Module 3

CREATE NEW FORMULA

Create the first formula with MyVariables, Standardvariables and Constants

The exciting world of IS measurement units opens with abaCal

Creating formulas is the big challenge in abaCal

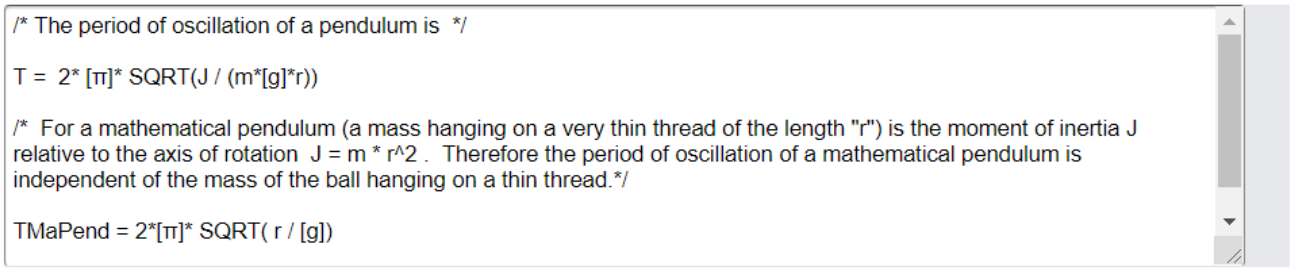
How do I create a formula with My Variables, SI Unit, Standardvariables and Constants.

To get to know “Create formulas” we have chosen a simpler formula. It is only about the implementation of the formula in the abaCal editor.
The formula consists of 3 blocks:

1. Name and **description of the formulas**. Name of the category and subcategory. The category has to fit the formula, because it indicates which MyVariables and Standvariables are used in the formula.
2. **Editor + calculator**: The editor is a continuous text editor. The formula is written from top to bottom. There are no restrictions on the length and width of the formula definition. We have already written formulas well over 1000 lines.
   The variables and constants for the formula definition are to the right of the editor. The syntax of all formula commands is at the bottom right.
3. The third block contains **formula variables** and the **results**..

Block 1: Formula name

Block 2: Editor + Calculator



Block 3: Variables and Results

Block 1: Definition of the formula

Press **My Formulas / Create:** an empty editor appears.

Name: **PENDULUM** and Description: enter **mathematical pendulum**

Enter **Category: Physics and Subcategory: Classical mechanics**

Block 2: Formel in den Editor eingeben

Formula: ***T = 2* [π]* SQRT(J / (m*[g]*r))***

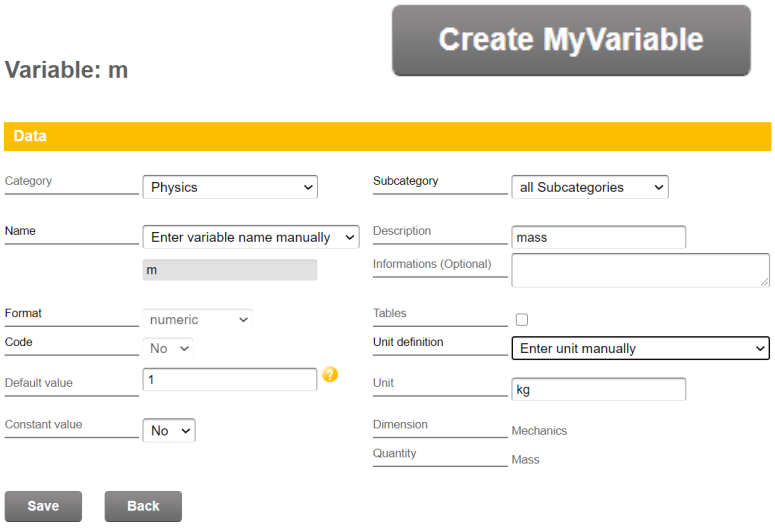
$$T = 2 * \pi * \sqrt{\frac{J}{(m * g * r)}}$$

