

PRE TEST

Designing Patterns: Exploring Shapes and Area (Rhombus Module)

Grade Level 3-5

Math in a Cultural Context*

UNIVERSITY OF ALASKA FAIRBANKS

Student Name:
Grade:
Teacher:
School:
Location of School:
Date:

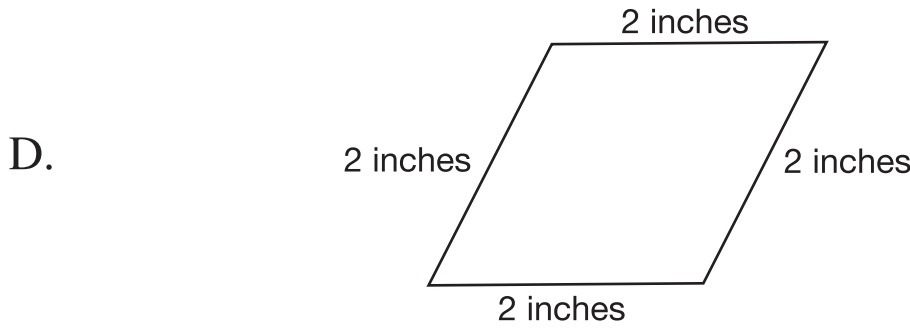
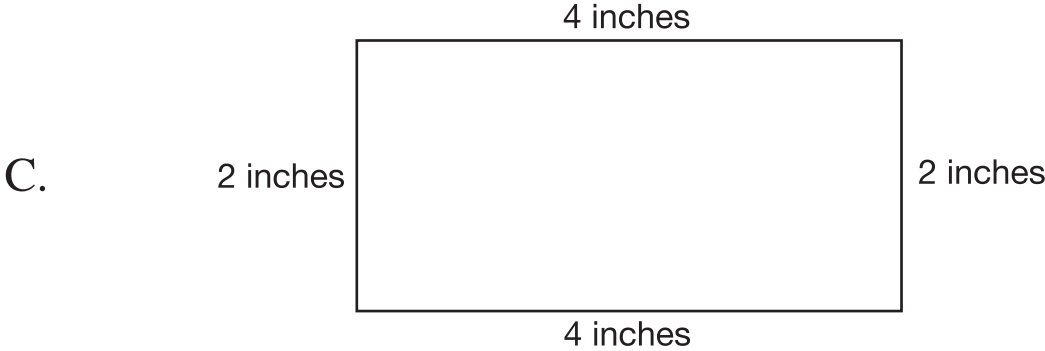
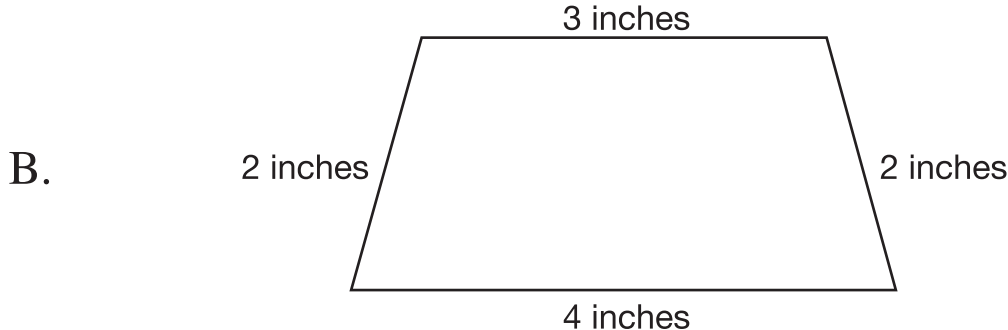
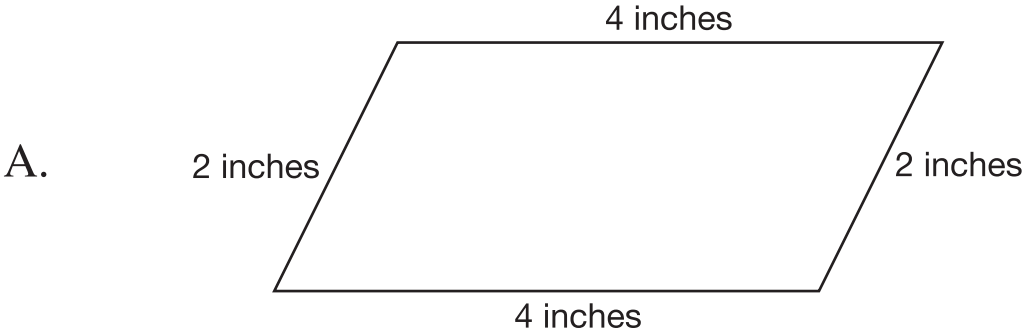
*This project has been funded by the U.S. Department of Education, *Returning the Gift: Systemic Implementation of an Effective Culturally Based Math Curriculum and Professional Development Program*, Jerry Lipka, P.I.

