



Work Place Instructions 6A Tangram Polygons

Each pair of players needs:

- one 6A Tangram Polygons Record Sheet to share
- 2 sets of tangrams
- 2 rulers

1 Players decide how many tangram pieces they want to use to build each shape. They write that number on the blank provided on the Tangram Polygons Record Sheet. Players can choose from 3, 4, 5, or 7 pieces.









Players have all 7 tangram pieces available to use, but will use only the number chosen to build each polygon. For example, if a player chooses to build with 4 pieces, any 4 pieces from the entire set may be used for each polygon. Players do not have to use the same 4 pieces every time.

2 Players work together to build each of the polygons shown on the record sheet. Many have more than one solution.

Note One shape cannot be made with 5 pieces, and one shape cannot be made with 7 pieces.

3 Players draw a sketch or sketches on the record sheet showing how they built each polygon.

- Players may use a ruler if they need help drawing straight lines.
- Players label the tangram pieces in their sketches with tangram piece letters, so other people can see how they solved the puzzles.
- Players show one or more ways they can find to build a shape.

NAME <u>Olivia</u>		DATE _____	
 6A Tangram Polygons Record Sheet We used exactly <u>3</u> pieces to build each shape. (Choose from 3, 4, 5, or 7.)			
 square	 rectangle	 triangle	
 <small>D C E</small>			
 trapezoid	 trapezoid	 parallelogram	

4 Players can come back to this Work Place on other days, each time using a different number of pieces and a new record sheet.

Game Variations

A Players may choose to work alone at this Work Place.

B After four visits to this Work Place, students may be interested in seeing what other polygons can be formed with 3, 4, 5, or 7 pieces. A wide variety of irregular polygons are possible. Students could create their own puzzle/record sheets for classmates to solve.



Work Place Guide 6A Tangram Polygons

Summary

Students choose the number of tangram pieces they want to use and then build the six polygons shown on the record sheet using just that number of pieces. As they build each polygon, they record their solution(s) on the record sheet by sketching and labeling the pieces they used. In subsequent sessions they can solve the same puzzles using a different number of tangram pieces.

Skills & Concepts

- Identify rhombuses, rectangles, and squares as quadrilaterals (3.G.1)
- Construct quadrilaterals that are not rhombuses, rectangles, or squares (3.G.1)
- Identify shared attributes of shapes in different categories (3.G.1)

Materials

Copies	Kit Materials	Classroom Materials
TM T10 Work Place Guide 6A Tangram Polygons TM T11 6A Work Place Tangram Polygons Record Sheet TM T12 6A Work Place Tangram Polygons Answer Key SB 193 Work Place Instructions 6A Tangram Polygons	<ul style="list-style-type: none"> • 6 sets of tangrams 	<ul style="list-style-type: none"> • 6 rulers

Assessment & Differentiation

Here are some quick observational assessments you can make as students begin to play this game on their own. Use the results to differentiate as needed.

If you see that...	Differentiate	Example
A student is getting frustrated.	SUPPORT If 4, 5 or 7 pieces are being used, suggest changing to 3 pieces. Encourage skipping ahead and coming back later to the harder shapes. Remind students that flipping or rotating pieces can open up new possibilities. Refer to the answer key and give small hints.	"I see you struggling a little bit. Here's a hint for you: The right trapezoid for 5 pieces has 4 different solutions, and each solution uses triangle B. See if that helps you get started."
A student has visual acuity challenges.	SUPPORT Pair the student with another student or a parent helper. When forming the triangles, it may be easier to build them as right triangles and then turn them to match the picture on the record sheet.	
Students using 3, 4, or 5 pieces have quickly found one solution for each shape and consider themselves finished.	CHALLENGE Encourage students to find at least one more solution to each shape. Keep in mind that the triangle cannot be made with 5 pieces. Encourage students to try a game variation.	
Students have solved the 5 polygons possible with 7 pieces.	CHALLENGE The right-angle trapezoid cannot be made with 7 pieces. Ironically, it is the only polygon in this Work Place that can be made with 6 pieces. You might challenge students to make the right trapezoid with 6 pieces. Encourage students to try a game variation.	

English-Language Learners Use the following adaptations to support the ELL students in your classroom.

- Model this activity with ELL students.
- Review formal geometric language such as shape names and transformations before beginning play.
- Pair students with supportive peers, or same-language peers who can help to provide clues in their native language.






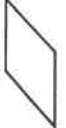
NAME _____

DATE _____



6A Tangram Polygons Record Sheet

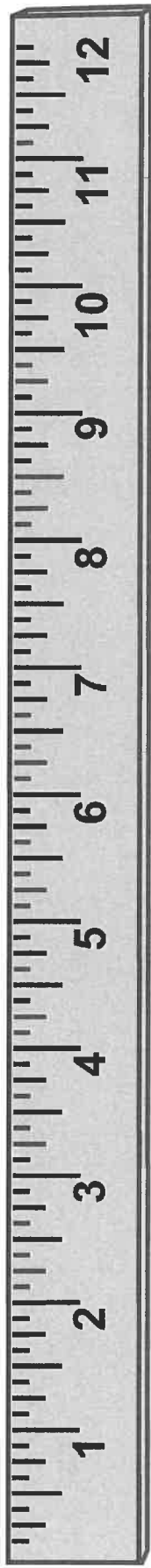
We used exactly _____ pieces to build each shape. (Choose from 3, 4, 5, or 7.)

 <p>square</p>	 <p>rectangle</p>	 <p>triangle</p>
 <p>trapezoid</p>	 <p>trapezoid</p>	 <p>parallelogram</p>

I need _____ pieces to build my shape.
number

I used the _____ tangram pieces to make a
number

_____.



I can create a _____ using _____ pieces.
shape number

