Standardized Assessment Tasks for
STAAR Alternate

Geometry

Copyright © September 2012, Texas Education Agency. All rights reserved. Reproduction of all or portions of this work is prohibited without express written permission from the Texas Education Agency.

Definitions/Examples for STAAR Reporting Category 1 (G.1)
Essence Statement A

The following definitions clarify terms used in the geometry assessment tasks to ensure that the content of the tasks is understood. When appropriate, examples and nonexamples have been provided for further clarification. These are just examples and do not represent all the appropriate ways to test the skills in the STAAR Alternate assessment tasks.

Level 3: page 3

area – the measure of how many square units a figure covers. The area of a rectangle can be found by multiplying the figure's length by its width.

- When the length of a rectangle is increased (and the width stays constant) the area of the rectangle increases as well.
- In this Level 3 task, the word "area" is used as a mathematics term and does NOT refer to where a figure is placed in a room.

Level 2: page 4

perimeter – the distance around a figure. To find the perimeter of a figure, add the numerical lengths of all its sides after each side is measured.

- In this Level 2 task, it is appropriate to use "Side 1 + Side 2 + Side 3 + Side 4 = Perimeter" to find perimeter.
- In this Level 2 task, tracing each side with a pencil or a finger is NOT identifying the perimeter.

STAAR Reporting Category 1 – Geometric Structure: The student will demonstrate an understanding of geometric structure.	
TEKS Knowledge & Skills Statement / STAAR-Tested Student Expectations	**Essence of TEKS Knowledge & Skills Statement / STAAR-Tested Student Expectations**
Geometry (1) Geometric structure. The student understands the structure of, and relationships within, an axiomatic system. The student is expected to (B) recognize the historical development of geometric systems and know mathematics is developed for a variety of purposes; Supporting Standard (C) compare and contrast the structures and implications of Euclidean and non-Euclidean geometries. Supporting Standard	**Essence Statement A:** Recognizes the foundations of geometric concepts.

<u>Level 3</u>

Prerequisite skill: select and use appropriate units, tools, or formulas to measure and to solve problems involving length (including perimeter), area, time, temperature, volume, and weight

The student will be presented a rectangle and a wide array of measurement tools. The student will select an appropriate tool for measuring length. The student will determine the area of the rectangle. The student will be presented with another rectangle where two of the sides are the same length as the first rectangle, but the length of the other two sides has increased. The student will determine the area of the second rectangle. The student will conclude how increasing the lengths of any of the sides of the rectangles affect the area.

Predetermined Criteria
1. The student will select an appropriate tool for measuring length.
2. The student will determine the area for both rectangles.
3. The student will conclude how increasing the lengths of any of the sides of the rectangles affect the area.

Process skill: select tools such as real objects, manipulatives, paper/pencil, and technology or techniques such as mental math, estimation, and number sense to solve problems

Level 2

Prerequisite skill: use linear measurement tools to estimate and measure lengths using standard units

The student will be presented a rectangular object in which the side lengths are whole numbers. The student will be presented a measurement tool for measuring length. The student will identify the formula used for finding perimeter. The student will assist in measuring the sides of the rectangular object. The student will identify the perimeter of the rectangular object.

Predetermined Criteria
1. The student will identify the formula used for finding perimeter.
2. The student will assist in measuring the sides of the rectangular object.
3. The student will identify the perimeter of the rectangular object.

Process skill: use tools such as real objects, manipulatives, and technology to solve problems

Level 1

Prerequisite skill: describe the relationship between the size of the unit and the number of units needed to measure the length of an object

The student will be presented a yardstick. The student will explore the length of the yardstick. The student will be presented three 12-inch rulers, each consisting of a unique physical characteristic. The student will participate in placing the rulers end-to-end next to the yardstick. The student will experience the length of the three combined rulers in relation to the length of the yardstick.

Predetermined Criteria
1. The student will explore the length of the yardstick.
2. The student will participate in placing the rulers end-to-end next to the yardstick.
3. The student will experience the length of the three combined rulers in relation to the length of the yardstick.

