25th February **Higher Plus 5-a-day**

Corbettmaths

Write $1.0\dot{3}\dot{5}$ as a fraction

$x = 1.035\,35\ldots$

$10x = 10.3535\ldots$

$1000x = 1035.3535\ldots$

$990x = 1025$

$x = \frac{1025}{990}$

$x = \frac{205}{198} = 1\frac{7}{198}$

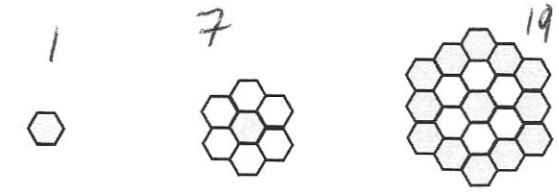
Prove the sum of two consecutive odd numbers is even.

$(2n+1) + (2n+3)$

$4n+4$

$2(2n+2)$

$\therefore$ even



Pattern 1 Pattern 2 Pattern 3

$2a = 6$ $3a+b=6$ $c=1$

$a = 3$ $9+b=6$

$b = -3$

How many tiles are needed to make Pattern number 10?

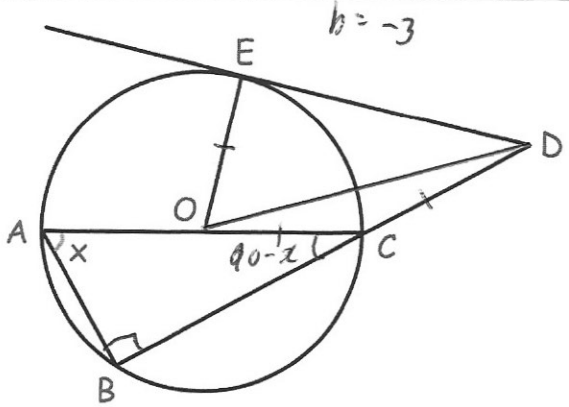
1 7 19 37

6 12 18

6 6

$3n^2 - 3n + 1$

$3\times10^2 - (3\times10) + 1 = 271$



AC is the diameter of a circle, centre O.
DE is the tangent to the circle.
BCD is a straight line.
AO = CD
Angle BAC = x

Express angle COD in terms of x.

$\angle DCO = 90 + x$

$180 - (90+x) = 90 - x$

$\frac{90-x}{2} = \left(45 - \frac{x}{2}\right)^\circ$

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