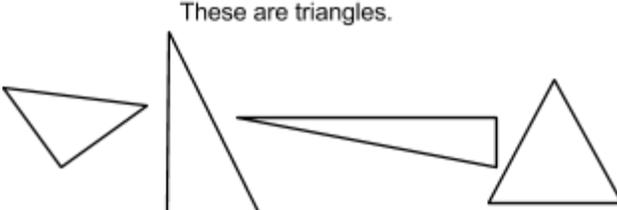


Common Core Mathematics Standards	Estándares estatales comunes de matemáticas
<u>Domain:</u> Geometry	<u>Dominio:</u> Geometría
<u>Cluster:</u> Reason with shapes and their attributes.	<u>Agrupación:</u> Razonan usando las figuras geométricas y sus atributos.
<p><u>Mathematics Standard:</u> 1.G.1 Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.</p>	<p><u>Estándar de matemáticas:</u> 1.G.1 Distinguen entre los atributos que definen las figuras geométricas (por ejemplo, los triángulos son cerrados con tres lados) y los atributos que no las definen (por ejemplo, color, orientación, o tamaño general); construyen y dibujan figuras geométricas que tienen atributos definidos.</p>
English Language Development Standards	Estándares para el desarrollo del idioma español
<p>Part I: 1.A.3 Offering opinions</p> <ul style="list-style-type: none"> <u>Em:</u> Offer opinions and ideas and conversation using a small set of learning phrases (e.g., <i>I think X.</i>), as well as open responses in order to gain and/or hold the floor <u>Ex:</u> Offer opinions and negotiate with others in conversations using an extended set of learned phrases (e.g., <i>I think/don't think X. I agree with X.</i>), as well as open responses in order to gain and/or hold the floor, elaborate on an idea, etc. <u>Tr:</u> Offer opinions and negotiate with others in conversations using an extended set of learned phrases (e.g., <i>I think/don't think X. I agree with X.</i>), and open responses in order to gain and/or hold the floor, elaborate on an idea, provide different opinions., etc. <p>Part II: 1.C.6 Connecting ideas</p> <ul style="list-style-type: none"> <u>Em:</u> Combine clauses in a few basic ways to make connections between and to join ideas (e.g., creating compound sentences using <i>and, but, so</i>) in shared language activities guided by the teacher and sometimes independently. <u>Ex:</u> Combine clauses in increasing variety of ways to make connections between and to join ideas, for example, to express cause/effect (e.g. <i>She jumped because the dog barked.</i>), and shared language activities guided by a teacher and with increasing independence. <u>Tr:</u> Combine clauses wide variety of ways (e.g., rearranging complete simple-to-form compound sentences) to make connections between and to join a ideas (<i>The boy was hungry. The boy ate a sandwich. → The boy was hungry so he ate a sandwich.</i>) in shared language activities guided by the teacher and independently. 	<p>Parte I: 1.A.3 Ofrecer opiniones</p> <ul style="list-style-type: none"> <u>Em:</u> Ofrecen opiniones e ideas en conversaciones usando un pequeño conjunto de frases aprendidas (ej.: <i>Pienso X</i>), así como respuestas abiertas para tomar y/o tener la palabra. <u>Am:</u> Ofrecen opiniones y llegan a un acuerdo con los demás en conversaciones usando un conjunto ampliado de frases aprendidas (ej.: <i>Pienso/No pienso X. Estoy de acuerdo con X.</i>), así como respuestas abiertas para tomar y/o tener la palabra, explicar una idea, etc. <u>Tr:</u> Ofrecen opiniones y llegan a un acuerdo con los demás en conversaciones usando un conjunto ampliado de frases aprendidas (ej.: <i>Pienso/No pienso X. Estoy de acuerdo con X.</i>) y respuestas abiertas para tomar y/o tener la palabra, explicar una idea, proveer opiniones distintas, etc. <p>Parte II: 1.C.6 Conectar ideas</p> <ul style="list-style-type: none"> <u>Em:</u> Combinan cláusulas en algunas maneras básicas para establecer relaciones entre ideas y unir las (ej.: creando oraciones compuestas mediante el uso de <i>y, pero, así que</i>) en actividades compartidas de lenguaje guiadas por el maestro y a veces de manera independiente <u>Am:</u> Combinan cláusulas en una variedad de maneras cada vez mayor para establecer relaciones entre ideas y unir las, por ej., para expresar causa/efecto (ej.: <i>Ella saltó porque el perro ladró.</i>) en actividades compartidas de lenguaje guiadas por el maestro y con mayor independencia cada vez. <u>Tr:</u> Combinan cláusulas en maneras amplias y variadas (ej.: reorganizando oraciones compuestas completas y fáciles de formar) para establecer relaciones entre ideas y unir las (ej.: <i>El niño tenía hambre. El niño comió un sándwich. → El niño tenía hambre, así que comió un sándwich.</i>) en actividades compartidas de lenguaje guiadas por el maestro y de manera independiente.

Mathematical Practice	Prácticas de las matemáticas
3. Construct viable arguments and critique the reasoning of others. 6. Attend to precision 7. Look for and make use of structure.	3. Construyen argumentos viables y critican el razonamiento de otros. 6. Ponen atención a la precisión 7. Reconocen y utilizan estructuras.
Learning Goals	Metas de aprendizaje
<input type="checkbox"/> Learn to construct viable arguments to classify rectangles and triangles by defining attributes.	<input type="checkbox"/> Aprender cómo construir argumentos viables para clasificar rectángulos y triángulos por sus atributos que los definen.
Success Criteria	Criteria para evaluar éxito
<input type="checkbox"/> Tell what makes a shape a triangle or a rectangle	<input type="checkbox"/> Contar lo que hace una figura un triángulo o rectángulo.
Key Vocabulary	Vocabulario Esencial
<p>Domain Specific: triangle(s), shape(s), side(s), rectangle(s), square(s), three [four, etc.], some, all, length, Academic: same, different, true, corners, more Multiple Meaning: straight, meet, closed, open Cognates: triángulo, figura, rectángulo</p>	<p>Matemáticas: triángulo(s), figura(s), lado(s), rectángulo(s), cuadrados, tres [cuatro, etc.], algunos, todos, longitud Español académico: igual, different, verdad, esquinas, más Palabras con sentidos múltiples: derecho, unen, cerrado, abierto Cognados: triangle, figure, rectangle</p>

Task (REVISED FOR ELs)	ORIGINAL
<p>Part 1: Triangle Examples and NonExamples</p> <p>These are triangles.</p>  <p>These are not triangles.</p>  <p>Present a few examples of triangles in a row, and then a few figures resembling triangles in a row. (See examples above.)</p> <p>Here are some shapes. These shapes are triangles.</p> <p>These others are not triangles.</p> <p>Ask student questions to encourage exploration:</p> <ol style="list-style-type: none"> 1. What is the same about these triangles? 2. How is each of these that are not a triangle different than the triangles? 3. What is true for some but not true for all of these triangles? <p>Encourage exploration and discussion with peers for students to make their own conclusions about the attributes of triangles, such as:</p> <ul style="list-style-type: none"> • All of the triangles, <u>have three sides.</u> • All of the triangles, <u>have three corners.</u> • The figures that are not triangles, <u>have four sides [or more than three sides].</u> • The figures that are not triangles, <u>have open corners [or sides that do not meet].</u> • The figures that are not triangles, <u>have sides(s) that are not straight.</u> 	<p>These are triangles</p>  <p>These are not triangles</p>  <p>Here are four triangles. What do all of these triangles have in common? What makes them different from the figures that are not triangles? What is true for some but not all of these triangles?</p>

- ❑ For students needing light support, consider repeating the questions and assign partners for sharing responses.
- ❑ For students needing moderate support, consider all of the above, as well as sentence frames shown above.
- ❑ For students needing substantial support, consider all of the above, as well as:
 - ❑ Manipulative representations of the figures and non-figures
 - ❑ Guidance for comprehension:
 - ❑ *Here are some shapes. These shapes are triangles. [Point to that row of figures.] These are **not** triangles. [Point to that row.]*
 - ❑ *Some shapes have corners. [Show samples of corners in the classroom.] Some shapes have sides. [Show samples of sides in the room object.]*
 - ❑ Simplified questions, through true/false, discreet answer or multiple choice format:
 - ❑ *Do all the triangles have three sides?*
 - ❑ *How many corners do triangles have?*
 - ❑ *Point to the figure that is **not** a triangle because it:
 - ❑ *does NOT have a straight side. ...has a "wavy" side.*
 - ❑ *had open corners**
 - ❑ *Which of the figures is **not** a triangle because it has **four** corners?....**more** than three sides?*
 - ❑ Options to discuss the question with their peers in their native language, then translating into English

If students state conclusions which are not true attributes, then ask students to imagine a triangle without that attribute. For example:

- ❑ if a student says, "All of the triangles are white on the inside," then ask, "Would it be possible for a triangle to have a different color on the inside?"
- ❑ if a student says, "All of the triangles point down," then ask, "Would it be possible for a triangle that does not point down?"

