

## HOW TO SOLVE IT

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according to G. Polya

Understand the problem.

What is the unknown?

What are the data?  
(What is given?)

What is the condition?  
(What are the constraints?)

Devise a plan.

Carry out the plan.

Look back.

Check the result.  
Can you derive the result differently?  
Can you use it for some other problem?

RELATED RATES

Identify and name all relevant quantities.

What rate of change is to be found?

Which quantities are constant? Which are variable?  
What rates and quantities are given?

Make a sketch and label it.  
What relates the basic variables?

Write an equation relating the variables  
whose rates are given or to be determined.  
Plan to differentiate it and solve.

Using the Chain Rule, differentiate both sides  
of the equation with respect to time  $t$ .  
Substitute all known values and solve for the  
desired rate of change.

Check your solution.

Is it reasonable?  
Can you see it at a glance?