INSTRUCTOR GUIDANCE EXAMPLE: Week Two Discussion

[*Please remember to use your own wording in your discussion. The writing here is intended to demonstrate the type of writing that is appropriate for a math discussion, and not intended for students to copy*.]

For this discussion we are to use Cowling's Rule to determine the child sized dose of a particular medicine. Cowling's Rule is a **formula** which converts an adult dose into a child's dose using the child's age. As in all **literal equations** this one has more than one variable, in fact it has three variables. They are

a = child's age
D = adult dose
d = child's dose

The formula is $d = \frac{D(a + 1)}{24}$

I have been assigned to calculate a 6-year-old child's dose of amoxicillin given that the adult dose is 500mg.

$d = \frac{D(a + 1)}{24}$ The Cowling's Rule **formula**

$d = \frac{500(6 + 1)}{24}$ I **substituted** 500 for D and 6 for a.

$d = \frac{500(7)}{24}$ Following order of operations I added inside parentheses first.

$d = \frac{3500}{24}$ Following order of operations the multiplication comes next.

$d = 145.833\ldots$ The division is the last step in **solving** for the child's dose.

The proper dose of amoxicillin for a 6-year-old child is 146mg.

The next thing we are to do for this discussion is to determine a child's age based upon the dose of medicine he has been prescribed. The same **literal equation** can be used, but we will just be **solving** for another of the variables instead of d. This time the adult dose is 1000mg and the child's dose is 208mg. I need to **solve** for a.

$d = \frac{D(a + 1)}{24}$ The Cowling's Rule **formula**

$208 = \frac{1000(a + 1)}{24}$ I **substituted** 1000 for D and 208 for d.

It should be noted that once both values have been **substituted** in, the result is a **conditional equation** for which there is only one possible value for a to make it true.

$208(24) = \frac{1000(a + 1)(\cancel{24})}{\cancel{24}}$ Both sides are multiplied by 24 to eliminate denominator.

$4992 = 1000(a + 1)$ Multiplication on left side is carried out.

$\frac{4992}{1000} = \frac{\cancel{1000}(a + 1)}{\cancel{1000}}$ Divide both sides by 1000.

$4.992 = a + 1$	One more step and it will be **solved**.
$4.992 - 1 = a + 1 - 1$	Subtract 1 from both sides to isolate a.
$3.992 = a$	We have **solved** for a.

The dose of 208mg is intended for a four-year-old child.