Supplies

Plastic or cardboard 1"-tiles. Several sizes of rectangular and square sheets of construction paper or regular paper, cut so that an exact number of inch-tiles fits. Tape measure, markers and paper.

The Activity

The student will work on calculating the **perimeter** of squares and rectangles. Explain that the word perimeter means the outside of the shape, like "putting a fence around it."

Ask the student to describe the properties of a square: 4 equal sides, and 4 right angles; and the properties of a rectangle: 1 pair of long parallel lines, one pair of short parallel lines, and 4 right angles. The "secret" of the rectangle is that the opposite sides are equal.

Then show the student that when calculating the perimeter of a square it can be done by adding each side (side A + side B + side C + side D), but that a faster way is to **multiply one side by 4**, because all the sides are equal. Show that the perimeter of the rectangle can be calculated by **multiplying the long side by 2, the short side by 2** and then **adding** the two numbers.

Variations

- Ask the student to calculate the perimeter of other equal-sided shapes, for instance an octagon, a hexagon, or an equilateral triangle.

Focus:

Encourage the student to focus their attention on the task at hand. Allow the student to get acquainted with the supplies by touching, holding, and talking about them. Formulate a plan with the student.

Questions: What is the plan? What will we do first? Next? And then?

Act:

The student will calculate the perimeters of differently sized squares and rectangles.

Questions: What is the slow way and what is the fast way to calculate the perimeter of a square? Where are the parallel sides of the rectangle? What does parallel mean?

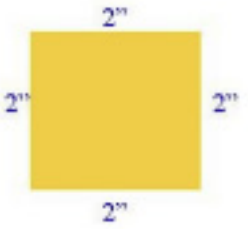
Reflect:

During and after the activity, reflect on what the student is doing/has done.

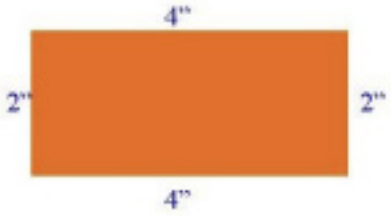
Questions: What did you do? How could you tell which shape was larger than another one? When you were using the inch-tiles, how did you know how long a side was without measuring?

Math Observation Checklist:

This activity will give insight into the student's ability to understand size, sequencing, position, addition, multiplication, perimeter, attend to more than one piece of information, and attend to relevant information.



Square
Perimeter
$2 + 2 + 2 + 2 = 8"$
Or
$4 \times 2 = 8"$



Rectangle
Perimeter
$2 + 4 + 2 + 4 = 12"$
Or
$2 \times 4 + 2 \times 2 = 12"$

Measurement

Supplies

Plastic or cardboard 1"-tiles. Several sizes of rectangular and square sheets of construction paper or regular paper, cut so that an exact number of inch-tiles fits, or a sheet of 1" grid paper. Tape measure, markers and paper.

The Activity

The student will work on calculating the **area** of squares and rectangles. Explain that the word area means the whole shape, inside and outside.

Ask the student to use square inch tiles to make squares and rectangles, and count the total number of tiles. Explain that because they are sing "square inch tiles" the number you get is in "square inches", or **in²**. Then show that if you multiply the number in the top row, by the number in the 1st column, you get the same number.

Next, show that the number of tiles in the top row is equal to the length of that row, for instance 7", and that the number of tiles in the columns is equal to the length of that side, for instance 5". Therefore, a rectangle with a width of 7" and a height of 5" has an area of 7 x 5 = 35 square inches (35 in^2).

Variations

- Ask the student to calculate the length of one side if the area and one other side are given . For instance: area is 42 in^2 and one side is 7". The other side is 42 : 7 = 6".

Focus:

Encourage the student to focus their attention on the task at hand. Allow the student to get acquainted with the supplies by touching, holding, and talking about them. Formulate a plan with the student.

Questions: What is the plan? What will we do first? Next?

Act:

The student will calculate the area of differently sized squares and rectangles.

Questions: What is the slow way and what is the fast way to calculate the area of a square? Where are the parallel sides of the rectangle? What does parallel mean? If you know the length of one side of a square, what can you say about the other sides? If you know one side of a rectangle, can you calculate the area? Of a square? How come?

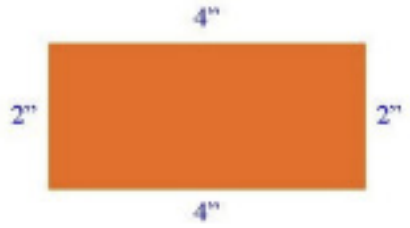
Reflect:

During and after the activity, reflect on what the student is doing/has done.

Questions: What did you do? What math operation did you have to use to calculate the area of a shape? If you knew the area and one side, what math operation did you have to use to calculate the length of the other side? Why?

