



6 minutes

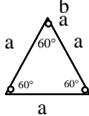
**Public Class Work: Review of triangles**

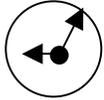
The teacher asks who Pythagoras was and how is his theorem used. A review of triangles ensues.

Right-angled triangle  (has a right angle)

The two sides of a right-angled triangle which are attached to the right angle are called right angle sides. The side opposite the right angle is called the hypotenuse. The Pythagorean theorem is used to calculate these sides.

Isoceles triangle  (has two equal sides and two equal angles)

Equilateral triangle  (has 3 equal sides and three equal angles, each is  $\frac{180^\circ}{3} = 60^\circ$ )



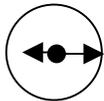
10 minutes

**Public Class Work: Class works on three problems**

The teacher asks the class how to determine the length of a side of a square whose surface area is 37. A student replies  $\sqrt{37}$ .

The teacher shows a diagram of one square (ABCD) inscribed within another (OEFG). She wants to know the lengths of a side of square ABCD. She reminds students that they've just seen that if you know the surface area, you can calculate the side. A student says that you can find the area of the larger square and subtract the areas of the triangles. Other students suggest that the square has an area of nine and by putting two triangles together and then taking half of the area, one finds that the area of a triangle is one. Thus, area of ABCD is  $9 - 4 = 5$ . Side =  $\sqrt{5}$ .

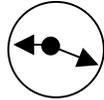
The teacher uses two overlaid squares to prove the Pythagorean theorem. The sum of the areas of the two smaller, white squares, equals the area of the larger, white square.



6 minutes

**Public Class Work: Summary of preceding problem**

Referring to the process just completed, the teacher summarizes that they had a right-angled triangle. They took the square of one right-angled side of the triangle, i.e., the surface area of the square. Then summed it up with the surface area of the square on the other right-angled side. The value equaled the surface area of the large square, which is the surface area of the square on the hypotenuse.



7 minutes

**Public Class Work: Single problem with summary and assignment of homework.**

The teacher draws on the board a triangle for which the lengths of the two right-angled sides are known. The hypotenuse is unknown. The teacher warns that you may only sum the sides once they are squared - not before then.  $3^2 + 4^2 = 5^2$ , thus hypotenuse =  $\sqrt{25} = 5$ . The sum of the square of one right-angled side and the square of the other right-angled side equals the square of the angled side.  $a^2 + b^2 = c^2$

During the last 2 ½ minutes of this segment, the teacher assigns homework.

**Private Class Work: Students work individually on set of homework problems**

The teacher alternates between circulating to answer students' questions and taking questions from her desk. A selection of the problems the students are working on is below:

- Page 86, question three: Annelotte's house has a square garden that is (14 x 14) meters. In three corners of the garden are plants. One corner is tiled. The square in the center is for rabbits. How many square meters is the whole garden? How many square meters have been tiled? What is the surface area of the area for the rabbits? Annelotte has enclosed the rabbits' square with wire mesh. How many meters of wire mesh did she use?
- Page 87, question six: The right-angled triangle has right-angled sides of 8 cm and 15 cm. Calculate the surface area of the squares. What is the surface area of the square on the hypotenuse? What is the length of the hypotenuse?
- Page 88, question eight A: Draw a rectangle of 12 cm by 5 cm and draw a diagonal in the rectangle. Calculate the length of the diagonal. Measure your drawing to check whether your answer is correct.
- Page 88, question nine: In triangle KLM, angle K is  $90^\circ$ . KL = 15 cm and LM = 25 cm. Carmen makes the following table. Draw triangle KLM and indicate which side is the longest. Explain why Carmen's table is incorrect. Make a correct table and calculate side KM.
- Page 89, question 13: In the grid are four lines. Calculate the length of AB, CD, EF, and GH. Round your answer to one decimal place.



26 1/2 minutes