The Fibonacci sequence starts:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **1** | **2** | **3** | **5** | **8** | **13** | **21** |

A ‘Fibonacci-style’ sequence starts with two different numbers but still uses the same rule. For example:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **2** | **4** | **6** | **10** | **16** | **26** | **42** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **1** | **7** | **8** | **15** | **23** | **38** | **61** |

**Task One**

Each number in these sequences is found by adding the two previous numbers. Find the next few terms in each sequence

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **1** | **3** | **4** | **7** |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **2** | **5** | **7** |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **1** | **4** |  |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **5** | **6** |  |  |  |  |

**Task Two**

Find the missing numbers in these Fibonacci-style sequences:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **4** |  | **9** |  | **23** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **3** |  | **10** |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **1** |  |  | **13** | **20** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **2** |  |  |  | **28** |
| ***Hard!*** |

|  |  |  |  |
| --- | --- | --- | --- |
| **1** |  |  | **13** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | **45** |
| ***How many solutions?!*** |

**Task Three: *Not hard if you know how …***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **2** | **n** | **n+2** | **2n+2** | **3n+4****= 28** |

* Solve the equation **3n + 4 = 28**.
* So n = 8. Take it from there…
* 2, 8, 10, 18, 28

Find the missing numbers in these Fibonacci-style sequences by forming an equation and solving it:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **5** |  |  | **19** |  |  |
|  |  |  |  |  |  |
| **3** |  |  | **15** |  |  |
|  |  |  |  |  |  |
| **2** |  |  |  | **31** |  |
|  |  |  |  |  |  |
| **7** |  |  |  | **50** |  |
|  |  |  |  |  |  |
| **1** |  |  |  | **50** |  |
|  |  |  |  |  |  |
| **4** |  |  |  |  | **47** |

Make up some similar problems for a friend to solve

**Finished so soon?**

Find a possible starting number for this Fibonacci-style sequence:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | **36** |

* Can you find more than one solution?
* Can you find a solution which is a decimal number?
* Can you find a solution which is a negative number?