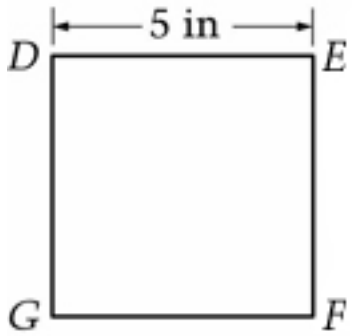
NAEP Released Items Aligned to the Iowa Core

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.

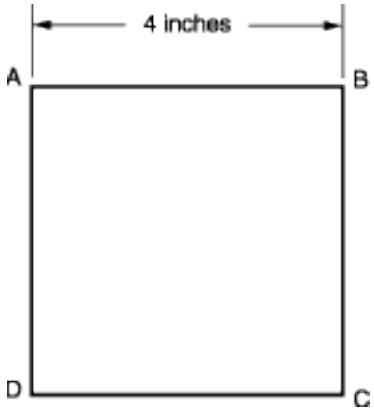
Below is a square. If side *DE* is five inches long, how long, in inches, is side *EF*?



2008-9-21-20

Source: National Assessment of Educational Progress, 2008, Age 9 Mathematics Assessment.

Below is a square. If side AB is four inches long, how long is side BC?

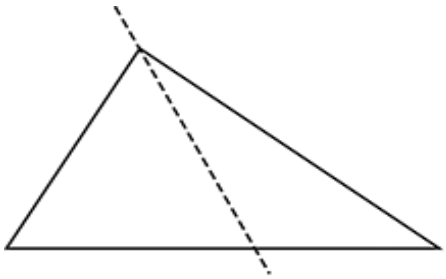


2004-9-23-14

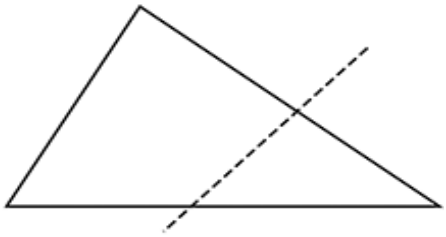
Source: National Assessment of Educational Progress, 2004, Age 9 Mathematics Assessment.

1.G.2 Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.

When a triangle is divided by a straight line, these results are possible.

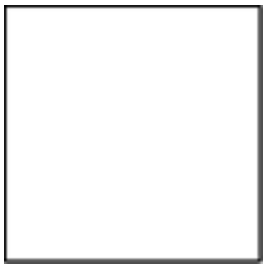


Two triangles

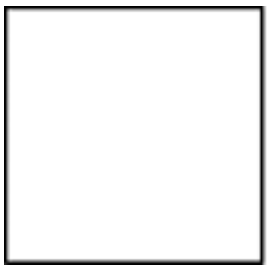


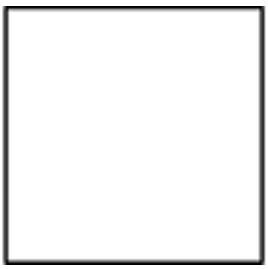
A triangle and a quadrilateral

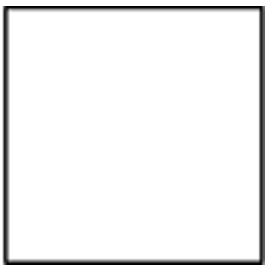
Draw one straight line to divide the square below into two rectangles.



Draw one straight line to divide each square below into two shapes that are not rectangles. The results should be different for each square.





