

Term 1 What is an evenly-spaced set?	Definition 1 Sequences of numbers that go up/down by the same amount (the INCREMENT) from one item in the sequence to the next
Term 2 An evenly-spaced set is fully-defined if what is known...?	Definition 2 1. Smallest (First) or Largest (Last) number in the set 2. The increment 3. The number of items in the set
Term 3 What is the increment of a set of consecutive integers?	Definition 3 1

Term 4 What are the 3 main properties of evenly-spaced sets?	Definition 4 1. Arithmetic Mean (Ave.) = Median ... you can find out the ave. by figuring out the Median (i.e. MIDDLE number) 2. Mean & Median = (First + Last terms) / 2... i.e. the average of the First and Last terms 3. Sum(Elements in Set) = Ave. x #Elements
Term 5 What is the formula for COUNTING consecutive integers?	Definition 5 (Last - First + 1)
Term 6 What is the formula for COUNTING consecutive multiples?	Definition 6 ((Last - First) / Increment) + 1

Term 7 The SUM of n consecutive integers is divisible by n if n is (ODD/EVEN)?	Definition 7 ODD
Term 8 The SUM of n consecutive integers is NOT divisible by n if n is (ODD/EVEN)?	Definition 8 EVEN
Term 9 The PRODUCT of n consecutive integers is divisible by ?	Definition 9 n!

Term 10 What is the MINIMUM number of multiples of 3 in a set of 3 consecutive integers?	Definition 10 ONE
Term 11 The product of k consecutive integers is ALWAYS divisible by what?	Definition 11 k! e.g. 4x3x2x1
Term 12 For a set of consecutive integers with an ODD number of items, the sum of ALL the integers is ALWAYS a multiple of the number of items... Why is this so?	Definition 12 Because the sum equals the average x the # items... the average for an ODD # items is an integer, so the SUM is a MULTIPLE of the number of items.

Term 13

For a set of consecutive integers with an EVEN number of items, the sum of ALL the integers is NEVER a multiple of the number of items... Why is this so?

Definition 13

Because the sum equals the average \times the # items... the average for an EVEN # items is NEVER an integer, so the SUM of all the items is NEVER a MULTIPLE of the number of items.

Term 14

The average of a set of consecutive integers with 4 elements is 9.5 . What is the set?

Definition 14

$$4 \times 9.5 = 38$$

$$x + (x+1) + (x+2) + (x+3) = 38...$$

$$4x + 6 = 38$$

$$4x = 32$$

$$x = 8...$$

Therefore, the set is {8,9,10,11}

Term 15

The average of a set of consecutive integers with 5 elements is 15 . What is the set?

Definition 15

$$5 \times 15 = 75$$

$$x + (x+1) + (x+2) + (x+3) + (x+4) = 75...$$

$$5x + 10 = 75$$

$$5x = 65$$

$$x = 13 ...$$

Therefore, the set is {13,14,15,16}

<p>Term 16</p> <p>The average of a set of 2 consecutive integers is EVEN...</p> <p>TRUE or FALSE?</p>	<p>Definition 16</p> <p>FALSE.</p> <p>The average of a set of 2 consecutive integers is NEVER an integer because you are averaging an ODD and an EVEN i.e. $(\text{ODD} + \text{EVEN}) / 2$ (...2 is EVEN) --> $(O + E) / E = O / E = \text{NON-INT}$ so it can't possibly be EVEN.</p>
<p>Term 17</p> <p>The average of a set of 2 consecutive integers is ODD...</p> <p>TRUE or FALSE?</p>	<p>Definition 17</p> <p>FALSE.</p> <p>The average of a set of 2 consecutive integers is NEVER an integer because you are averaging an ODD and an EVEN i.e. $(\text{ODD} + \text{EVEN}) / 2$ (...2 is EVEN) --> $(O + E) / E = O / E = \text{NON-INT}$ so it can't possibly be ODD.</p>
<p>Term 18</p> <p>What is the MINIMUM number of multiples of 8 in a set of 8 consecutive integers?</p>	<p>Definition 18</p> <p>ONE, and therefore it's product is divisible by 8!</p>

<p>Term 19</p> <p>Why is the product of any set of 4 consecutive integers divisible by 4! ??</p>	<p>Definition 19</p> <p>$4! = 4 \times 3 \times 2 \times 1 = 24$</p> <p>The product of any set of 4 consecutive integers will have at least one multiple of 4, one multiple of 3, and an even number (a multiple of 2), and of course the product is also a multiple of 1.</p> <p>According to the Factor Foundation Rule, every number is divisible by all the factors of its factors... so --> FILL THIS IN</p>
<p>Term 20</p> <p>What does this tell us about k ? --></p> <p>The sum of k consecutive integers is divisible by k</p>	<p>Definition 20</p> <ul style="list-style-type: none"> * The sum divided by k results in an integer. * The sum divided by k is also the average. <p>So, the average is an integer... Therefore k <i>MUST</i> be ODD.</p>
<p>Term 21</p> <p>What is the relationship between evenly spaced sets, consecutive multiples and consecutive integers?</p>	<p>Definition 21</p> <p>All sets of consecutive integers are sets of consecutive multiples.</p> <p>e.g. {3,6,9} is a subset of {3,4,5,6,7,8,9}</p> <p>All sets of consecutive multiples are evenly spaced sets.</p> <p>i.e. {3,6,9} has a constant</p>

Term 22 For an evenly-spaced set to be fully defined, what 3 parameters are required ?	Definition 22 1. The smallest (first) OR largest (last) # in the set 2. The increment (always 1 for consecutive integers) 3. The number of items in the set
Term 23 What is an evenly-spaced set?	Definition 23 A set of numbers whose values go up or down by the same amount (the increment) from one item in the sequence to the next
Term 24	Definition 24

Term 25	Definition 25