If students come up with a statement that is true about all of the triangles that they see but not true of all triangles in general, the teacher should ask students if they can imagine a triangle without that attribute. For example, if a student says, "All of the triangles are white on the inside," the teacher can ask, "Would it be possible for a triangle to have a different color on the inside?"

When the class comes up with an attribute that is truly shared by all triangles, then ask the class to complete the sentence frame:

All triangles __, but only some triangles __.

- ❑ For students needing substantial support, consider student manipulation of the figures (e.g., flipping them around, coloring them, creating new corners by folding, sorting by attributes on a T-chart with the word “all” & “some.”)

When the students have discussed, completed the sentences frames, or composed own original their sentences based, the class can compose the definition of a triangle together:

A triangle is a closed shape with three straight sides that meet at three corners.

- ❑ For students needing light support, consider partners to share what they had learned first.
- ❑ For students needing moderate support, consider all of the above, as well as sentence frames shown above.
- ❑ For students needing substantial support, consider all of the above, as well as:
 - ❑ Simplified questions, through true/false, discreet answer or multiple choice format:
 - ❑ *Is a triangle an open or closed shape?*
Are the sides straight or wavy?
 - ❑ *How many sides do triangles have?*
 - ❑ *What happens when the lines meet?*
 - ❑ Options to discuss the question with their peers in their native language, then translating into English
 - ❑ Opened ended concluding statements regarding non-examples for students to complete, such as:
 - ❑ *This is not a triangle because...it is open...it has more than three sides/corners...it has side(s) that are not straight.*

When the class comes up with an attribute that is truly shared by all triangles, then the class can complete the sentence frame: All triangles _____, but only some triangles _____.

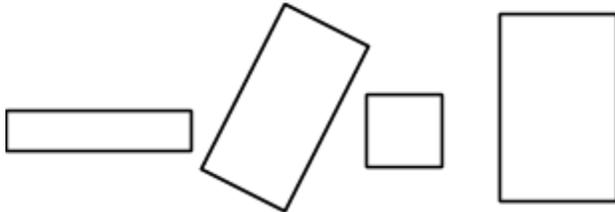
When the students have written (or composed) their sentences based on the sentence frames, the class can write the definition of a triangle together:

A triangle is a closed shape with three straight sides that meet at three corners.

Part 2: Rectangle Examples & NonExamples

Repeat the process for rectangles and then squares. Each time, the class should complete the appropriate sentence frame once they have settled on a universal attribute. Then help them compose a definition for the shape.

These are rectangles.

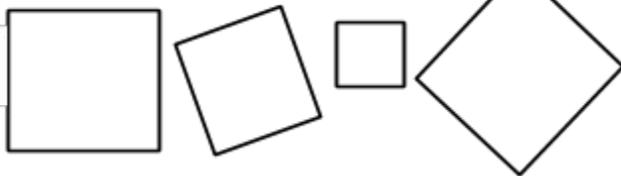


These are not rectangles.



A rectangle is a closed shape with four straight sides and four square corners.

These are squares.



These are not squares.

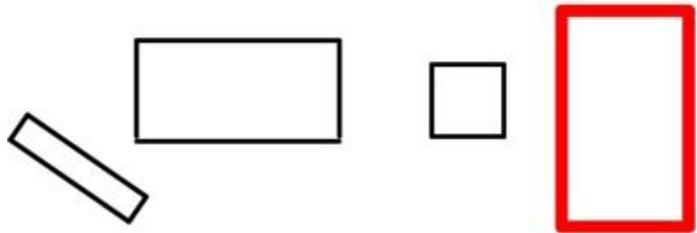


A square is a closed shape with four straight sides and four square corners. The four sides are the same length.