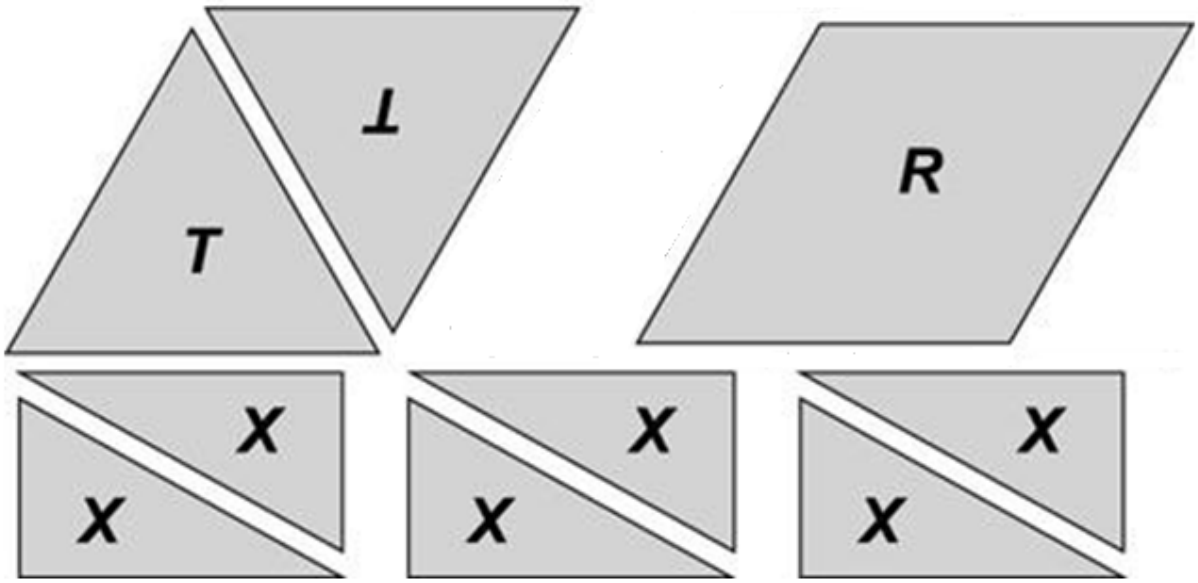


You do not need to give the names of your shapes.

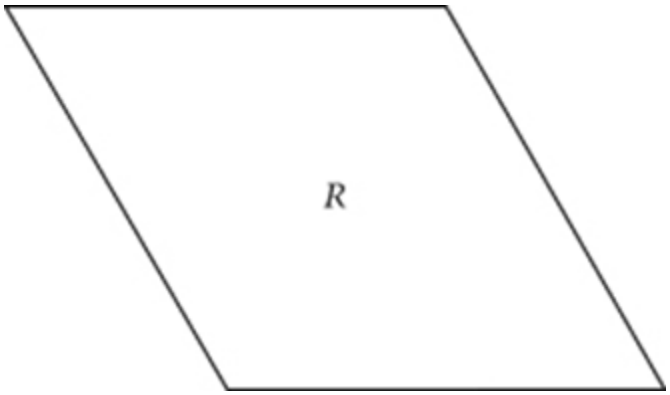
2011-4-12-16

Source: National Assessment of Educational Progress, 2011, Grade 4 Mathematics Assessment.

This question requires these additional materials:



The following question refers to pieces R, T and X.



You can cover the piece labeled *R* with two of the pieces labeled *T*.

