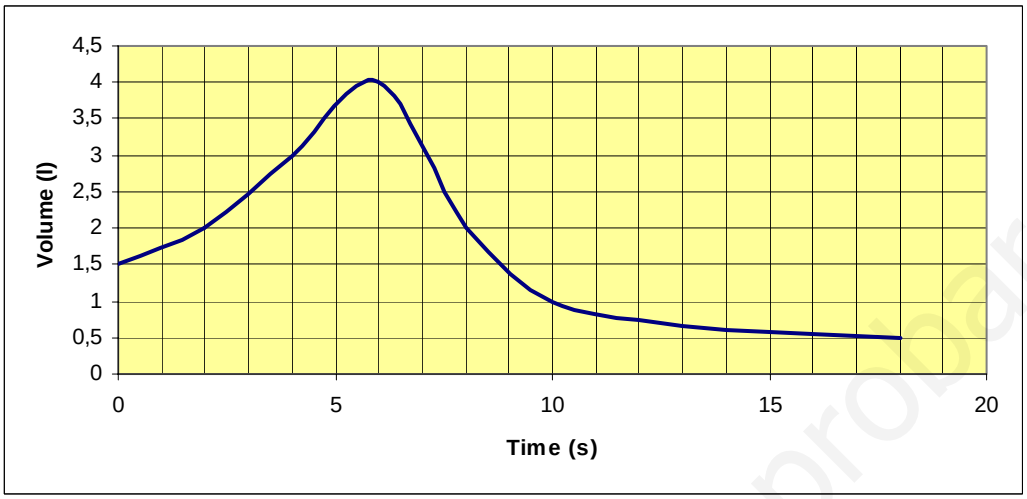
Maths 3rd ESO

FUNCTIONS

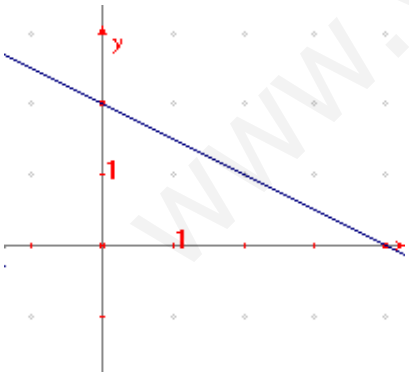
1. You can measure lung capacity by inhaling as much air as you can and exhaling it forcefully into a device called spirometer.
This graph shows the volume of air that is moved in and out of your lungs. (2 points)

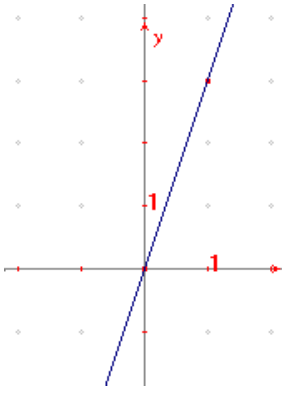


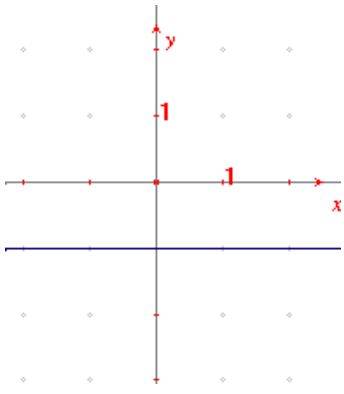
a) What was the volume at first?
b) How long did the observation take?
c) What's this person's maximum capacity?
d) What was the volume ten seconds after the test started? And when it finished?

2. Graph the line that contains the given information and find the equations. (2 points)
a) Slope = -3 Point (1,-3) b) Slope = 1/2 Point (2,1)

3. Find the equation of the lines given by their graphs: (2.5 points)
a) b) c)







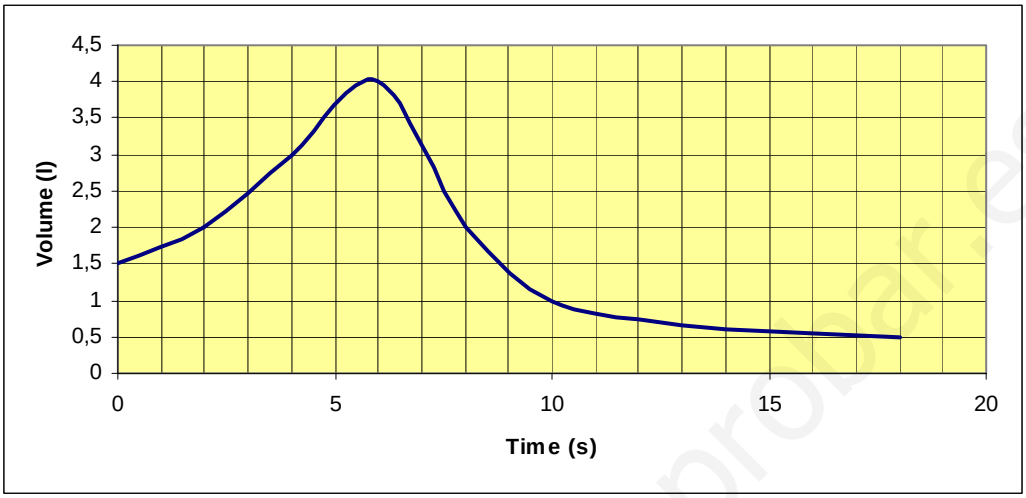
4. Use the two points to find the equation of the line that goes through them both. (2 p)
a) (2, -1) (3, 1) b) (6, 1), (4, -1)