Definitions/Examples for STAAR Reporting Category 2 (G.4)
Essence Statement B

The following definitions clarify terms used in the geometry assessment tasks to ensure that the content of the tasks is understood. When appropriate, examples and nonexamples have been provided for further clarification. These are just examples and do not represent all the appropriate ways to test the skills in the STAAR Alternate assessment tasks.

Level 2: page 7

base – a flat surface that makes up what is considered to be the bottom of a three-dimensional figure.

- In this Level 2 task, an appropriate square-based container could be a plastic food container, and appropriate right triangle-based objects could be two halves of a sandwich cut diagonally.
- Choices that a teacher might provide for this task are sandwich slices that are not congruent to the base of the container (some that are in the shape of right triangles and some that are not) and diagonally-cut sandwich halves with right angles that are congruent to the base of the container (correct answer).
- Examples of other appropriate objects for this task: inset puzzle with right-triangle pieces and a square-based inset, napkins folded into right triangles with a square-based box.

Level 1: page 7

line of symmetry – the line at which a figure can be folded so that its two halves match exactly.

- For the Level 1 task, see the example below:

STAAR Reporting Category 2 – Geometric Patterns and Representations: The student will demonstrate an understanding of geometric patterns and representations.	
TEKS Knowledge & Skills Statement / STAAR-Tested Student Expectation	**Essence of TEKS Knowledge & Skills Statement / STAAR-Tested Student Expectation**
Geometry (4) Geometric structure. The student uses a variety of representations to describe geometric relationships and solve problems. The student is expected to (A) select an appropriate representation ([concrete,] pictorial, graphical, verbal, or symbolic) in order to solve problems. Supporting Standard	**Essence Statement B:** Uses different representations for geometric relationships and solves problems.

<u>Level 3</u>

Prerequisite skill: use angle measurements to classify angles as acute, obtuse, or right

The student will be presented a collating task. The student will be presented a collection of papers in disarray. The collection will include papers that are different sizes and shapes. The student will determine which papers in the collection have at least one right-angled corner. The student will organize the papers so that one right-angled corner per sheet is aligned. After the papers are organized, the student will determine where to place the papers along the line of symmetry in an open folder.

Predetermined Criteria
1. The student will determine which papers in the collection have at least one right-angled corner.
2. The student will organize the papers so that one right-angled corner per sheet is aligned.
3. The student will determine where to place the papers along the line of symmetry in an open folder.

Process skill: select tools such as real objects, manipulatives, paper/pencil, and technology or techniques such as mental math, estimation, and number sense to solve problems

Transition

Level 2

Prerequisite skill: compare two-dimensional figures, three-dimensional figures, or both by their attributes using formal geometry vocabulary

The student will be presented an object with a base that is a right triangle to place in a storage container with a square base. The student will match the right angle of the object's base to one of the right angles of the container's base. The object will be placed in the container. The student will be presented other objects of varying sizes with triangular bases. Some of the objects will have bases that are right triangles and others will not. The student will choose an object that has a base that is congruent to the base of the object already placed in the container. The student will arrange the object to fit in the container.

Predetermined Criteria

1. The student will match the right angle of the object's base to one of the right angles of the container's base.
2. The student will choose an object that has a base that is congruent to the base of the object already placed in the container.
3. The student will arrange the object to fit in the container.

Process skill: use tools such as real objects, manipulatives, and technology to solve problems

Level 1

Prerequisite skill: describe and identify two dimensional geometric figures, including circles, triangles, rectangles, and squares (a special type of rectangle)

The student will be presented square-shaped napkins. The student will explore the four right-angle corners of the napkins. The student will participate in folding the napkins diagonally along the line of symmetry. The student will respond to the triangular-shaped napkins.

Predetermined Criteria

1. The student will explore the four right-angle corners of the napkins.
2. The student will participate in folding the napkins diagonally along the line of symmetry.
3. The student will respond to the triangular-shaped napkins.