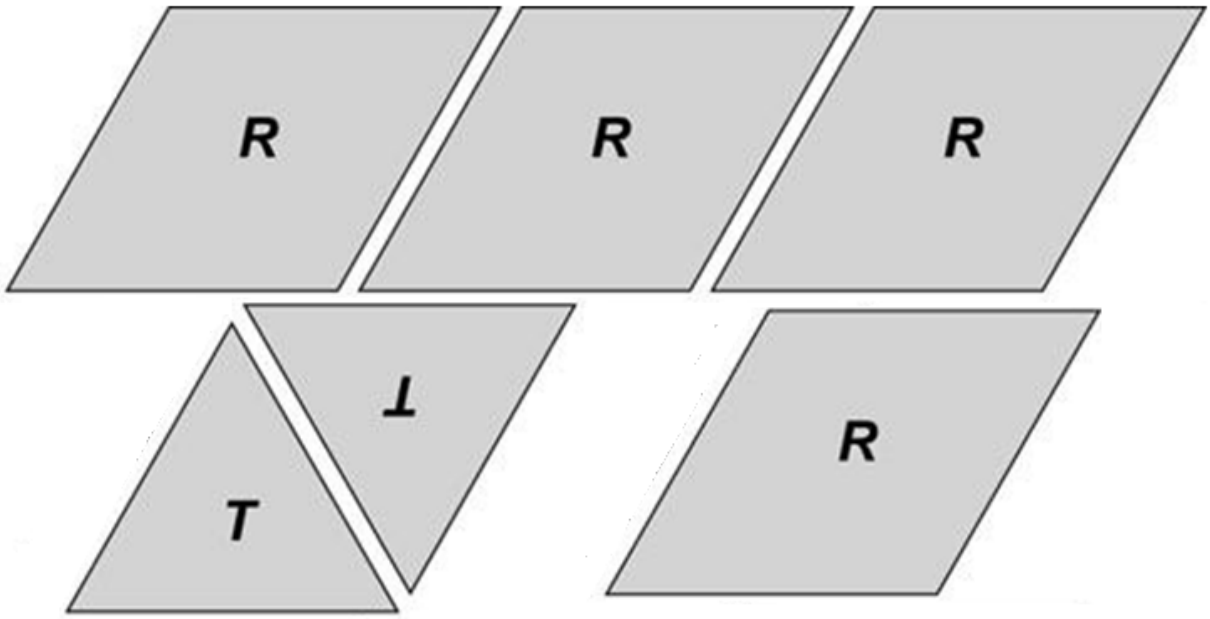
How many of the pieces labeled *X* are needed to cover the piece labeled *R* ?

A. Two
B. Three
C. Four
D. Six

2011-4-5-1

Source: National Assessment of Educational Progress, 2011, Grade 4 Mathematics Assessment.

This question requires these additional materials:

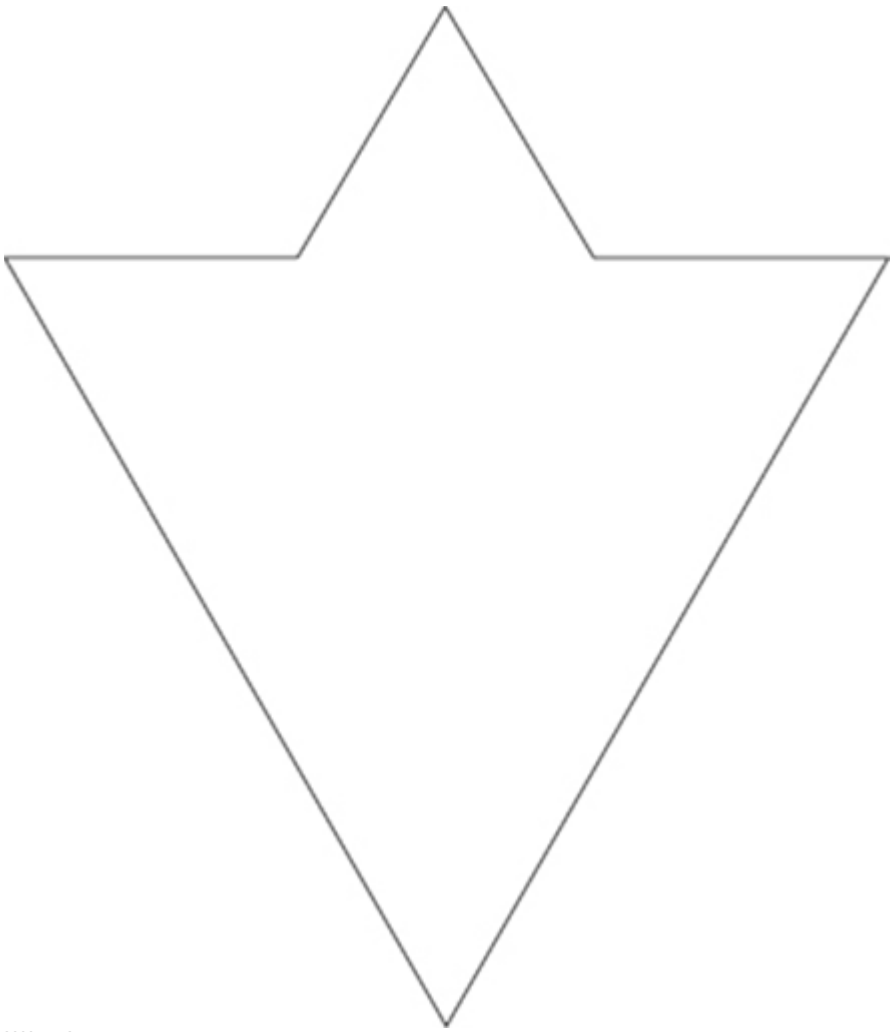


You will need four pieces labeled *R* and two pieces labeled *T* to answer this question.