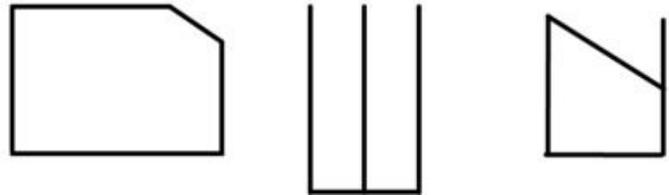
Part 3: Sort & Create Shapes Per Attributes

The teacher will repeat the process for rectangles and then squares. Each time, the class should complete the appropriate sentence frame once they have settled on a universal attribute. Then the teacher can help them compose a definition for the shape

These are rectangles

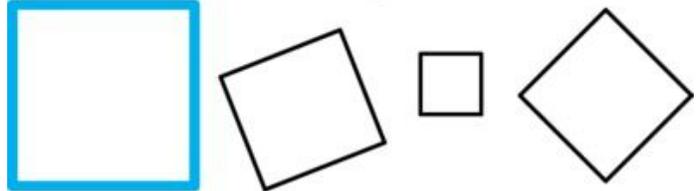


These are not rectangles

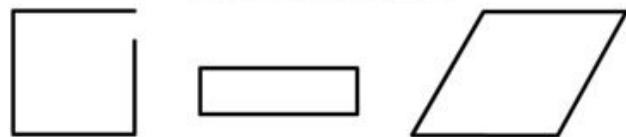


A rectangle is a closed shape with four straight sides and four square corners.

These are squares



These are not squares

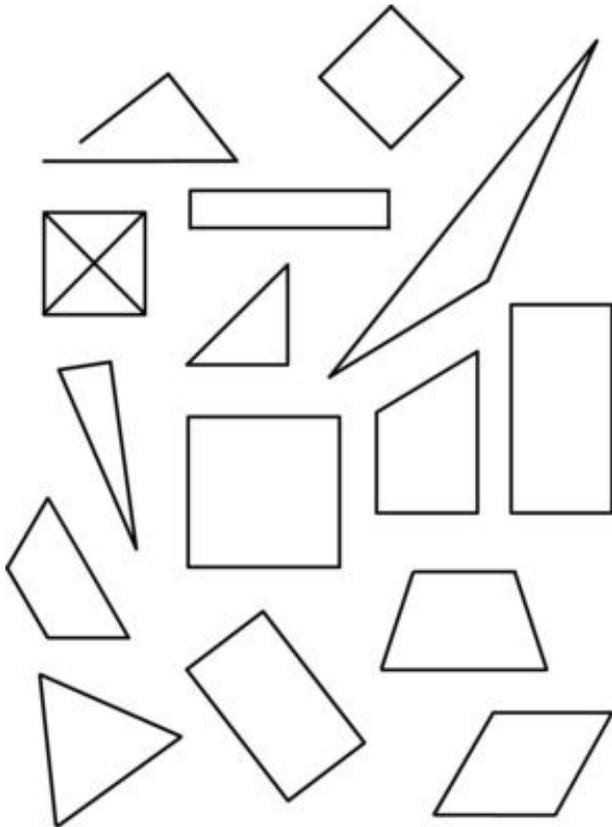


A square is a closed shape with four straight sides and four square corners. The four sides are the same length.

Provide all students a copy of the shapes and non-examples with figures below. Have students sort forms by their attributes (for example, the number of sides, the number of “corners”)

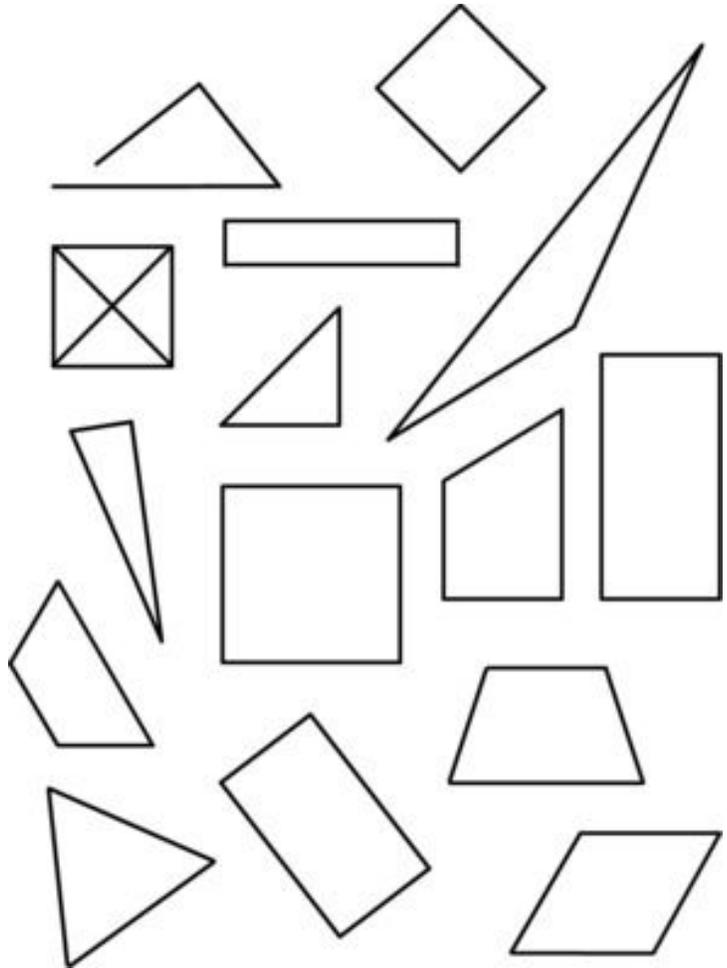
Once the class has working definitions in grade appropriate language for these shapes, to identify the triangles, rectangles, and squares below, have students...