Transition

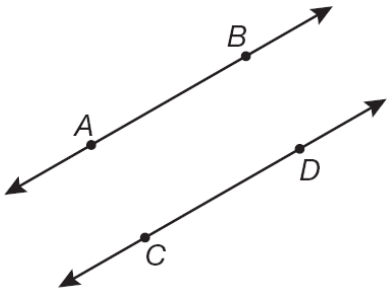
Definitions/Examples for STAAR Reporting Category 3 (G.6)
Essence Statement C

The following definitions clarify terms used in the geometry assessment tasks to ensure that the content of the tasks is understood. When appropriate, examples and nonexamples have been provided for further clarification. These are just examples and do not represent all the appropriate ways to test the skills in the STAAR Alternate assessment tasks.

Level 3 and Level 2: pages 9 and 10

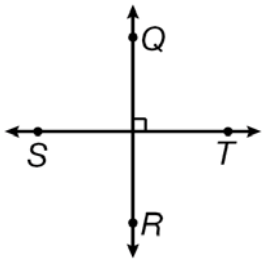
parallel lines – lines that are the same distance apart at all points.

- In the example below, Line AB and line CD are parallel. These lines will never cross, or intersect.



perpendicular lines – special intersecting lines that form right angles where they intersect.

- Line QR and line ST below are perpendicular.



STAAR Reporting Category 3 – Dimensionality and the Geometry of Location: The student will demonstrate an understanding of dimensionality and the geometry of location.	
TEKS Knowledge & Skills Statement / STAAR-Tested Student Expectations	**Essence of TEKS Knowledge & Skills Statement / STAAR-Tested Student Expectations**
Geometry (6) Dimensionality and the geometry of location. The student analyzes the relationship between three-dimensional geometric figures and related two-dimensional representations and uses these representations to solve problems. The student is expected to (A) describe and draw the intersection of a given plane with various three-dimensional geometric figures; Supporting Standard (B) use nets to represent and construct three-dimensional geometric figures; Supporting Standard (C) use orthographic and isometric views of three-dimensional geometric figures to represent and construct three-dimensional geometric figures and solve problems. Supporting Standard	**Essence Statement C:** Uses geometric representations to solve problems.

<u>Level 3</u>

Prerequisite skill: identify essential attributes including parallel, perpendicular, and congruent parts of two- and three-dimensional geometric figures

The student will be presented a real-life problem in which he or she needs to locate the streets surrounding a designated area. The student will be presented a city map that has parallel and perpendicular streets. The student will locate the designated area on the map. The student will locate two parallel streets that are adjacent to the designated area. The student will locate two other parallel streets that are perpendicular to the original two streets.

Predetermined Criteria
1. The student will locate the designated area on the map.
2. The student will locate two parallel streets that are adjacent to the designated area.
3. The student will locate two other parallel streets that are perpendicular to the original two streets.

Process skill: relate informal language to mathematical language and symbols

Transition

Geometry; Reporting Category 3 Geo (6); Essence Statement: C

Level 2

Prerequisite skill: identify and describe parallel and intersecting (including perpendicular) lines using concrete objects and pictorial models

The student will be presented a real-life problem in which he or she needs to find perpendicular and parallel streets on a map. The student will construct a model of parallel and perpendicular lines using manipulatives. The student will be presented a portion of a city map with one street clearly emphasized. Using the models, the student will identify a street that is parallel to the emphasized street. Using the models, the student will identify a street that is perpendicular to the emphasized street forming an intersection.

Predetermined Criteria
1. The student will construct a model of parallel and perpendicular lines using manipulatives.
2. The student will identify a street that is parallel to the emphasized street.
3. The student will identify a street that is perpendicular to the emphasized street forming an intersection.

Process skill: relate informal language to mathematical language and symbols

Transition

Level 1

Prerequisite skill: describe and compare the attributes of real-life objects such as balls, boxes, cans, and cones or models of three-dimensional geometric figures

The student will participate in an investigation to recognize an attribute that enhances movement. The student will be presented spheres and cubes. The student will explore the figures. The student will be presented an inclined plane. Each object will be placed individually on the inclined plane. The student will respond to the figures that roll down the inclined plane. The student will participate in grouping the figures by attributes.

Predetermined Criteria
1. The student will explore the figures.
2. The student will respond to the figures that roll down the inclined plane.
3. The student will participate in grouping the figures by attributes.