Total Score:

PLEASE NOTE:

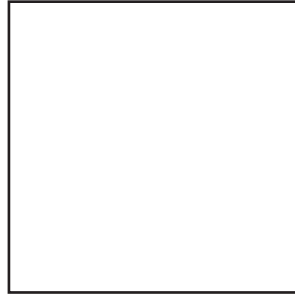
STUDENTS WILL NEED TO CUT OUT THE SHAPES ON THE LAST PAGE TO ANSWER QUESTION # 3.

1. Draw a circle around the quadrilateral which is a rhombus.

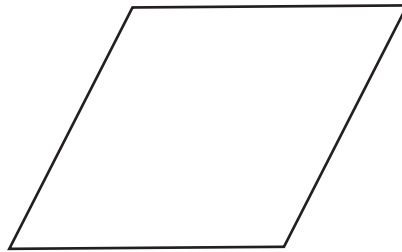


2. Find the shapes below that have EXACTLY two lines of symmetry. Draw in those two lines of symmetry.

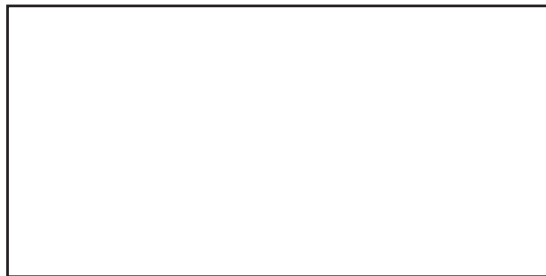
A.



B.



C.



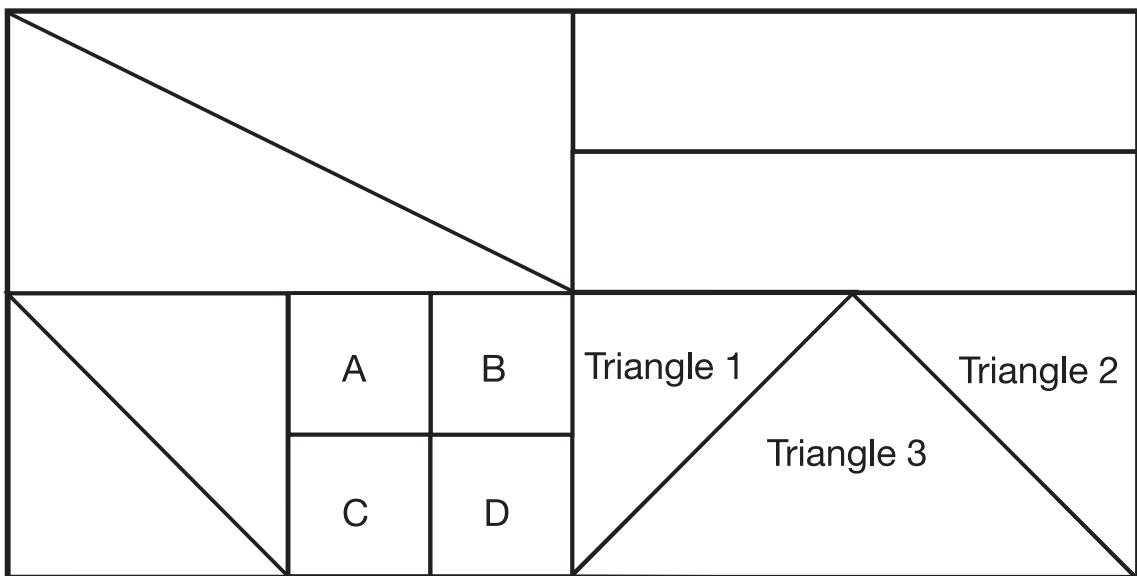
3. Cut out shapes 1, 2, and 3 from the last page of the test.
Fill out the table.

Mark “Y” if it is true. Mark an “N” if it is false.