Use these pieces to cover the figure below.

Draw the lines to show where the pieces meet.

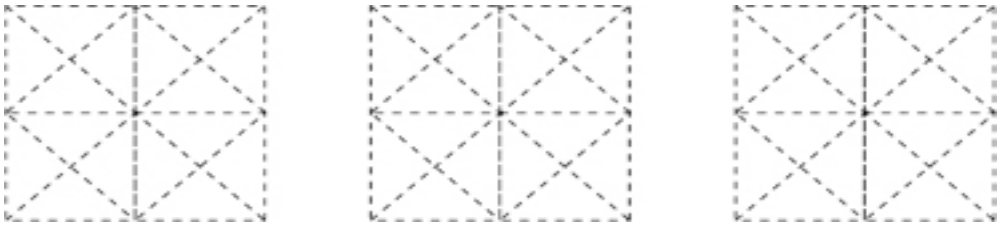
Label the pieces on the figure.



2009-4-5-3
2009-8-5-1

Source: National Assessment of Educational Progress, 2009, Grade 4 and Grade 8 Mathematics Assessments.

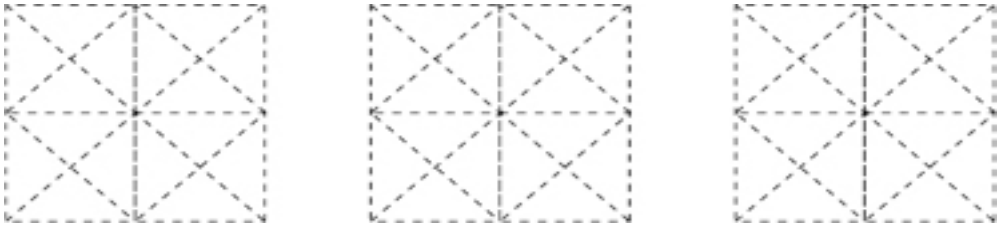
In each figure below, outline a square. The squares must not be the same size.



2007-4-9-13

Source: National Assessment of Educational Progress, 2007, Grade 4 and Grade 8 Mathematics Assessments.

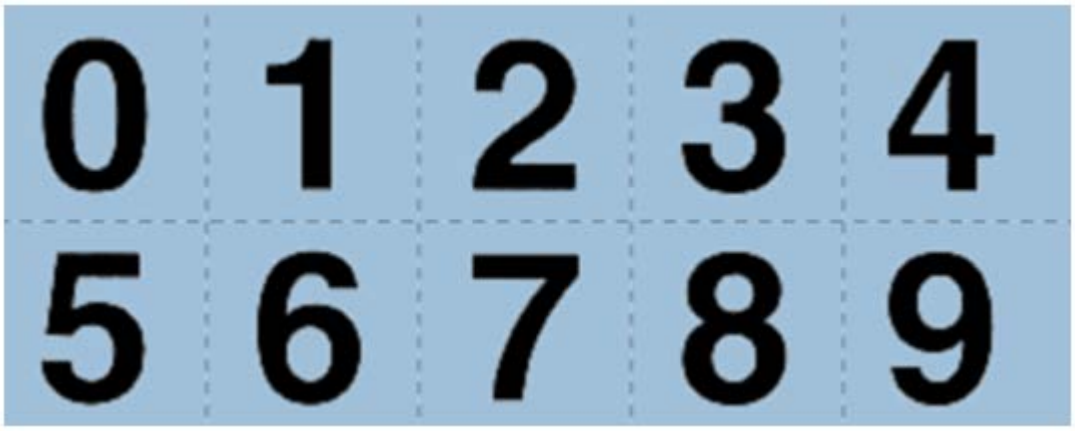
In each figure below, outline a triangle. The triangles must not be the same size.