Math Observation Checklist:

This activity will give insight into the student's ability to understand size, sequencing, position, addition, multiplication, area, attend to more than one piece of information, and attend to relevant information.



Area of the Rectangle
2 x 4 = 8 in^2

Supplies

Plastic or cardboard 1”-tiles. Several sizes of rectangular and square sheets of construction paper or regular paper, cut so that an exact number of inch-tiles fits. Tape measure, markers and paper.

The Activity

The student will work on calculating the **perimeter** of composite figures (irregular shaped rectangles and/or squares.) Explain that the word perimeter means the outside of the shape, like “putting a fence around it.”

Explain to the student that the perimeter of a composite (or irregular) shape is calculated the same way as a square or a rectangle, namely by adding the lengths of all the sides. The student can draw shapes on grid paper, or cut them out and then measure the sides and calculate the perimeter

Variations

- Ask the student to calculate the perimeter of a composite shape where the length of one side is unknown. They has to calculate the missing side first. (See example.)

Focus:

Encourage the student to focus the student attention on the task at hand. Allow the student to get acquainted with the supplies by touching, holding, and talking about them. Formulate a plan with the student.

Questions: What is the plan? What will we do first? Next?

Act:

The student will calculate the perimeters of differently sized composite shapes.

Questions: How can you calculate the perimeter of a composite shape? If all the corners of the shape are marked with a letter, how could we describe this shape? How would you describe the longest side? The shortest?

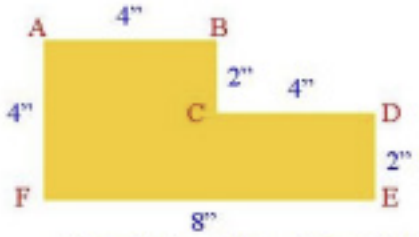
Reflect:

During and after the activity, reflect on what the student is doing/has done.

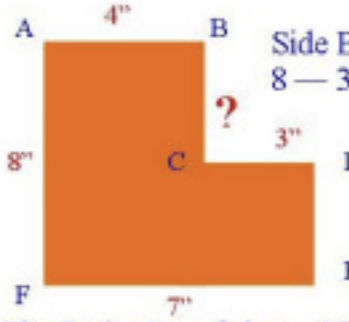
Questions: What did you do? How could you tell which shape was larger than another one? When you were using the inch-tiles, how did you know how long a side was without measuring? How did you calculate the perimeter?

Math Observation Checklist:

This activity will give insight into the student’s ability to understand size, sequencing, position, addition, perimeter, attend to more than one piece of information, and attend to relevant information.



AB + BC + CD + DE + EF + FA =
4 + 2 + 4 + 2 + 8 + 4 =
The Perimeter of shape ABCDEF = 24”



Side BC = AF — DE =
8 — 3 = 5”

The Perimeter of shape ABCDEF = 30”

Supplies

Plastic or cardboard 1"-tiles. Several sizes of rectangular and square sheets of construction paper or regular paper, cut so that an exact number of inch-tiles fits, or a sheet of 1" grid paper. Tape measure, markers and paper.

The Activity

The student will work on calculating the **area** of composite shapes made up of squares and rectangles. Make sure the student understands the word "area". Ask the student to use square inch tiles to fill in the shapes, and count the total number of tiles. Explain that because they are using "square inch tiles" the number you get is in "square inches", or **in²**.

The student may measure the sides with a ruler.

Show how the composite figure can be broken up and that the area of each separate shape can be calculated by multiplying the length and the width. Then the resulting numbers are added to get the total area of the whole figure.

Variations

- Ask the student to calculate the **length** of one side if the area and the other sides are given .

Focus:

Encourage the student to focus their attention on the task at hand. Allow the student to get acquainted with the supplies by touching, holding, and talking about them. Formulate a plan with the student.

Questions: What is the plan? What will we do first? Next? And then?

Act:

The student will calculate the area of differently sized composite figures.

Questions: How can you calculate the area of a composite figure? What do you need to do? When you use inch-tiles, what are 2 ways to discover the area? How can you break up this composite figure into 2 figures to calculate the area?

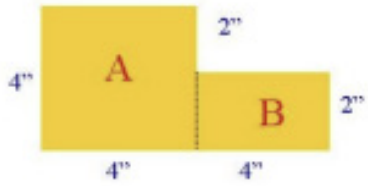
Reflect:

During and after the activity, reflect on what the student is doing/has done.

Questions: What did you do? What math operation did you have to use to calculate the area of a shape? If you knew the area and one side, what math operation did you have to use to calculate the length of the other side? Why?

Math Observation Checklist:

This activity will give insight into the student's ability to understand size, sequencing, position, addition, multiplication, area, attend to more than one piece of information, and attend to relevant information.



The area of shape A is 4 x 4 = 16 sq.in
The area of shape B is 2 x 4 = 8 sq.in
The area of the whole shape is 24 sq.in