- * Color all the triangles blue.
- * Color all the squares red.
- * Color all the rectangles green.



- Create three versions of one figure (either a triangle or a rectangle)

Once the class has working definitions in grade appropriate language for these shapes, students can identify the triangles, rectangles, and squares below.* Color all the triangles blue. * Color all the squares red. * Color all the rectangles green.



- Agrupar figuras geométricas por sus atributos (por ejemplo, el número de lados, el número de <<esquinas>>)
- Crear tres versiones de una figura geométrica (un triángulo o un rectángulo)

Commentary

The purpose of this task is for students to discuss and come to understand what constitute defining attributes for triangles, squares, and rectangles. Students start by looking for attributes shared by all the instances of a particular shape. Some, but not, all of these attributes will

be defining attributes. For example, all rectangles have opposite sides parallel, but this isn't a defining attribute--it is something you can show starting only with the defining attributes that a rectangle is a quadrilateral with four right angles. Thus, in the end the teacher will need to state for the students which of those attributes are defining attributes by helping the class write a definition for each shape. Here are some suggestions for modifying or extending this task based on student readiness/needs:

- *The teacher may desire to include an "are" in each sentence so that students only need to fill in single words: All triangles are _____, but only some triangles are _____. although this forces students to say (for example) "three-sided" rather than "have three sides".*
- *At the end of the lesson the teacher can have students assemble a list of things that are never defining attributes for shapes, such as color, size, and orientation, and things that are often defying attributes for shapes, such as number of sides, number of angles, or if the sides are straight or curved. This will help students to understand what defines shapes in general vs just defining one specific shape.*
- *A student may fill in "only some" with something mathematical. While not part of the standard, it may help to also distinguish between non-defining attributes which are not mathematical (such as "drawn in pencil") and ones that have mathematical content that is not relevant to that particular shape (such as "has equal sides").*

There is a printable PDF version of the example shapes attached, or the teacher can draw the figures on the board. There is also a printable PDF for the coloring activity.

The Standards for Mathematical Practice focus on the nature of the learning experiences by attending to the thinking processes and habits of mind that students need to develop in order to attain a deep and flexible understanding of mathematics. Certain tasks lend themselves to the demonstration of specific practices by students. The practices that are observable during exploration of a task depend on how instruction unfolds in the classroom. While it is possible that tasks may be connected to several practices, only one practice connection will be discussed in depth. Possible secondary practice connections may be discussed but

not in the same degree of detail.

This particular task is linked very intentionally to the first part of Mathematical Practice Standard 3, construct viable arguments. Through question posing, students are guided to distinguish and describe defining characteristics of triangles by examining figures that are triangles and figures that are not triangles. This same process is repeated for squares and rectangles. Thus, students are continually analyzing and describing. This task lays the foundation for the art of explanation leading to “critiquing the reasoning of others.” For instance, a first grader might offer the explanation, “It looks like all the triangles have 3 straight sides that are all connected.” Through carefully crafted questions, students will discover which characteristics really matter and complete the sentence frames provided as a class. These sentence frames can then be used to write definitions for each of the shapes. These types of activities further support MP.6, Attend to precision, which in this case pertains to precision in language.

Note: Informal language is acceptable, especially in the non-defining attributes. Students do not have to identify all the defining attributes listed below, but the key ones are all included in this solution for completeness.

- *All triangles have three straight sides, but only some triangles are small.*
- *All triangles have three corners, but only some triangles are green.*
- *All triangles are closed, but only some triangles are upside down.*
- *All rectangles have four straight sides, but only some rectangles are red.*
- *All rectangles have four square corners, but only some rectangles are tall and skinny.*
- *All rectangles are closed, but only some rectangles are short.*
- *All squares have four equal sides, but only some squares are tilted.*
- *All squares have four have four square corners, but only some squares are blue.*
- *All squares are closed, but only some squares are turned.*

