

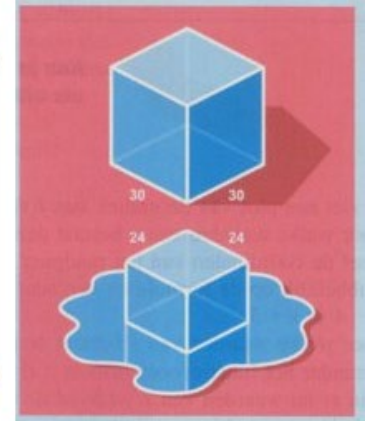
ProTEEM Day 2 Part I: Worksheet – Realistic Mathematics Education

Exercise A

An ice cube with edges of 30 mm long starts to melt down slowly. Every minute, the edges get 1.5 mm shorter. The volume of the ice cube is described by the formula

$V = (30 - 1,5 t)^3$, where V stands for the volume in mm^3 and t for the time in minutes.

- Calculate the volume of the ice cube when $t=0$.
- What are meaningful values for t ? And for V ?
- Plot and sketch that part of the graph for which the variables are meaningful.
- Trace the graph with the cursor and investigate after how many minutes the volume is less than 10 000 mm^3 . Provide your answer with a precision of one decimal.



Exercise B

The temperature in a cool storage room is given by the following function:

$$T(t) = \frac{3t^2 - 6t + 3}{t^2 - 2t + 2}$$

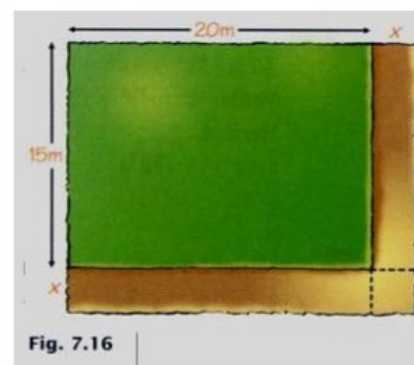
T : temperature (°C) · t : time (in hours) · $t=6$ corresponds to 9 a.m.

- Sketch the graph of this function
- If the temperature drops below 1 °C, there is a risk of damage to the food. How long was the temperature below 1 °C? From when to when?
- When did the temperature start to rise again?
- What temperature does the cool storage evolve to?

Exercise C

The lawn in Mr. Jones's garden measures 15 by 20 meters. Mr. Jones decides to extend the lawn. To two sides he adds a strip of equal width of x meters. See Figure 7.16.

- Show that the area of the enlarged lawn is represented by $\text{Area} = x^2 + 35x + 300$
- The new lawn has an area of 374 m^2 . Set up an equation and calculate the width of the strip.



Exercise D

Mr. Kok has a lawn of 16m by 40m. His lawn machine mows 40cm wide. He starts mowing on the outside and follows the perimeter. After how many laps is he halfway?