Name: _____ 5-a-day Higher Plus

13th March

Corbettmaths

The first 4 terms of a sequence are:
400, 390, 375, 355 ...

-10 -15 -20
-5 -5

Which term is the first to be negative?

$400 = -5 + c$
$c = 405$

$3a + b = -10$
$-7.5 + b = -10$
$b = -2.5$

$a = -2.5$
$b = -2.5$
$c = 405$

$-2.5n^2 - 2.5n + 405$

13th term (which is -50)

Express $(5 - \sqrt{2})^2$ in the form $a + b\sqrt{2}$, where a and b are integers to be found

$(5-\sqrt{2})(5-\sqrt{2})$

$25 - 5\sqrt{2} - 5\sqrt{2} + 2$

$27 - 10\sqrt{2}$

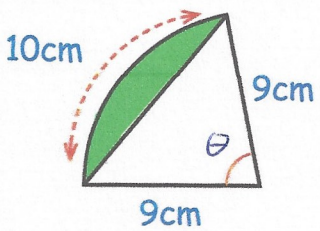
Find the minimum point of the graph

$y = x^2 - 6x - 20$

$y = (x-3)^2 - 9 - 20$

$y = (x-3)^2 - 29$

$(3, -29)$



$\frac{\theta}{360} \times \pi \times 18 = 10$

$\theta \times \pi \times 18 = 3600$

$\theta \times \pi = 200$

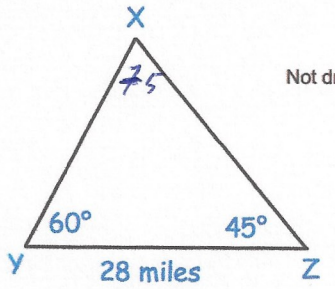
$\theta = 63.661977...$

Calculate the area of the segment

$\frac{1}{2} \times 9 \times 9 \times \sin(63.661977...) = 36.295784 14$

$\frac{63.66...}{360} \times \pi \times 9^2 = 45$

$45 - 36.29578414 = 8.704\ cm^2$



Not drawn is scale.

Sine Rule

How much closer is the boat, at point X, to the port at Y than the port at Z?

$\frac{28}{\sin 75} = \frac{XY}{\sin 45} = \frac{XZ}{\sin 60}$

$XY = 20.497$ $XZ = 25.104$

4.607 miles