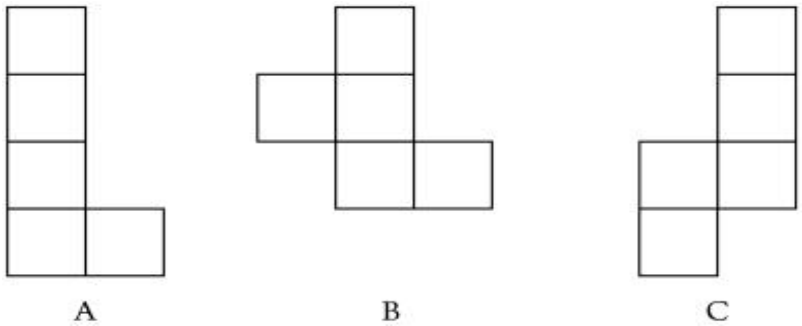
2007-4-9-14

Source: National Assessment of Educational Progress, 2007, Grade 4 and Grade 8 Mathematics Assessments.

This question refers to additional materials:



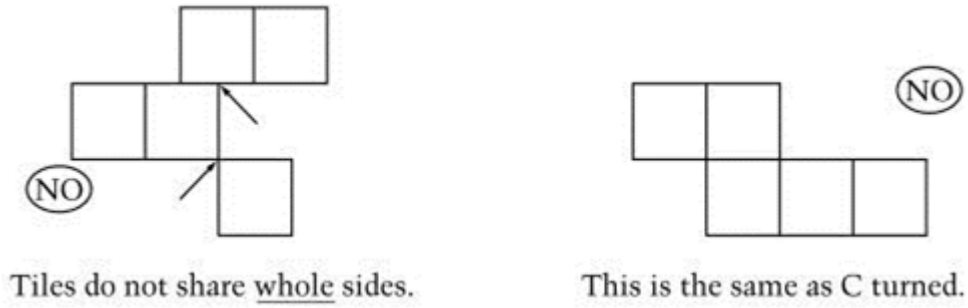
Turn the tiles facedown so that the blank side is showing.



It is possible to arrange 5 tiles so that at least one side of each tile completely shares one side of another tile. Here are 3 different ways to do this.

Two figures are not considered different if one figure can be turned or flipped to match the other.

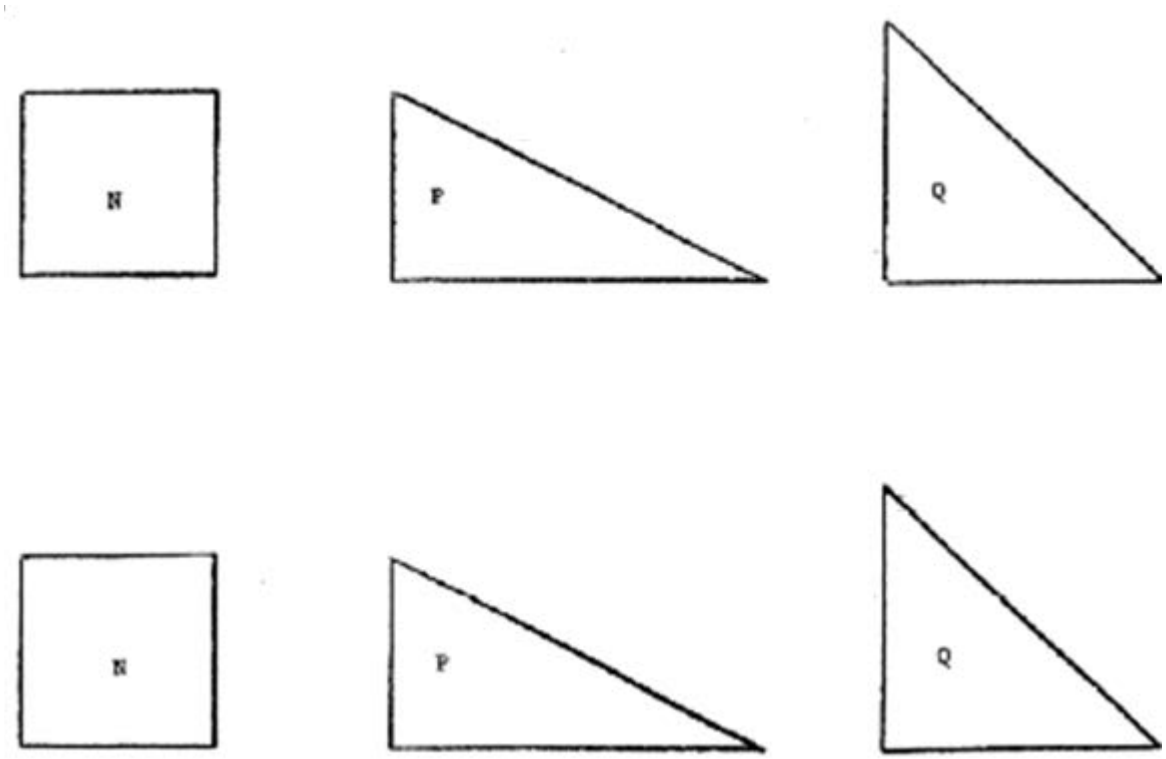
The figures below are <u>not</u> examples of proper arrangements or new arrangements.



