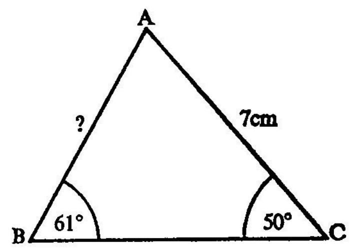
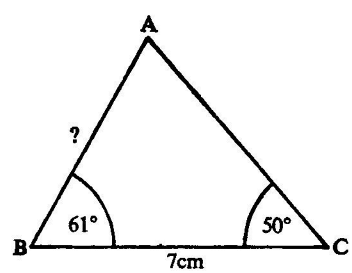
(iii) Square root. (ii) $PQ = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

4.2.6 Control of the new and reducing the learning content

a) *Theme* Trigonometry Grades 11 and 12).
Application of the sine rule for solving acute and obtuse triangles.

b) *Reduction of the theme*
The value of this formula is that the sine rule is used:

(1) When the size of two angles and the side opposite one of them is given. (When a side is given that is not opposite one of the two given angles, the size of the required angle always first be computed).

Theory	**Illustration**
(i) Given: Two angles and a side opposite one of them.	 $\frac{AB}{\sin 50^0} = \frac{7}{\sin 61^0}$ $\therefore AB = \frac{7 \sin 50^0}{\sin 61^0}$
(ii) Two angles and a side that is not opposite one of the given angles. Compute $\hat{A}$.	(ii) 

$$\hat{A} = 180^0 - (61^0 + 50^0)$$
$$= 180^0 - 111^0$$
$$= 69^0$$

Now compute AB.

$$\frac{AB}{\sin 50^0} = \frac{7}{\sin 69^0}$$

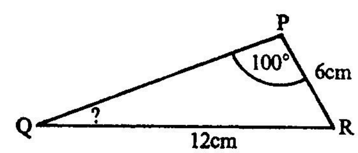
$$\therefore AB = \frac{7 \sin 50^0}{\sin 69^0}$$

(2) When the length of two sides and the angle opposite one of them is given.

Theory

Two sides and an angle opposite one of them.

Illustration



$$\frac{\sin Q}{6} = \frac{\sin 100^0}{12}$$

$$\sin Q = \frac{6 \sin 100^0}{12}$$

c) *Control of the new*

Now that an example where two angles and a side opposite one of them is given and demonstrated by the teacher the following example can be done together to control or verify if the pupils have arrived at insight.

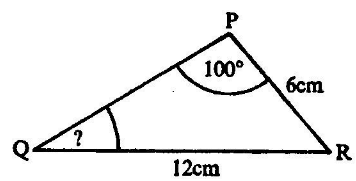
In triangle PQR:

PR = 6 cm, QR = 12 cm and QPR = 100^0.

As an example for actualizing the new insights an obtuse triangle is chosen in order to review anew with the pupils the application of the rule. In this example we begin with the notation

$$\frac{\sin Q}{6} = \frac{\sin 100^0}{12}$$

that will assist in loosening the pupil from the original notation $\frac{\sin A}{a} = \frac{\sin B}{b}$. At this stage it also can be expected of the pupils that they already must show mobility in the use of the rule always beginning with the *unknown* on the left side of the formula.

Theory	**Illustration**
	
(i) Write the formula	$\frac{\quad}{6} = \frac{\sin 100^0}{12}$
(ii) Solve for Q	$\sin Q = \frac{6\sin(180^0 - 80^0)}{12}$ $= \frac{6 \sin 100^0}{12}$

4.2.7 Functionalizing and reducing the learning material

a) *Theme:* (Geometry, Grades 11 and 12).
The Pythagorean theorem.

b) *Reduction of the theme*
The essence of this theme is that the square of the hypotenuse of a right triangle is equal to the sum of the square of the sides forming the right angle.