The basic drug dosage formula listed below can be used for most drug dosage calculations. These calculations are necessary when a doctor orders a particular desired dose of medication and the medication you have available on hand is in the form of mass/tablet or mass/volume.

**Formula:**

\[
\frac{D}{H} \times Q = X
\]

**Abbreviations Commonly Used in Dosage**

<table>
<thead>
<tr>
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<th>Term</th>
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<tbody>
<tr>
<td>po</td>
<td>by mouth (or orally)</td>
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<td>susp</td>
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<tr>
<td>pm</td>
<td>as needed</td>
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<tr>
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<tr>
<td>cap</td>
<td>capsule</td>
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<tr>
<td>q</td>
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**Desired**  
**Have**  
**Quantity**  
**= X**
**Tips for Correct Calculations:**

- Make sure that all measurements are in the **same units**. If necessary, convert between units.
- In most cases, it is best to **convert a larger unit to smaller units** (e.g. convert grams to milligrams). This conversion uses multiplication and most often keeps the calculation in whole numbers.
- Always check for **reasonableness of your answer**. Does the drug dosage make sense? (Amounts less than \( \frac{1}{2} \) tablet or greater than 3 tablets are not common, but still possible.)
- When solving dosage problems for drugs supplied in tablets or capsules, the quantity, Q, is always 1 because the supply dosage is per tablet or per capsule.

**Example 1:**
The doctor orders 90 milligrams of liquid cough syrup. The liquid cough syrup has a label that reads 120 milligrams in 5 milliliters. How much cough syrup should the nurse give to the patient?

Given:
\[ D = 90 \text{ mg} \]
\[ H = 120 \text{ mg} \]
\[ Q = 5 \text{ mL} \]

\[ x = \frac{D}{H} \times Q \]
\[ x = \frac{90 \text{ mg}}{120 \text{ mg}} \times 5 \text{ mL} \]
\[ x = \frac{3}{4} \times 5 \text{ mL} \]
\[ x = \frac{15}{4} \text{ mL} \]
\[ x = 3.75 \text{ mL} \]

Therefore, the nurse should give 3.75 mL of the cough syrup to the patient.

**Example 2:**
Ampicillin 500 mg capsules are supplied. MD orders 1.5 g. How many capsules should be given to the patient?

Given:
\[ D = 1.5 \text{ g} \]
\[ H = 500 \text{ mg} \]
\[ Q = 1 \text{ capsule} \]

\[ x = \frac{D}{H} \times Q \]
Step 1: Since the desired dose is in grams, but the capsules available on hand are in milligrams, convert 1.5 g into mg.

1.5 g x 1000 mg/g = 1500 mg

Step 2: Use the formula to calculate the number of capsules that should be given.

\[
x = \frac{1500 \text{ mg}}{500 \text{ mg}} \times 1 \text{ capsule}
\]

\[
x = 3 \text{ capsules}
\]

Therefore, 3 capsules of Ampicillin should be given to the patient.

**Practice Questions**

1. The doctor orders “ibuprofen 600 mg PO BID”. You have 300 mg tablets of ibuprofen on hand. How many tablets should be given to the patient at one time?

2. The physician ordered “enalapril maleate 7.5 mg PO daily.” You have 5 mg tablets of enalapril maleate available on hand. How many tablets should be given to the patient?

3. Atenolol 0.05 g capsules are supplied. MD orders 100 mg. How many capsules should be given to the patient?

4. The order says “erythromycin suspension 600 mg PO q6h”. The supply on hand is erythromycin 400 mg/5 mL. How many milliliters of medication should be given to the patient?

5. The doctor orders “valporic acid 0.5 g PO TID.” The bottle of valporic acid on hand says 50 mg/mL. How milliliters should be given?

6. The physician ordered “penicillin V potassium 400 000 units PO QID”. You have penicillin V potassium 200 000 units/5 mL. How many milliliters should be given to the patient?

**Answers:**

1) 2 tablets
2) 1.5 tablets
3) 2 capsules
4) 7.5 mL
5) 10 mL
6) 10 mL