Using 5 of your tiles, show 3 <u>other</u> different ways to arrange the tiles. Trace the tiles to show each figure. **Show the lines separating the individual squares.**

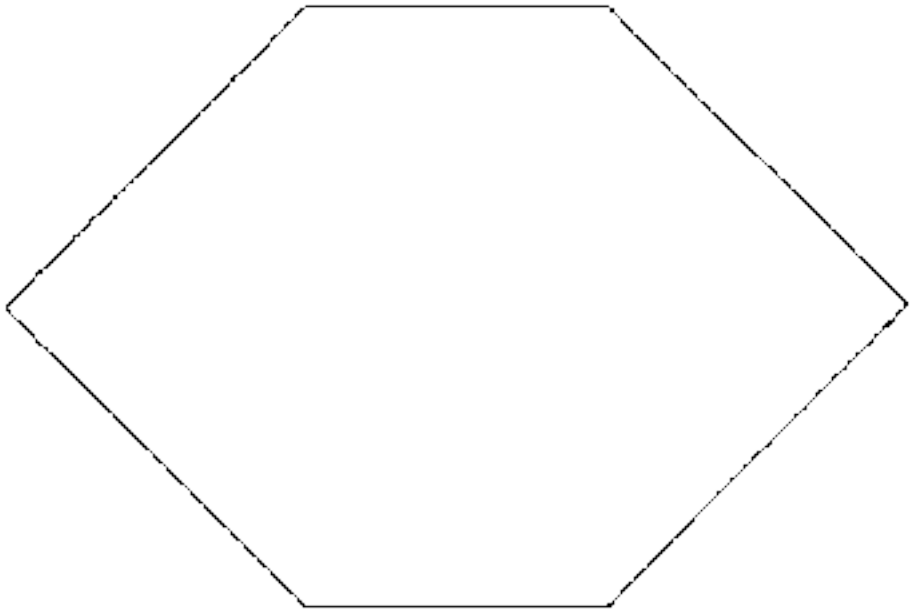
2005-4-4-14

Source: National Assessment of Educational Progress, 2005, Grade 4 Mathematics Assessment.



For this question you will need some of the pieces labeled *N, P,* and *Q*.

Use 4 of the 6 pieces labeled *N, P,* and *Q* to make the shape shown below. Draw the lines to show where the pieces meet and label the pieces.



1996-4-10-2
1996-8-10-4

Source: National Assessment of Educational Progress, 1996, Grade 4 and Grade 8 Mathematics Assessments.

Which of the following figures has two circular bases?

A. A pyramid
B. A sphere
C. A cube
D. A cylinder
E. A cone

1990-8-9-5

Source: National Assessment of Educational Progress, 1990, Grade 8 Mathematics Assessment.

1.G.3 Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.