

**Learning outcomes**

After completing this section, you will inshaAllah be able to

1. know what are related rates problems
2. solve related rates problems

## What are related rates problems?

- Given a situation where

one quantity 'A' is related to other quantity or quantities  
& a change is occurring

- And the question is

To find the rate of change of quantity 'A', using known  
rates of change of other quantities on which it is  
depending.

- For example:
  - Volume 'V' of a cube depends on the length of the side 'h'.
  - If 'h' is changing and  $dh/dt$  is known.
  - Then the question to find rate of change of volume  $dV/dt$  is a question of related rate problem.

**Strategy for solving related rates problems****1. Understand the situation**

- draw a figure (if possible)

**2. Set up the problem**

- List given information/data and the rate of change to be found.
- Mathematical model.

Express the above information in the form of mathematical equations.

**3. Solve using differentiation**

See examples done in class

*End of 3.9*