

## ACTIVITY 7



Beaker X



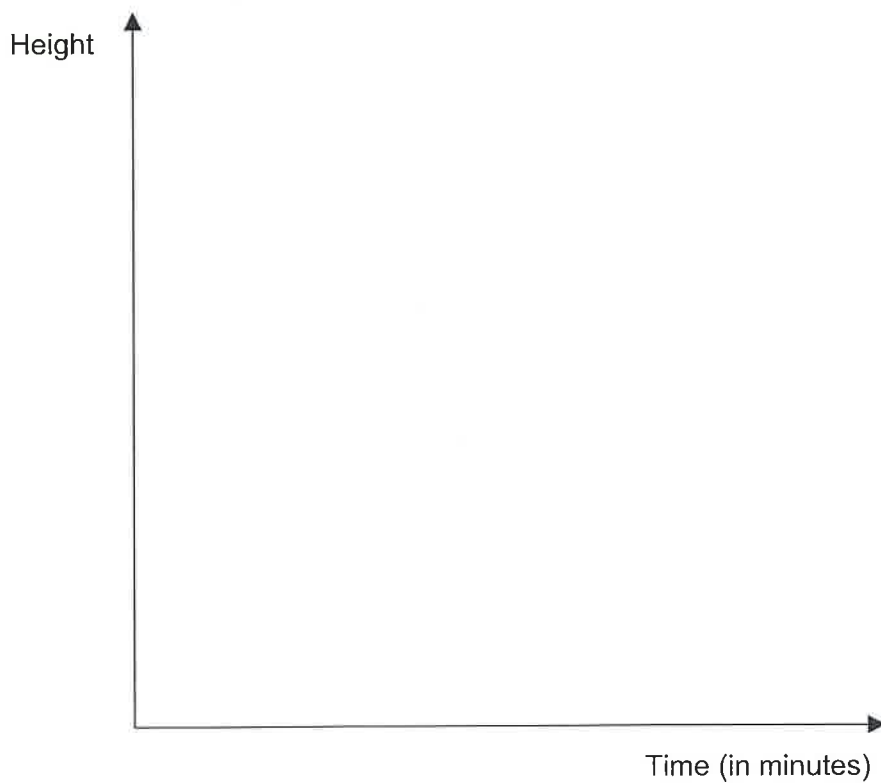
Beaker A



Beaker B

Water drips simultaneously into the above beakers from three different taps which deliver water at the *same* constant rate (millilitres per second).

On the same system of axes sketch graphs to show how the height of the water in each beaker varies with time.



## ACTIVITY 20 Entrepreneur

An entrepreneur starts a new business.

He produces gadgets at a cost of  $Y_1 = 4x + 200$  rands and then sells it at  $Y_2 = 5x$  rands, where  $x$  is the number of gadgets.

*Note: He assumes that he can sell all the gadgets he produces.*

$$\text{Profit} = \text{Selling price} - \text{Production cost}$$

1. Calculate his profit for different numbers of gadgets.
2. Draw graphs of the *cost-function*  $Y_1$  and the *selling price-function*  $Y_2$  on the same system of axes.
3. How many gadgets must he produce and sell to make a profit?  
Can you show this on the graphs?
4. Show how he can increase his profit by reducing his production costs and/or increasing his selling price.

### Challenge:

Draw the graph for the *profit-function* by entering  $Y_3 = Y_2 - Y_1$ .

Can you deduce the same information as above from this graph?

$Y_1$	$4x+200$
$Y_2$	$5x$
$Y_3$	$Y_2 - Y_1$
$Y_4$	=
$Y_5$	=
$Y_6$	=
$Y_7$	=
$Y_8$	=

Note: to enter  $Y_2$  and  $Y_1$  directly into the equation for  $Y_3$  you must press

$\boxed{2nd} \boxed{Y-VARS}$ , choose FUNCTION and then select the appropriate function:

Y-VARS	
1	Function...
2	Parametric...
3	Polar...
4	Sequence...
5	On/Off...

FUNCTION	
1	$Y_1$
2	$Y_2$
3	$Y_3$
4	$Y_4$
5	$Y_5$
6	$Y_6$
7	$Y_7$
8	$Y_8$

Can you write down a formula (in simplest form) for  $Y_3$  using  $x$ ?  
How can you *check* that you are right?