**Make a conjecture about the next figure in the pattern. Then draw the figure.**

|  |  |
| --- | --- |
| **1.** |  |
|  |  |
| **2.** |  |
|  |  |
| **3.** |  |
|  |  |
| **4.** |  |
|  |  |

**Write a rule for each number pattern, and find the next number.**

|  |  |  |
| --- | --- | --- |
| **5.** |  |  |
| **6.** |  |  |
| **7.** |  |  |
| **8.** |  |  |
| **9.** |  |  |
| **10.** |  |  |

**Find one counterexample to show that each conjecture is false.**

|  |  |  |  |
| --- | --- | --- | --- |
| **11.** | The sum is equal to | **12.** | All numbers that are divisible by 3 are also divisible by 6. |
|  |  |  |  |
| **13.** | All pentagons have exactly five congruent sides. | **14.** | All even numbers are composite. |
|  |  |  |  |
| **15.** | The sum of two numbers is always greater than the larger number. | **16.** | The difference of any two numbers is always smaller than the larger number. |
|  |  |  |  |

**Find the n-th term**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **17.** | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  | |
|  |  |
| **18.** | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  | |
|  |  |
| **19.** | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  | |
|  |  |
| **20.** | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  | |
|  |  |

**ANSWERS**

**Make a conjecture about the next figure in the pattern. Then draw the figure.**

|  |  |
| --- | --- |
| **1.** |  |
|  |  |
| **2.** |  |
|  |  |
| **3.** |  |
|  |  |
| **4.** |  |
|  |  |

**Write a rule for each number pattern, and find the next number.**

|  |  |  |
| --- | --- | --- |
| **5.** |  | Start with each number is obtained by adding 4 to the previous number.  The next number is |
| **6.** |  | Start with each number is decreased by to the previous number.  The next number is |
| **7.** |  | Start with each number is increased by successive multiple of  The next number is |
| **8.** |  | Start with 3each number is 4 times the previous number.  The next number is |
| **9.** |  | Start with 0.45 0.25 is being added to each number.  The next number is |
| **10.** |  | Start with 0.45. Successive natural numbers are cubed.  The next number is |

**Find one counterexample to show that each conjecture is false.**

|  |  |  |  |
| --- | --- | --- | --- |
| **11.** | The sum is equal to | **12.** | All numbers that are divisible by 3 are also divisible by 6. |
|  |  |  | 15 is divisible by 3 but no divisible by 6. |
| **13.** | All pentagons have exactly five congruent sides. | **14.** | All even numbers are composite. |
|  | An irregular pentagon doesn’t have congruent sides. |  | Number 2 is even but it is a prime number. |
| **15.** | The sum of two numbers is always greater than the larger number. | **16.** | The difference of any two numbers is always smaller than the larger number. |
|  |  |  |  |

**Find the n-th term**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **17.** | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  | |
|  | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  | |
| **18.** | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  | |
|  | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  | |
| **19.** | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  | |
|  | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  | |
| **20.** | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  | |
|  | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  | |