Can’t see it?   
Then you need to memorize it or actually do the math in your calculator ☹

**Change factor to Rate = [Change factor for Concentration]x**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Examples of determining the orders by actually plugging in** | | | | |
| *rate doesn’t change* | 1 = 2x | *concentration doubles* | x = 0 |
| *rate doubles* | 2 = 2x | *concentration doubles* | x = 1 |
| *rate quadruples* | 4 = 2x | *concentration doubles* | x = 2 |
| *rate increases x8* | 8 = 2x | *concentration doubles* | x = 3 |
| *rate is cut in half* | ½ = 2x | *concentration doubles* | x = -1 |
| *rate doesn’t change* | 1 = 3x | *concentration triples* | x = 0 |
| *rate triples* | 3 = 3x | *concentration triples* | x = 1 |
| *rate increases by x9* | 9 = 3x | *concentration triples* | x = 2 |
| *rate is cut in thirds* | 1/3 = 3x | *concentration triples* | x = -1 |
| *rate quadruples* | 4 = 4x | *concentration quadruples* | x = 1 |
| Etc…etc…etc… | | | |

**R-42**

**Finding Units for k**

Remember:

Rearrange:

Remember:

Substitute in your units and rewrite:

**🡪 🡪 then cancel out units**

|  |  |  |
| --- | --- | --- |
| **Units for k based on overall order of reaction** | | |
| **Overall Order** | **Example of Units Plugged In** | **Final Units for k** |
| 0 |  |  |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| Etc…etc…etc… | | |

*Remember:*

*You may see this substituted into k units.*   
  
*For example: M-1s-1* =