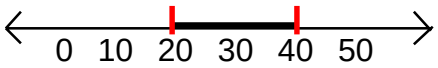
Math Study Strategies

Math for Nursing

Lower and Upper Limits

Children metabolize at vastly different rates, depending on their weight and age. Medical labels usually give a range. A range is the distance between the lowest and highest recommended medicine prescribed.

When you look at a range on a label, try to visulalize a ruler. For example, a range of 20 to 40 could be seen like this:



1. Any value greater than 40, like 41 or 50 is outside the range of recommended dosage.
2. Any value smaller than 20 is outside the range of recommmende dosage.
3. Any value **between 20 and 40 is within** the range of **recommended dosage.**

Example:

A child weighing 20 kg is administered medicine, in which the range of daily doses is $20\frac{mg}{kg/day}$ to $40\frac{mg}{kg/day}$. Find the maximum and minimum number of milligrams that should be administered to the child in one day.

Use dimensional analysis to cancel units

$$20\frac{mg}{\cancel{kg}/day}\times 20\cancel{kg}=400\frac{mg}{day}$$

400 mg is the lower limit or the smalles amount of medicine that can be given in 1 day.

$$40\frac{mg}{\cancel{kg}/day}\times 20\ \cancel{kg}=800\frac{mg}{day}$$

800 mg is the upper limit or the largest amount of medicine that can be given in 1 day

Tolerance is another word for range. Medication administered at 3 cc with tolerance of 0.02cc, has a range of 0.02 cc more than 3 cc and 0.02 cc less than 3 cc.

3.0 - 0.2 = 2.98 becomes your **lower limit.**

3.0 + 0.2 = 3.2 cc becomes your **upper limit.**

On a ruler your range might look like this: