lesson.

Tell groups that you will put a question on the board referring to one of the quadrilaterals we have learned about. Using their notes, they should work with their group to decide which quadrilateral the clue is referring to. When their group knows, they will come to the line and toss their group's beanbag into the bucket of the quadrilateral they think the clue refers to. (In some cases, the clue may refer to more than one quadrilateral. You can decide whether groups just throw one beanbag, or if they are able to throw more than one into each of the correct buckets.) Once all groups have tossed their beanbag, the teacher will review the answers chosen with the students. Repeat this for all of the questions provided.

**If your class likes a little competition, make each correct beanbag worth 1 point. Each incorrect bean bag is worth -1 point. This way, students are encouraged to think hard about whether a clue refers to more than one quadrilateral to get additional points, but are not just throwing as many bean bags as they can!*

Discuss:

Why were there times when you needed to throw more than one bean bag? *Students should refer to the common attributes quadrilaterals like a square and a rectangle have or a parallelogram with the rectangle, square, and rhombus.*

Was there a time when you needed to throw all of your beanbags? Why? *Yes, when the attributes referred to shapes with at least one set of parallel lines and when they referred to the shapes with 4 sides.*

Evaluate:
Have students compare a square and a rectangle. Older students should use a Venn Diagram type model and younger students can have a conversation with their group members, and then their class. Be sure to review this as a class.

Classifying Triangles

Objective:

- Students will be able to classify triangles based on angles, lines, and sides.

Materials Needed:

- Triangle anchor chart
- student notebook
- "The Greedy Triangle" by Marilyn Burns
- circle mats
- Vis-a-viz wet-erase marker
- paper

Set-up prior to lesson:

- Display the Triangle Anchor Chart during the lesson
- Draw random triangles on the circle mats, using the Vis-a-Viz marker. Try to make at least 10 Equilateral, 10 Isosceles, and 10 Scalene triangles. *Do not label them.
- Spread the circle mats out on the floor around the room.
- Have the slideshow prepared to display during the activity.

Launch:

Read aloud, " The Greedy Triangle" by Marilyn Burns. Give students time to point out where they see triangles in real-life in the book and where they might see triangles at the school or on the playground.

Have students work to take notes on the 6 different triangles. After writing down a definition for a triangle, ask students to look at the circle mats on the floor and see if they can find one that represents that specific type of triangle. Choose one student to pick up the mat and bring it to the front of the classroom. Talk with students about why the triangles do or do not fit the description of the triangle you are working on. Have the child put the circle mat back when you are finished. Repeat this for the next few triangles.

Explore:

Ask students to find a circle mat near them to stand on. Tell students that you will put an attribute of a triangle on the board, and they should work to find a circle mat with a triangle that has that attribute. For example, if the attribute on the board has equal sides- students should find an equilateral triangle and stand on it. If they do not see a circle mat to stand on that fits the clue, they should stand on the floor instead of a mat. Once students get where they are going, have a conversation with the class about the triangles people are standing on and the triangles around those who are not standing on a mat. (Essentially discussing why the triangles fit the clue or don't.) When reviewing these triangles that fit the clue, be sure to use the term Equilateral, Scalene, Isosceles, etc. so that students begin to make those connections. As you repeat this, encourage students to tell you what kind of triangle you are showing the class.

Eventually, the slide show will change from attributes to types of triangles. Referring to each triangle by their name will help students to identify these triangles using their respective attributes at this point in the lesson.

Discuss:
Why were some of you not able to find a triangle to stand on throughout this lesson? *Not all of the triangles had equal sides, or unequal sides, or equal angles, etc.*

Was there a time when everyone should have been able to find a triangle to stand on? *Yes, when the clue was a shape with three angles, or a shape with three sides.*

Evaluate:
Have students pick up the circle mat nearest to them. On a piece of paper, have students draw the triangle, classify it by its sides (Equilateral, Isosceles, or Scalene) and then classify it by its angles (Acute, Right, or Obtuse).

Lesson Alignment with Grade Level Standards

This chart should be used to determine the alignment of the lessons within this unit to your grade level standards. Please note, that in some cases, the lesson may need to be modified to meet your learners at their developmental stage. This may mean adjusting vocabulary or taking out some attributes that students may not yet have knowledge of. Each lesson has a launch activity that is appropriate for all grade levels to introduce the content, but tasks may need to be modified.

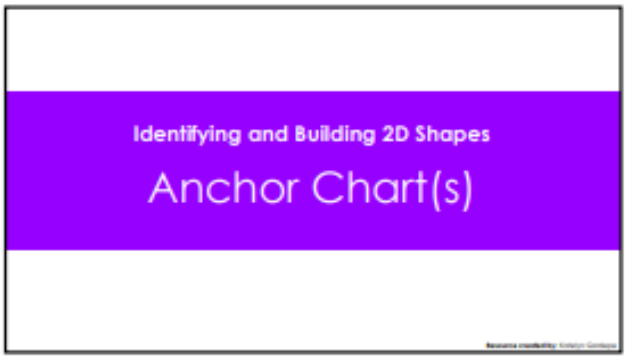
	Building and Identifying 2D Shapes	Building and Identifying 3D Shapes	Identifying Points, Lines, and Angles	Classifying Quadrilaterals	Classifying Triangles
K	**NC.K.G.2** Correctly name squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres regardless of their orientations or overall size. **NC.K.G.3** Identify squares, circles, triangles, rectangles, hexagons as two-dimensional. **NC.K.G.5** Model shapes in the world by: Building and drawing triangles, rectangles, squares, hexagons, circles.	**NC.K.G.3** Identify cubes, cones, cylinders, and spheres as three dimensional. **NC.K.G.5** Model shapes in the world by: Building cubes, cones, spheres, and cylinders.		**NC.K.G.5** Model shapes in the world by: Building and drawing triangles, rectangles, squares, hexagons, circles.	
1	**NC.1.G.1** Distinguish between defining and non-defining attributes and create shapes with defining attributes by: • Building and drawing triangles, rectangles, squares, trapezoids, hexagons, circles.	**NC.1.G.1** Distinguish between defining and non-defining attributes and create shapes with defining attributes by: • Building cubes, rectangular prisms, cones, spheres, and cylinders.		**NC.1.G.1** Distinguish between defining and non-defining attributes and create shapes with defining attributes by: • Building and drawing triangles, rectangles, squares, trapezoids, hexagons, circles.	**NC.1.G.1** Distinguish between defining and non-defining attributes and create shapes with defining attributes by: • Building and drawing triangles, rectangles, squares, trapezoids, hexagons, circles.

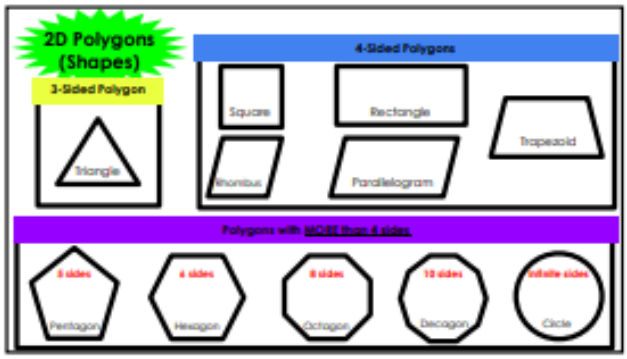
Appendix 1:

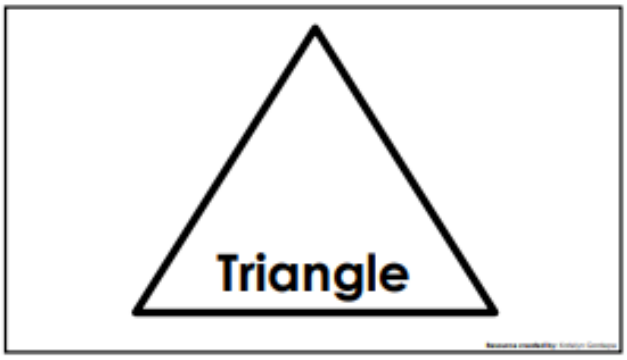
	NC.1.G.2 Create composite shapes by: • Making a two-dimensional composite shape using rectangles, squares, trapezoids, triangles, and half-circles naming the components of the new shape.	**NC.1.G.2** Create composite shapes by: • Making a three-dimensional composite shape using cubes, rectangular prisms, cones, and cylinders, naming the components of the new shape.			
2	**NC.2.G.1** Recognize and draw triangles, quadrilaterals, pentagons, and hexagons, having specified attributes.	**NC.2.G.1** Recognize and draw recognize and describe attributes of rectangular prisms and cubes.	**NC.2.G.1** Recognize and draw triangles, quadrilaterals, pentagons, and hexagons, having specified attributes.	**NC.2.G.1** Recognize and draw triangles, quadrilaterals, pentagons, and hexagons, having specified attributes.	**NC.2.G.1** Recognize and draw triangles, quadrilaterals, pentagons, and hexagons, having specified attributes.
3	**NC.3.G.1** Reason with two-dimensional shapes and their attributes. • Investigate, describe, and reason about composing triangles and quadrilaterals and decomposing quadrilaterals.		**NC.3.G.1** Reason with two-dimensional shapes and their attributes. • Recognize and draw examples and non-examples of types of quadrilaterals including rhombuses, rectangles, squares, parallelograms, and trapezoids.	**NC.3.G.1** Reason with two-dimensional shapes and their attributes. • Recognize and draw examples and non-examples of types of quadrilaterals including rhombuses, rectangles, squares, parallelograms, and trapezoids.	**NC.3.G.1** Reason with two-dimensional shapes and their attributes. • Investigate, describe, and reason about composing triangles and quadrilaterals and decomposing quadrilaterals.
4			**NC.4.G.1** Draw and identify points, lines, line segments, rays, angles, and perpendicular and parallel lines.	**NC.4.G.2** Classify quadrilaterals based on angle measure, side lengths, and the presence or absence of parallel or perpendicular lines.	**NC.4.G.2** Classify triangles based on angle measure, side lengths, and the presence or absence of parallel or perpendicular lines.
5			**NC.5.G.3** Classify quadrilaterals into categories based on their properties.	**NC.5.G.3** Classify quadrilaterals into categories based on their properties.	

Appendix 2: Lesson Resources

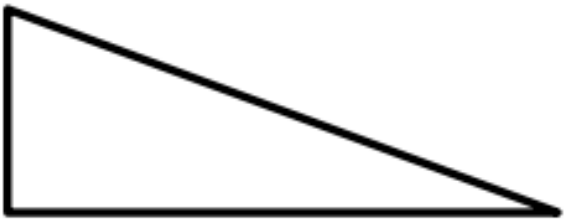
[Click here to make a copy of the Google Presentation for this Unit]







Triangle

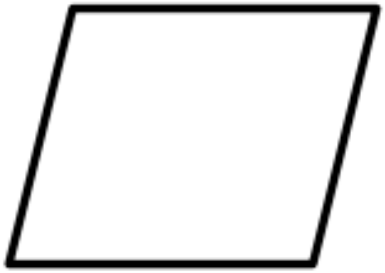


Triangle

Square

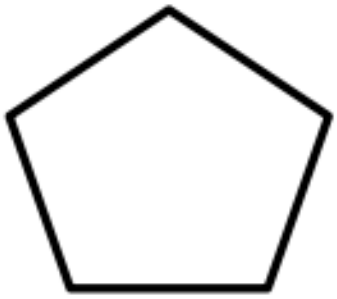
Rectangle

Trapezoid

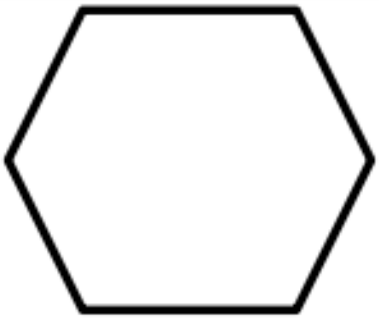


Rhombus

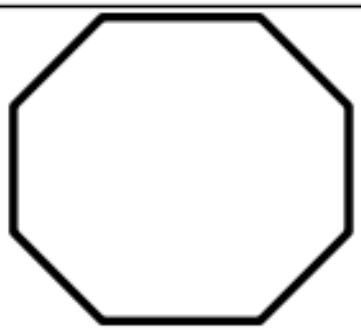
Parallelogram



Pentagon



Hexagon



Octagon

Identifying and Building 3D Shapes

A resource for the "Shaping the Movement" Curriculum Unit by Katelyn Gaddepe

Identifying and Building 3D Shapes

Anchor Chart

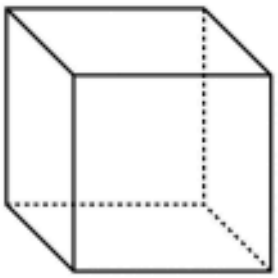
Three-Dimensional Shapes

3D Shape	Faces	Edges	Vertices
Cube	6	12	8
Cylinder	2	0	0
Sphere	0	0	0

3D Shape	Faces	Edges	Vertices
Rectangular Prism	6	12	8
Rectangular Pyramid	5	8	5
Cone	1	0	1

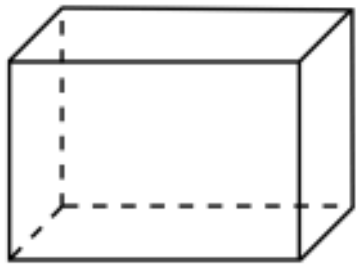
Identifying and Building 3D Shapes

3D Figure Slides to present as students build



Faces	6
Edges	12
Vertices	8

Cube

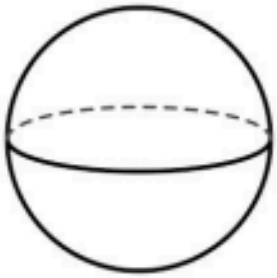


Faces	6
Edges	12
Vertices	8

Rectangular Prism

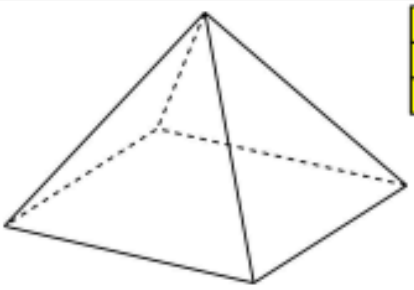
Faces	2
Edges	0
Vertices	0

Cylinder



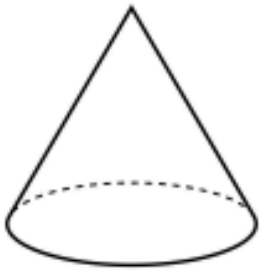
Faces	0
Edges	0
Vertices	0

Sphere



Faces	5
Edges	8
Vertices	5

Rectangular Pyramid



Faces	1
Edges	0
Vertices	1

Cone

Identifying Points, Lines, and Angles

A resource for the "Shaping the Movement" Curriculum Unit by Katelyn Gardepe

Identifying Points, Lines, and Angles:

Anchor Chart

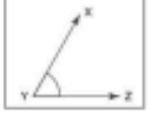
Lines

Term	Definition	Example
Point	An exact location in space.	A
Line	An endless, straight path with **no endpoints.**	A B
Line Segment	Part of a line with **two endpoints.**	A B
Ray	A part of a line with **one endpoint.**	
Parallel Lines	Two lines that **never meet** and are always the same distance apart.	
Perpendicular Lines	Two lines that **meet at exactly 90 degrees.**	
Intersecting Lines	Two lines that **cross at one point.**	

Angles

Acute Angle

An angle that measures **less than 90 degrees.**

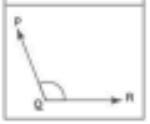


Right Angle

An angle that measures **exactly 90 degrees.**

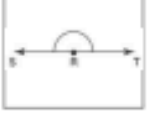
Obtuse Angle

An angle that measures **more than 90 degrees.**



Straight Angle

An angle that measures **exactly 180 degrees.**



Identifying Points, Lines, and Angles:

Signs for Linear Terms & Angles
to hang around the room

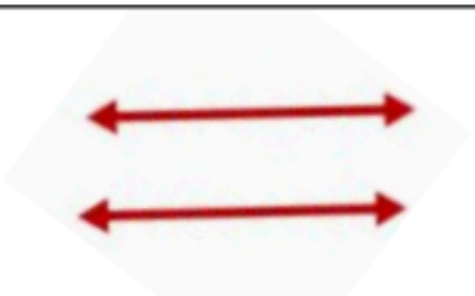
A

Point

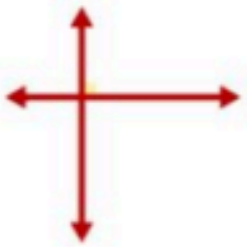
Line

Line Segment

Ray



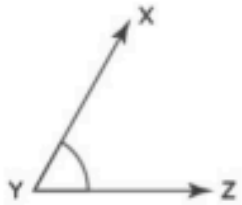
Parallel Lines



Perpendicular Lines

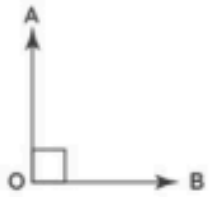
Intersecting Lines

An angle that measures **less than 90 degrees**.



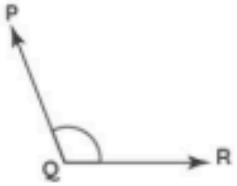
Acute Angle

An angle that measures **exactly 90 degrees**.



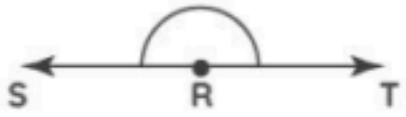
Right Angle

An angle that measures **more than 90 degrees**.



Obtuse Angle

An angle that measures **exactly 180 degrees**.



Straight Angle

Classifying Quadrilaterals

A resource for the "Shaping the Movement" Curriculum Unit by Katelyn Gadapee

Resource created by: Katelyn Gadapee

Classifying Quadrilaterals:

Anchor Chart

Resource created by: Katelyn Gadapee

Quadrilaterals

-All sides equal
-90 degree angles
-2 sets of parallel lines

Square

-all 90 degree angles
-2 sets of parallel lines

Rectangle

-exactly **one** set of parallel lines

Trapezoid

-All sides equal
-2 sets of parallel lines

Rhombus

-2 sets of parallel lines

Parallelogram

Resource created by: Katelyn Gadapee

Classifying Quadrilaterals:

Quadrilateral signs to tape on each bucket

Resource created by: Katelyn Gadapee

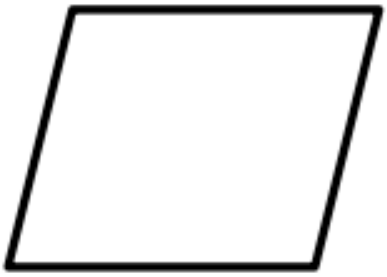
Square

Resource created by: Katelyn Gadapee

Rectangle

Resource created by: Katelyn Gadapee

Trapezoid



Rhombus

Parallelogram

Classifying Quadrilaterals:

Attribute Clues to display during the lesson activity.

Which quadrilateral has…

four equal sides

Which quadrilateral has…

two set of parallel lines

Which quadrilateral has…

only two sides of equal length

Which quadrilateral has…

at least one set of parallel lines

Which quadrilateral has…

ONLY one set of parallel sides

Which quadrilateral has…

four right angles

Which quadrilateral has…

at least one acute angle

Which quadrilateral has…

at least one obtuse angle

Which quadrilateral has…

a set of perpendicular lines

Which quadrilateral has…

at least one attribute in common with a square

Which quadrilateral has…

at least one attribute in common with a trapezoid

Classifying Triangles

A resource for the "Shaping the Movement" Curriculum Unit by Katelyn Gardepe

Classifying Triangles:

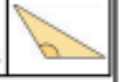
Anchor Chart

Classifying Triangles

By side lengths:

Equilateral Triangle	Isosceles Triangle	Scalene Triangle
A triangle with **all equal** length sides.	A triangle with **two equal** length sides.	A triangle with **no equal** length sides.
		

By angles:

Acute Triangle	Right Triangle	Obtuse Triangle
A triangle with **three acute** angles.	A triangle with **one right** angle.	A triangle with **one obtuse** angle.
		

Classifying Triangles:

Attribute Clues to display during the lesson activity.

These include slides that ask students to find the type of triangle (with hints), slides with just attributes of a triangle, and slides with just the names of the triangle (without hints).

Find the shape that is a(n)…

Isosceles Triangle

Find the shape that is a(n)…

Acute Triangle

Find the shape that is a(n)…

Right Triangle

Find the shape that is a(n)…

Equilateral Triangle

Find the shape that is a(n)…

Obtuse Triangle

Find the shape that is a(n)…

Scalene Triangle

Find a triangle that has…

A right angle

Find a triangle that has…

All equal sides

Find a triangle that has…

No equal sides

Find a triangle that has…

At least one acute angle

Find a triangle that has…

Two equal sides

Find a triangle that has…

One obtuse angle

Find a triangle that has…

Three acute angles

Find the shape that is a(n)…

Isosceles Triangle

Find the shape that is a(n)…

Acute Triangle

Find the shape that is a(n)…

Right Triangle

Find the shape that is a(n)…

Equilateral Triangle

Find the shape that is a(n)…

Obtuse Triangle

Find the shape that is a(n)…

Scalene Triangle

Appendix 3: List of Materials for Classroom Use

- Shaping the Movement Curriculum Resources
    - This Google Slideshow presentation will be your resource throughout this unit for anchor charts and teaching materials that should be presented throughout the included lessons.
- Resistance exercise bands (1 per student pair)
    - Resistance bands will be used throughout the lesson, *Building and Identifying 2D Shapes,* for students to create 2D shapes with their partners. These resistance bands can be ordered from Amazon using the link above or purchased from another source.
- Straw Connector Pieces
    - Straw connector pieces are used throughout the lesson, *Building and Identifying 3D Shapes*, for students to work with their groups to create various three dimensional figures. While building, classes will discuss key terms like face, edge, and vertex.
- Read Aloud Books
    - These books will be used in three of the five lessons within this unit. Most are available through YouTube read aloud or Amazon, for purchase.
        - Captain Invincible and the Space Shapes by Stuart J. Murphy
        - "If You Were a Quadrilateral" by Molly Baisdell
        - "The Greedy Triangle" by Marilyn Burns
- Index cards & a black marker
    - Index cards, or sheets of paper, and a black marker will be used to create the various different line examples for the lesson, *Identifying Points, Lines, and Angles.*
- 5-gallon buckets/laundry baskets
    - These buckets can be purchased at a local hardware store or on Amazon. Buckets can also be substituted with another item that could be used for students to throw bean bags into.This item will be used in the lesson, *Classifying Quadrilaterals*.
- Nylon bean bags
    - These bean bags will be used for a bean bag toss throughout the lesson, Classifying Quadrilaterals. If needed, they can be purchased using the link above.
- Painter's tape
    - Painter's tape will be used in the lesson, *Classifying Quadrilaterals*, to create a starting point for students to throw their bean bags from.
- Circle Mats
    - These circle mats should be used throughout the lesson, *Classifying Triangles.* The mats will have various types of triangles on them and students will choose the appropriate mat/triangle based on the attribute shown.

Appendix 4: Annotated Teacher Resources

- Shaping the Movement Curriculum Resources
    - All of the anchor charts and lesson resources needed for this unit can be found in the slideshow linked above. These resources can be displayed as a slideshow to students or printed, as appropriate.
- Captain Invincible and the Space Shapes by Stuart J. Murphy
    - This read aloud will be used during the lesson, Building and Identifying 3D Shapes, as students work to build three dimensional shapes with their groups.
- "If You Were a Quadrilateral" by Molly Baisdell
    - This read aloud will be used during the lesson, Classifying Quadrilaterals. Students will take notes throughout the read aloud and then use their notes to complete the lesson activity.
- "The Greedy Triangle" by Marilyn Burns
    - This read aloud will be used during the lesson, *Classifying Triangles*. Students will share their thoughts on where they see triangles in real-life with the class.

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