	All sides are equal	All angles are 90°	Diagonals are equal
Shape 1			
Shape 2			
Shape 3			

4. Use the drawing below to answer the questions.

a. The small squares (marked A, B, C, and D) are each one unit. How many units is the whole, large rectangle?



Write the answer here _____

b. What is the relationship of the triangle 3 and the total area of the small rectangles A, B, C, and D?

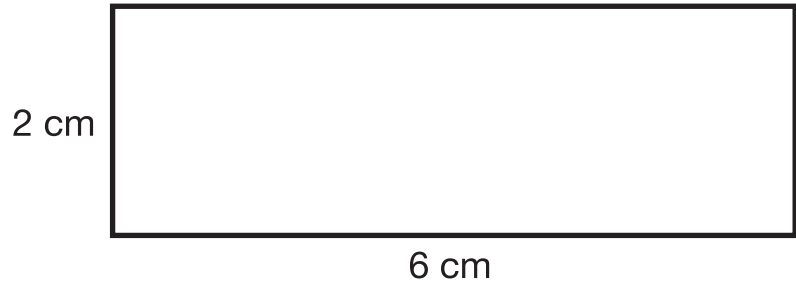
Circle the correct answer and then explain below.

- They are the same.
- The triangles 1 and 2 are larger than the rectangles.
- The rectangles A, B, C, and D are larger than the triangles 1 and 2.
- There is not enough information to know.

c. What fraction of the whole picture is triangle 3?

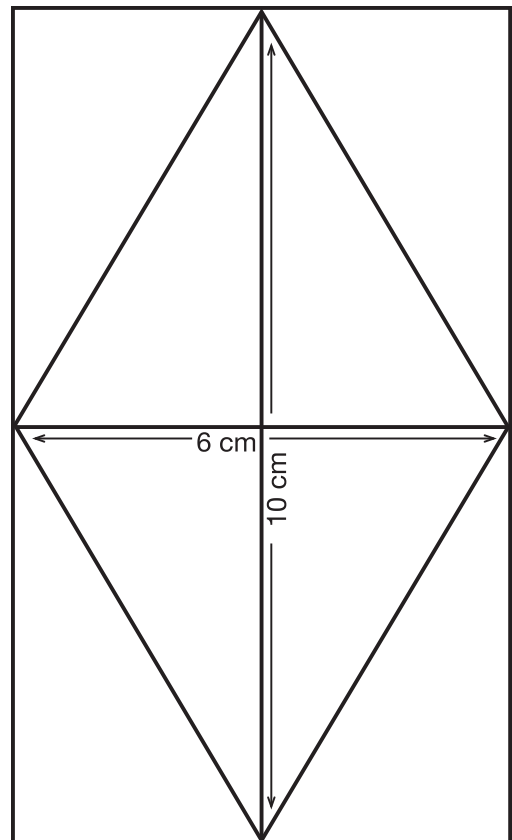
Write the answer here_____

5. Find the area of the rectangle given the side lengths. Show your work.



Write the answer here _____

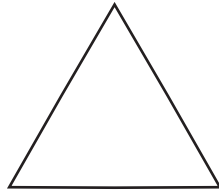
6. Find the area of the rhombus given the diagonal lengths. Show your work.



Write the answer here _____

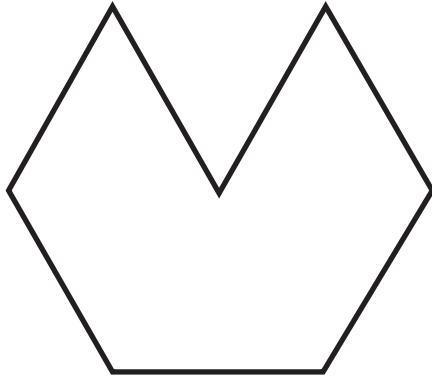
7.

How many



fit in each shape?

