# MathFLIX CHALLENGE

## *The "Life" of Medications*
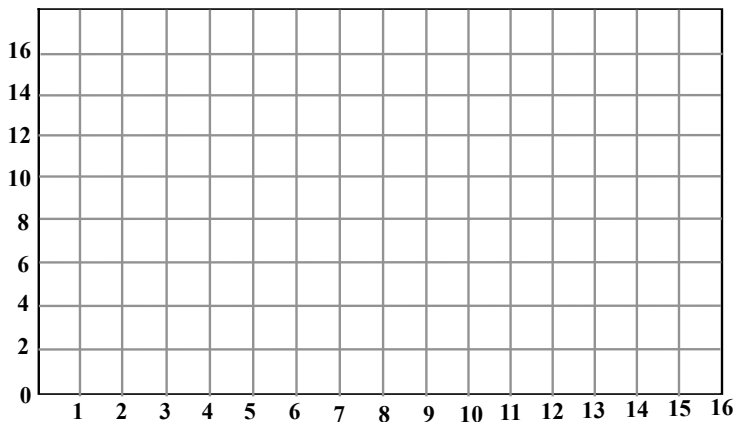
Pharmacists use the idea of "half-life" to predict how long medications remain in a person's system. During a half-life, approximately ½ of the active ingredients of a medicine is depleted in the body.

***Part I: For each half-life below, indicate the time and the mg of medication remaining in a person's system.***

| Half Life = 3hrs |  |  |  |  |  |  |
|---|---|---|---|---|---|---|
| **Dosage = 40 mg** | 40 mg | 20 mg | | | | |
| **Half Life = 5hrs** |  |  |  |  |  |  |
| **Dosage = 60 mg** | 60 mg | | | | | |

***Part II: Complete the tables below, then graph the information using a different color for each half-life.***

½ life = 1 hr

| hrs | mg |
|---|---|
| 0 | 16 |
| 1 | 8 |
| 2 | 4 |
| 3 | |
| 4 | |
| 5 | |
| 6 | |

½ life = 2hrs

| hrs | mg |
|---|---|
| 0 | 16 |
| 2 | 8 |
| 4 | 4 |
| | |
| | |
| | |
| | |

½ life = 3hrs

| hrs | mg |
|---|---|
| 0 | 16 |
| 3 | 8 |
| 6 | 4 |
| | |
| | |
| | |
| | |



***Part III: Read the information below, study the example and complete the table.***

It's important to be a knowledgable "consumer" of health information and to read all medication labels carefully. If you take a pill at noon today, how much of the medication will be in your system when you play basketball tomorrow at noon?

| Consumer Health Information | Ratio calcuation of half-life to specified time | Math Notations for half-life of specified time | Proportion to calculate mg drugs in system | Mg drugs in system |
|---|---|---|---|---|
| *Label of popular allergy medicine:* ½ life = 6 hrs    Dosage = 32mg | $\dfrac{6 \text{ hrs half-life}}{24 \text{ hrs (noon - noon)}}$ | $(½)^4$ or ½ x ½ x ½ x ½ or 1/16 | $\dfrac{1}{16} = \dfrac{x}{32} \dfrac{\text{mgs}}{\text{mgs}}$ | |
| *Label of cheaper allergy medicine:* ½ life = 8 hrs    Dosage = 64mg | | | | |