• "dB" are a relative measure and can make sense only in relation to another level.
• Saying “the level of this signal is 5 dB” is similar to saying "the cost of this candy bar is 5 cents more."
• When judging the response of your filter(s), measure them in relation to a good reference level (e.g., near DC or π); the absolute level does not matter.
  – Be careful if your input signal does not have a flat spectrum
dB

- Consider two signals: x and y and suppose x is 10x larger in magnitude than y
- $Power = \frac{voltage^2}{resistance}$, so $P_x$ is 100x larger than $P_y$
- “Normal” dB
  - $20 \times \log_{10} \left( \frac{x}{y} \right)$
  - $20 \times \log_{10} \left( \frac{10y}{y} \right) = 20 \times \log_{10} (10) = x$ is 20dB larger than y
- “Power” dB
  - $10 \times \log_{10} \left( \frac{P_x}{P_y} \right)$
  - $10 \times \log_{10} \left( \frac{100 P_y}{P_y} \right) = 10 \times \log_{10} (100) = x$ is 20dB larger than y