5. There is an initial enrolment fee of €30 and a monthly fee of €120 for an evening classes Maths course.
a) Find the formula for the function: number of months → cost
b) Draw the function graph. (1.5 points)

Maths 3rd ESO

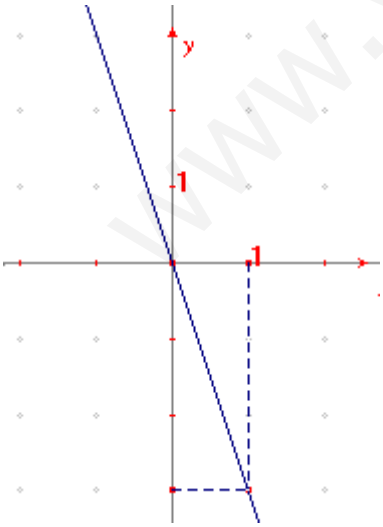
SOLUTION

1. You can measure lung capacity by inhaling as much air as you can and exhaling it forcefully into a device called spirometer.
This graph shows the volume of air that is moved in and out of your lungs.



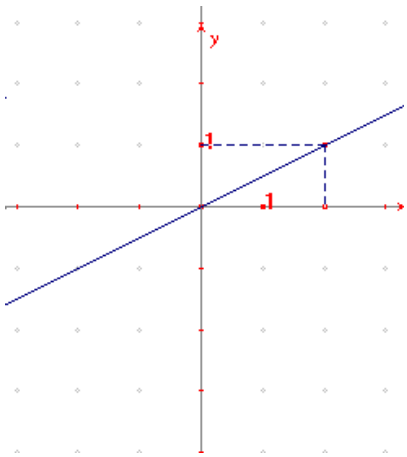
a) What was the volume at first? 1.5 litres
b) How long did the observation take? 18 seconds
c) What's this person's maximum capacity? The maximum capacity is 4 litres
d) What was the volume ten seconds after the test started? And when it finished? Ten seconds after the test started the volume was 1 litre. When it finished the volume was 0.5 litres.

2. Graph the line that contains the given information and find the equations.
a) Slope = -3 Point (1,-3)



$y = -3x$

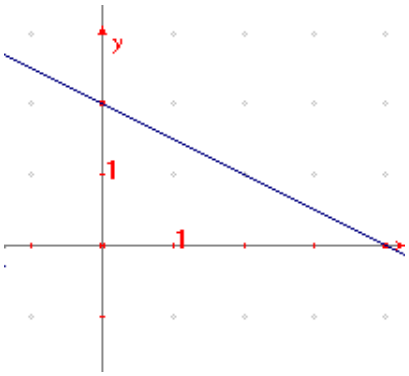
b) Slope = 1/2 Point (2,1)



$y = \frac{1}{2}x$

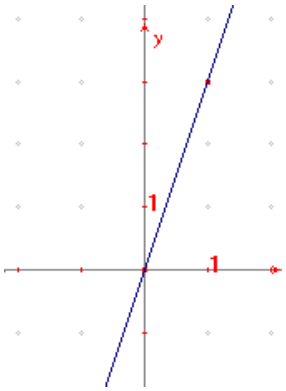
3. Find the equation of the lines given by their graphs:

a)



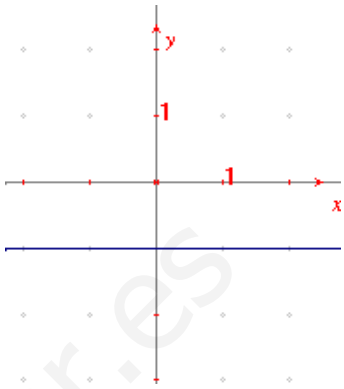
$y = -\frac{1}{2}x + 2$

b)



$y = 3x$

c)



$y = -1$

4. Use the two points to find the equation of the line that goes through them both.

a) (2, -1) (3, 1)

$m = \frac{y_1 - y_0}{x_1 - x_0} = \frac{1+1}{3-2} = 2$

$y = m(x - x_0) + y_0 \rightarrow y = 2(x-2) - 1$

$y = 2x - 4 - 1 \Rightarrow y = 2x - 5$

b) (6, 1), (4, -1)

$m = \frac{y_1 - y_0}{x_1 - x_0} = \frac{-1-1}{4-6} = 1$

$y = m(x - x_0) + y_0 \rightarrow y = 1(x-6) + 1$

$y = x - 6 + 1 \Rightarrow y = x - 5$

5. There is an initial enrolment fee of €30 and a monthly fee of €120 for an evening classes Maths course.

a) Find the formula for the function: number of months $\rightarrow$ cost

months	1	2	3	4
cost	150	270	390	510

$y = 30 + 150x$

b) Draw the function graph.