

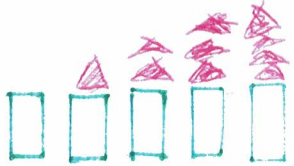


For: Three neighbours and. What does it all add up to.

number of consecutive numbers	sum of the series	comments
<p>3</p>  <p><math>a, a+d, a+2d</math></p>	$3 \times \square + 3 \times \blacktriangle$ $3a + 3d = 3(a+d)$	<p>multiple of 3</p>
<p>4</p>  <p><math>a, a+d, a+2d, a+3d</math></p>	$4 \times \square + 6 \times \blacktriangle$ $= 4a + 6d$	<p><math>f=3 \times 2</math> not multiple of 4          so <math>4a + 6d</math> is not a multiple of <del>4</del> 4</p>
<p>5</p>  <p><math>a, a+d, a+2d, a+3d, a+4d</math></p>	$5 \times \square + 10 \times \blacktriangle$ $5a + 10d = 5(a+2d)$	<p>multiple of 5</p>
<p>6</p> <p><math>a, a+d, a+2d, a+3d, a+4d, a+5d</math></p>	$6 \times \square + 15 \times \blacktriangle$ $6a + 15d$ $= 3(2a + 5d)$	<p>multiple of 3</p>
<p>7</p> <p><math>a, a+d, \dots, a+(6)d, a+(7)d</math></p>	$7 \times \square + 21 \times \blacktriangle$ $7a + 21d$ $= 7(a+3d)$	<p>multiple of 7</p>
<p>8</p> <p><math>a, \dots, a+(7)d, a+(8)d</math></p>	$8a + 28d$ $= 4(2a + 7d)$	<p>multiple of 4</p>
<p>9</p> <p><math>a, \dots, a+(8)d, a+(9)d</math></p>	$9a + 36d$ $= 9(a+4d)$	<p>multiple of 9</p>

## For Three Neighbours

Continue:

### My Conclusions:

① The pattern is: The sum of the consecutive series are multiples of 3, 5, 7, 9, 11, 13, ..... ~~the~~ <sup>if</sup> the number of items in the series are 3, 5, 7, 9, 11, 13, ..... respectively

② Every number in the pattern is odd number.

What does it all add up to?  
< Proof Sorters >

(1). Take four consecutive numbers

(2). Let the first number be  $a$

(3). Then the four consecutive numbers  
is are  $a, a+1, a+2$

(4). ~~The~~ The sum of the four consecutive  
numbers is  $4a + 6$

(5).  $4a + 6 = 4(a+1) + 2$

(6). Therefore  $4a + 6$  is two more  
than a multiple of 4.

(7). Therefore the sum of four consecutive  
numbers is always an even number  
which is not a multiple of 4

Name: Oliver Ci Hui Junh Ngoc

Grade: P4

School: Kong Hwa School

Country: Singapore