Developing Concepts of Perimeter and Area: Grade IV *(Misselbrook, Koleyak)*

OBJECTIVE To build a readiness for the learning of the perimeter and area concepts as applied to geometric figures of varied shapes and sizes.

INTRODUCTION Today we will do some experimenting. You will find on the table materials such as a foot ruler, yardstick, tape-measure, geoboard, a tile and some circles which you may use to carry out your experiment. First we will divide into groups for the various activities. Each group will take an assignment card on which it will place the actual measurements.

Open-ended Question

1. Can you guess the distance around your desk?
2. Can you guess the distance around your book?
3. Can you guess the distance around the classroom?
4. What would you use to measure the distance around the classroom?
5. Can you guess the distance around our piano?
6. How would you measure around our piano?
7. Can you guess the distance around the cement patio?
8. How would you measure it?
9. Can you give the word which means distance around objects?
10. Who can find out what that word is?
11. If you find it, don't tell the secret. Tomorrow you may write it on the board for all to see.

While we are measuring distances, let's see if we can find out how many squares or long shapes it will require to cover these flat areas.

1. Can you guess how many squares it will take to cover your book?
2. Can you estimate how many squares will cover your desk?
3. How many squares will it take to cover the classroom floor?
4. Can you guess how many squares it will take to cover the space where our piano stands?
5. How would you find the number of squares it would take?
6. What would you use to cover the patio space?
7. Can you give the name to the surface space cover with the squares?
8. Can you find out for tomorrow what that name would be?
9. If YOU know, DON'T tell the secret!

[*In order to give the class experience in measuring perimeter and area, in the next lesson they will be asked to measure circles, balls, the soles of their feet, palms of their hands, their bodies, cylindrical and triangular shapes. We find that, in order to teach perimeter and area effectively, we must have several sessions in measuring in order to instill the correct concepts. This is followed by another set of open-ended questions and to conclude the workshop, a display of completed assignment cards, graphs or other suitable materials.*]

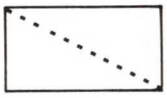
Parallelograms and Triangles: Grade IV *(Leyshon)*

ASSUMPTION The students know that area = base x height for rectangles.

MATERIALS Scissors, pencil, ruler, prepared rectangles, parallelograms, and triangles (right angle, isosceles, scalene).

1. What is the area of this rectangle?

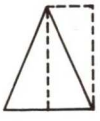
2. Fold the rectangle in half diagonally. What will the area of the resulting triangle be? Is it half the area of the rectangle? Can you make an equation to find the area of the right angled triangle?



3. Can you find the area of the right angled triangle?

4. Take one of the parallelograms. Can you find its area? By making one cut with the scissors, can you make the parallelogram into a rectangle? Is the area the same? What is the base of the new rectangle? What is its height? Can you find the area now?
   Take another parallelogram. What is its base? What is its height? Where do you measure the height? What is the area of this parallelogram?

5. Take a triangle labelled "isosceles". How would you describe it? Let the side that is not equal to the others be the base. Can you make one cut with the scissors to make a rectangle? What is its base? What happened to the base of the triangle? What is its height? Can you find the area? Can you apply the same equation that you used for the right angled triangle to find the area of an isosceles triangle? Take another isosceles triangle and apply the equation. How do you measure the height? Cut the triangle to make a rectangle. Were you right about the area?



6. Take a scalene triangle. How are you going to measure the height? What is its area? What equation did you use?

7. Can you use your equation to find the area of all triangles? Try some other triangles and see.

8. What is the important thing to remember about measuring the height of a triangle or a parallelogram?

9. Does it matter which side of a triangle you use for the base? Check your answer with some of the triangles.

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