

To convert  $x$  beats per minute into milliseconds per beat:

Note that “ $x$  beats” and “1 minute” represent equal quantities, but expressed in different units. You may always multiply a quantity by  $\frac{X}{Y}$  if  $X$  and  $Y$  are equal quantities, since  $\frac{X}{Y}$  will then equal 1. Use this idea to convert “1 minute per  $x$  beats” gradually:

$$\frac{1\text{min}}{x\text{beats}} = \frac{1\text{min}}{x\text{beats}} \cdot \frac{60\text{sec}}{1\text{min}} \cdot \frac{1000\text{ms}}{1\text{sec}}$$

Now you may “cancel” out any words you see appearing both above and below:

$$\frac{\cancel{1\text{min}}}{x\text{beats}} \cdot \frac{60\cancel{\text{sec}}}{\cancel{1\text{min}}} \cdot \frac{1000\text{ms}}{1\cancel{\text{sec}}} = \frac{60,000\text{ms}}{x\text{beats}} = \left(\frac{60,000}{x}\right) \text{ms/beat.}$$