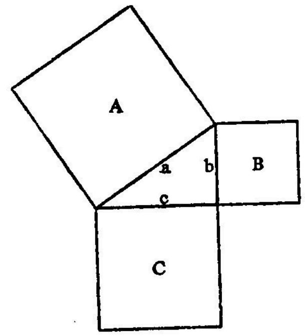
Theory	Illustration
The sum of the area the squares drawn on the shorter sides of a right triangle are equal to the area of the square drawn on the longest side.	

A = B + C;

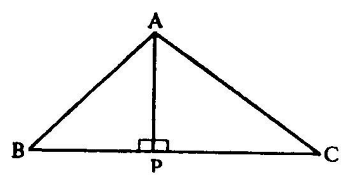
$a^2 = b^2 + c^2$

c) *Functionalizing the new insights*

For a practicing *of* insights the following example can be carried out by the pupils themselves.

In triangle ABC, $\hat{A} = 90^0$ and AP > BC. Prove that $AB^2 - AC^2 = BP^2 - PC^2$. With this example the application of the Pythagorean theorem is carried out.

Theory **Illustration**



Proof:

(i) Following the Pythagorean theorem.	(i) $AB^2 = AP^2 + BP^2$
(ii) Following the Pythagorean theorem.	(ii) $\underline{AC^2 = AP^2 + PC^2}$ $AB^2 - AC^2 = BP^2 - PC^2$

The newly acquired geometrical insights can be integrated with already existing insights in Graphics, Trigonometry, Analytic Geometry and Arithmetic in terms of the following examples:

(i) Graphics.	(i) Draw the graph of $x^2 + y^2 = 15$.
(ii) Trigonometry.	(ii) In triangle PQR, $Q = 90^0$. Prove that $\sin^2 R + \cos^2 R = 1$.
(iii) Analytic Geometry.	(iii) A is the point $(x_1; y_1)$ and B is the point $(x_2; y_2)$. Derive a formula to indicate the length of AB.
(iv) Arithmetic.	(iv) A 1 0.5 meter wire is affixed to a point at the top of a telegraph pole and is anchored in the ground 3.6 meters from the pole. Calculate the length of the pole.

4.2.8 Evaluating and reducing the learning material

a) *Theme:* (Trigonometry, Grades 11 and 12).
Simple identities that pertain to the relationships mentioned in the above section.

b) *Reduction of the theme*
The essence of this theme is: To simplify the left and the right sides of the identity to the same expression.

Theory	**Illustration**
Prove that $\tan A + \cot A \equiv$ $Cosec^2 A . \sec A . \sin A$.	
(i) *Left side:* Simplify to a sin- and cos-function.	(i) Left side

$= \tan A + \cot A$

$= \frac{\sin A}{\cos A} + \frac{\cos A}{\sin A}$

$= \frac{\sin^2 A + \cos^2 A}{\cos A.\sin A.}$

$= \frac{1}{\cos A.\sin A.}$

(ii) *Right side:* Simplify to a sin- and cos-function.

(ii) Right side

$= \text{cosec}^2 A.\sec A.\sin A.$

$\frac{1}{\sin^2 A} \times \frac{1}{\cos A} \times \sin A$

$= \frac{1}{\sin A.\cos A.}$

(iii) The solution now must necessarily fall open.

$\therefore \tan A + \cot A = \text{cosec}^2 A.\sec A.\sin A.$

c) *Evaluating*

The following examples can be given to the pupils on a test:

(i) For the proof of the identity: $\tan A + \cot A \quad \text{cosec}^2 A \sec A \ \sin A$, the pupils alone must fill in the open spaces of the following exposition.

Left side = $\tan A + \cot A$.

= ....

$= \frac{\sin^2 A + \cos^2 A}{\cos A.\ \sin A.}$

= ....

Right side = $\text{cosec}^2 A.\sec A.\sin A.$

= ....

= ....