1. Result field: write **T=**

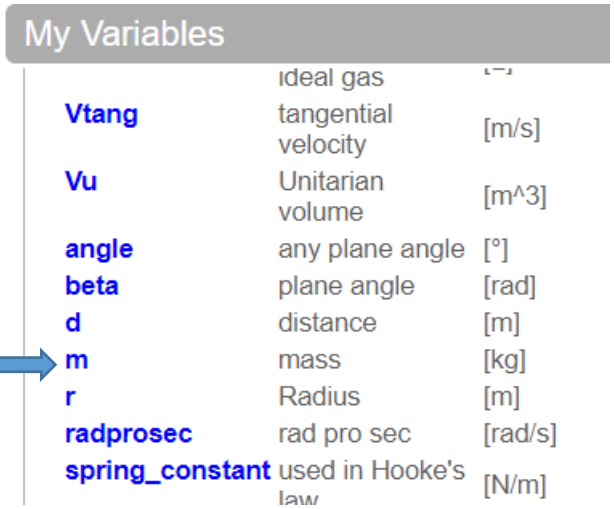
2. Write **2*** and insert the constant **[π]** from the **constants table** with a click, it must be inserted with a click, because abaCal perceives that it is a constant because of the brackets.

3. Write ***** and insert variable **J** from **Standardvariables** with one click

4. Generate with the left bracket **m** via **Create MyVariable** (see below)
Create MyVariable by pressing "**Enter unit manually**"
Create the variable "**m**" with "**1kg**" via Save this MyVariable



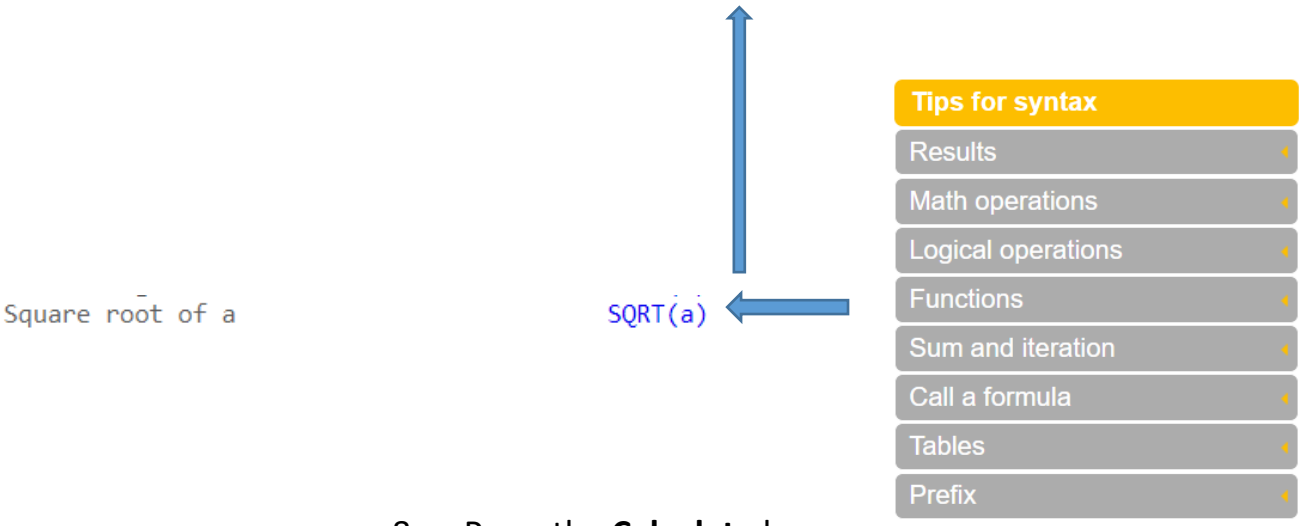
Generate with the left bracket **m** via ***MyVariable***
Create MyVariable by pressing „**Enter unit manually**“
Create „**m**“ und „**1kg**“ variables via Save this MyVariable



5. Insert * and Constant **[g]** from Constants table with a click

6. Generate ***r** via Create MyVariable and put a bracket

7. Paint formula part J / (m * [g] * r) with cursor, get root function **SQRT** with one click.



8. Press the **Calculate** key
and check the formula with the **Formula Display**.

$$T = 2 * \pi * \sqrt{\frac{J}{(m * g * r)}}$$

Formula: ***TMaPend = 2*[π]* SQRT(r / [g])*** $TMaPend = 2 * \pi * \sqrt{\frac{r}{g}}$

1. Result field write: **TMaPend=**
2. Write **2*** and insert constant **[π]** from Constants table.
3. Write ***** and generate and insert after bracket **r** using Create MyVariable, see MyVariable m = 1kg
4. **/** write and insert constant **[g]** from Constants table
5. Paint the formula part **r / [g]** with the cursor, get the root function **SQRT** with a click.
6. Press the **Calculate** key
   and check the formula with the **Formula Display**.

Block 3: Variables und Results:

$$TMaPend = 2 * \pi * \sqrt{\frac{r}{g}}$$