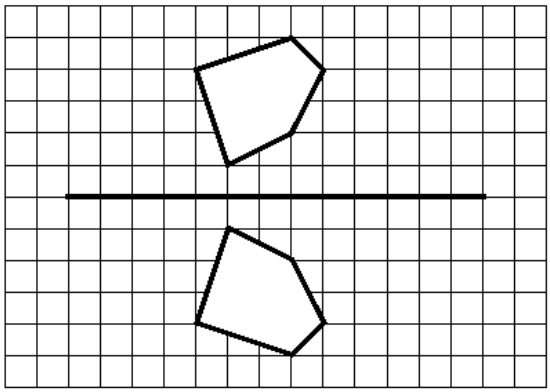
Definitions/Examples for STAAR Reporting Category 4 (G.10)
Essence Statement D

The following definitions clarify terms used in the geometry assessment tasks to ensure that the content of the tasks is understood. When appropriate, examples and nonexamples have been provided for further clarification. These are just examples and do not represent all the appropriate ways to test the skills in the STAAR Alternate assessment tasks.

Level 3: page 12

reflection – a mirror image of a figure across a line.

- See the example of a reflection below:



Level 2: page 13

congruent – same size, same shape.

STAAR Reporting Category 4 – Congruence and the Geometry of Size: The student will demonstrate an understanding of congruence and the geometry of size.	
TEKS Knowledge & Skills Statement / STAAR-Tested Student Expectations	**Essence of TEKS Knowledge & Skills Statement / STAAR-Tested Student Expectations**
Geometry (10) Congruence and the geometry of size. The student applies the concept of congruence to justify properties of figures and solve problems. The student is expected to (A) use congruence transformations to make conjectures and justify properties of geometric figures including figures represented on a coordinate plane; Supporting Standard (B) justify and apply triangle congruence relationships. Readiness Standard	**Essence Statement D:** Uses the concept of congruence in geometric figures.

Level 3

Prerequisite skill: identify the transformation that generates one figure from the other when given two congruent figures on a Quadrant I coordinate grid

The student will be presented a wide array of two-dimensional geometric figures. Some of the figures have the same size and shape, but others do not. The student will be directed to demonstrate a reflection. The student will select two geometric figures that are reflections of each other. The student will determine how to orient the two geometric figures so that they are reflections of each other. The teacher will change the orientation of one of the geometric figures so it no longer shows a reflection. The student will generate a reflection of the teacher-placed geometric figure using the other geometric figure.

Predetermined Criteria
1. The student will select two geometric figures that are reflections of each other.
2. The student will determine how to orient the two geometric figures so that they are reflections of each other.
3. The student will generate a reflection of the teacher-placed geometric figure using the other geometric figure.

Process skill: use tools such as real objects, manipulatives, and technology to solve problems

Level 2

Prerequisite skill: identify congruent two-dimensional figures

The student will identify the definition of the word “congruent.” The student will be presented different lids that vary in both size and shape. The student will group the lids according to shape. From an assorted group of containers whose openings match the size and shape of the lids, the student will be presented one container at a time. The student will identify which group of lids is the appropriate shape for the opening of each container. From the group, the student will identify which lid is the right size for the opening of each container.

Predetermined Criteria
1. The student will identify the definition of the word “congruent.”
2. The student will identify which group of lids is the appropriate shape for the opening of each container.
3. The student will identify which lid is the right size for the opening of each container.

Process skill: identify mathematics in everyday situations

Transition

Level 1

Prerequisite skill: place an object in a specified position

The student will be presented a large envelope that can fit in a mail slot only one way. The teacher will position the envelope so it will not fit in the mail slot. The student will participate in attempting to place the envelope into the mail slot. The student will participate in rotating the envelope so that it will fit in the mail slot. The student will respond as the envelope is successfully placed in the mail slot.

Predetermined Criteria
1. The student will participate in attempting to place the envelope into the mail slot.
2. The student will participate in rotating the envelope so that it will fit in the mail slot.
3. The student will respond as the envelope is successfully placed in the mail slot.

Transition