Name: _____ 5-a-day Further Maths

**14th June**

Corbettmaths

Write

$$\frac{5}{8x}+\frac{9}{16y}$$

as a single fraction in its simplest form.

$$= \frac{10y+9x}{16xy}$$

Given that $y = 5x - x^2$

Work out the coordinates of the point at which the gradient of the curve is $-7$

$$\frac{dy}{dx} = 5-2x$$

$$5-2x=-7$$

$$x=6$$

$$(6,-6)$$

Find the nth term

7 8 11 16 ... ...

1 3 5

2 2

$$t_n = an^2+bn+c$$

$$2a=2 \Rightarrow a=1$$

$$3a+b=1 \Rightarrow b=-2$$

$$a+b+c=7 \Rightarrow c=8$$

$$t_n = n^2-2n+8$$

The line $L_1$ has equation $2x + 3y = 32$

The line $L_2$ passes through the origin and is perpendicular to $L_1$

The lines $L_1$ and $L_2$ intersect at the point A.

The line $L_1$ crosses the y-axis at the point C.

Find the area of triangle OAC.

$$\Rightarrow 3y = -2x+32$$

$$y = -\frac{2}{3}x + \frac{32}{3}$$

$$\Rightarrow L_2: y = \frac{3}{2}x$$

At A $\frac{3}{2}x = -\frac{2}{3}x + \frac{32}{3}$

$$\Rightarrow \frac{13}{6}x = \frac{32}{3}$$

$$\Rightarrow x = \frac{64}{13}$$

At C $y = \frac{32}{3}$

$$\text{Area} = \frac{1}{2} \times \frac{32}{3} \times \frac{64}{13}$$

$$= \frac{1024}{39} \quad (26.26)$$