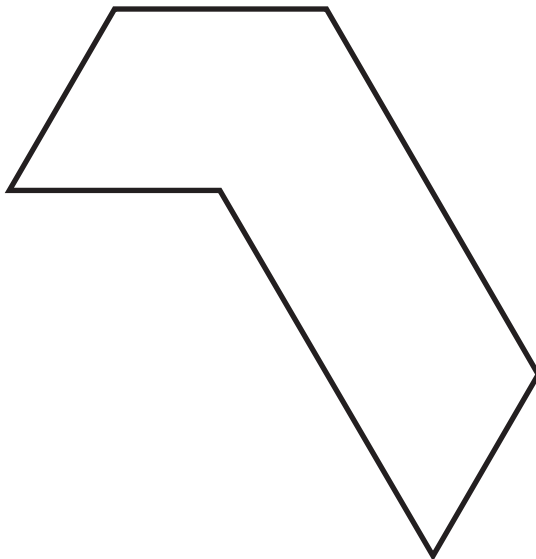
A. How many? _____



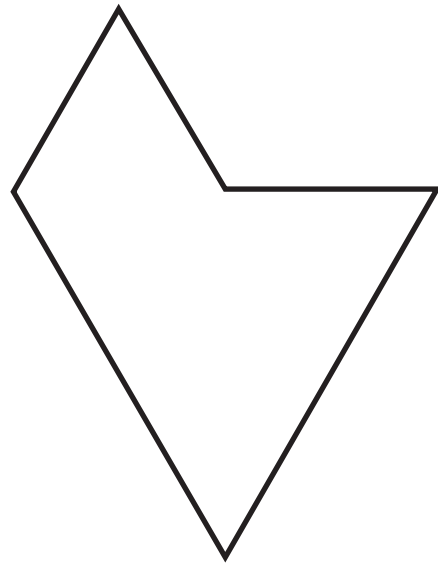
B. How many? _____



C. How many? _____



D. How many? _____



8. Here is the beginning of a pattern of squares.

Fig. 1



Fig. 2

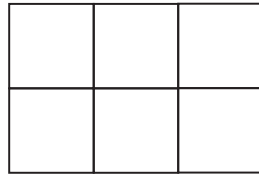


Fig. 3

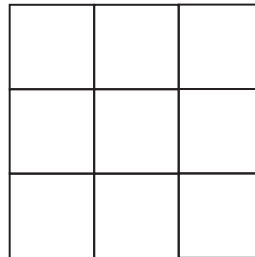


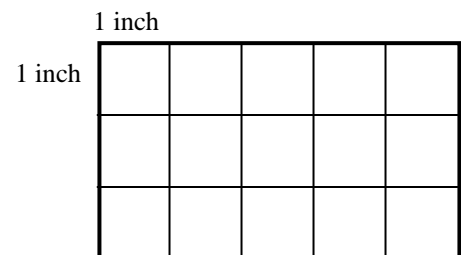
Fig. 4

a. Draw a picture of Fig. 4.

b. How many squares will be in Fig. 4?

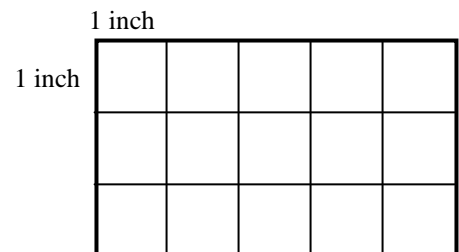
Write the answer here _____

9a. What is the total distance around the outside of the large rectangle to the right? Be sure to include the correct units.



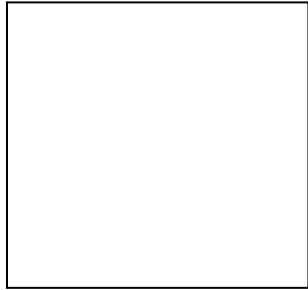
Write the answer here _____

b. What is the total space inside the large rectangle to the right? Be sure to include the correct units.

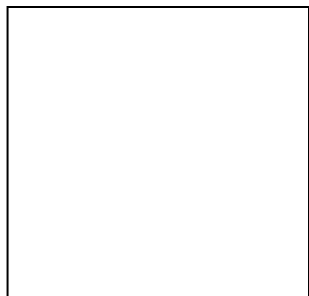


Write the answer here _____

10 a. Use your pencil to draw lines to make the square below have 4 equal parts.



b. Use your pencil to shade $\frac{3}{4}$ of this square.



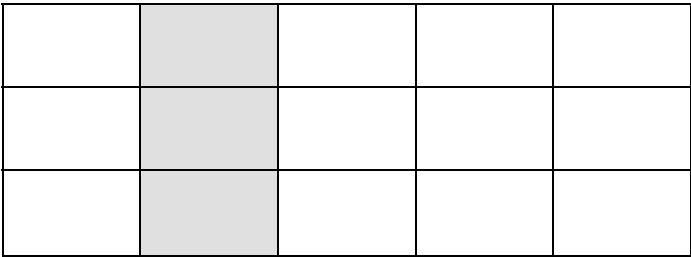
11. See the grid below. What fraction is shaded?

a. $\frac{3}{9}$

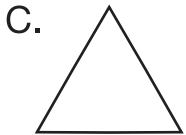
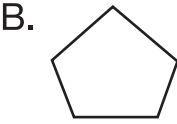
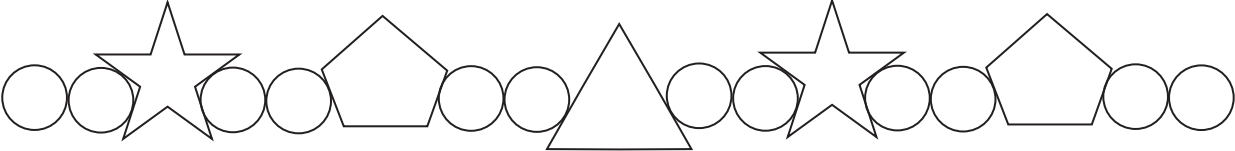
b. $\frac{3}{15}$

c. $\frac{3}{12}$

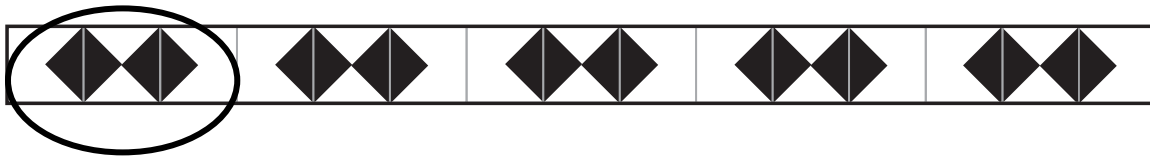
d. $\frac{12}{3}$



12. Identify a core unit. What shape comes next?



13. In each pattern, two or more shapes repeat to make the whole pattern. Circle the shapes or parts that repeat to fill the strip. The first one has been done for you.



a.



b.




c.



d.

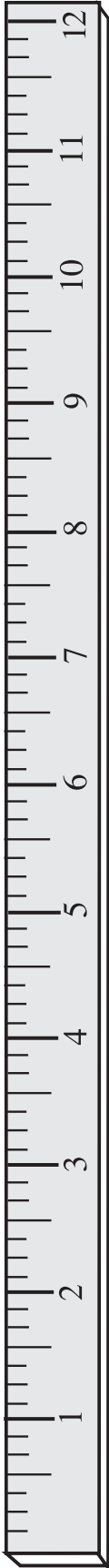
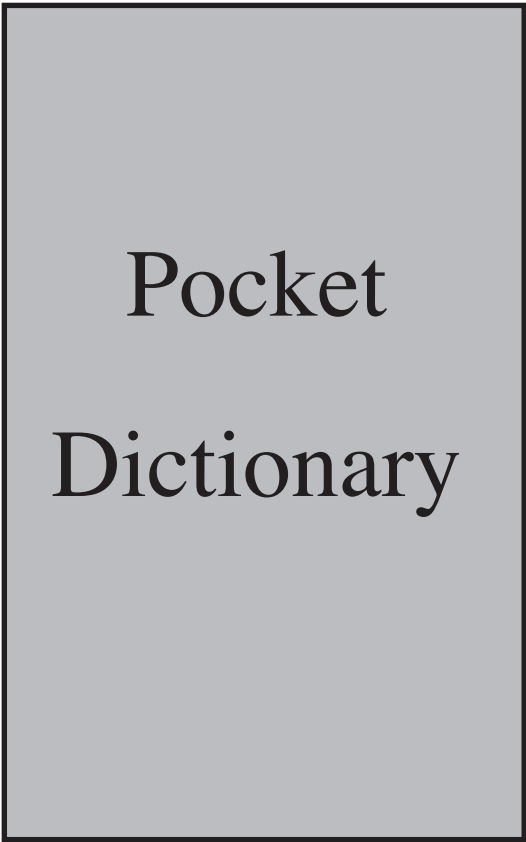


14. Charlie made this pattern strip . He said to his friend Ted that he can use it to measure. Approximately, how many strips long is the line below.



Write the answer here: _____

15. Measure the length of this dictionary.



Write the answer here: _____

Cut out shapes 1, 2, and 3 for item #3

