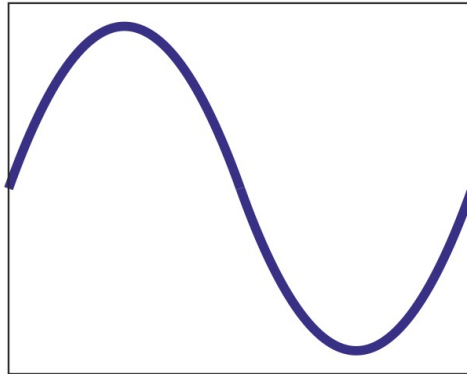


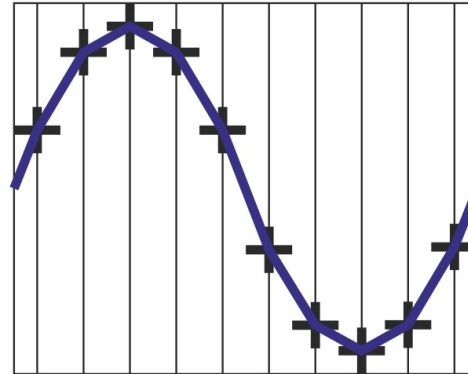
Sampling

- Sampling = Frequency

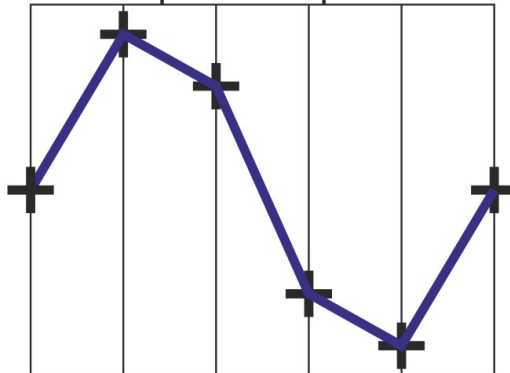
Original Waveform



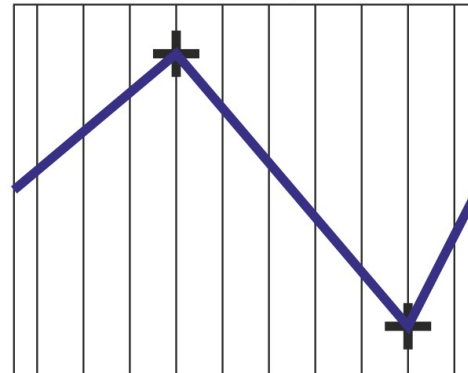
Sampled at 10 points



Sampled at 6 points



Sampled at 2 points

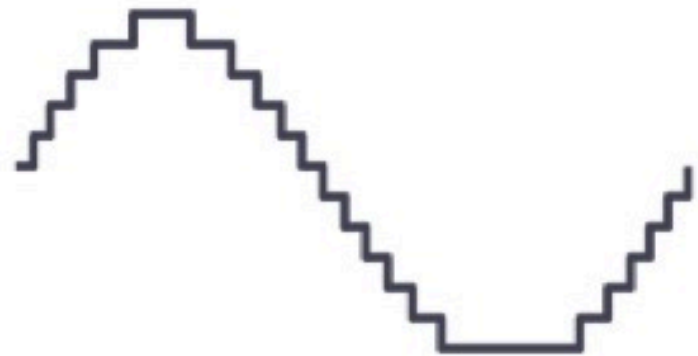




ORIGINAL SOUND WAVE



ANALOG SOUND WAVE



DIGITAL SOUND WAVE

Nyquist Theorem

- To capture a frequency you must sample at twice that frequency.
- 500 Hz = 1kHz
- 44.1 kHz ?

Common Sampling Rates

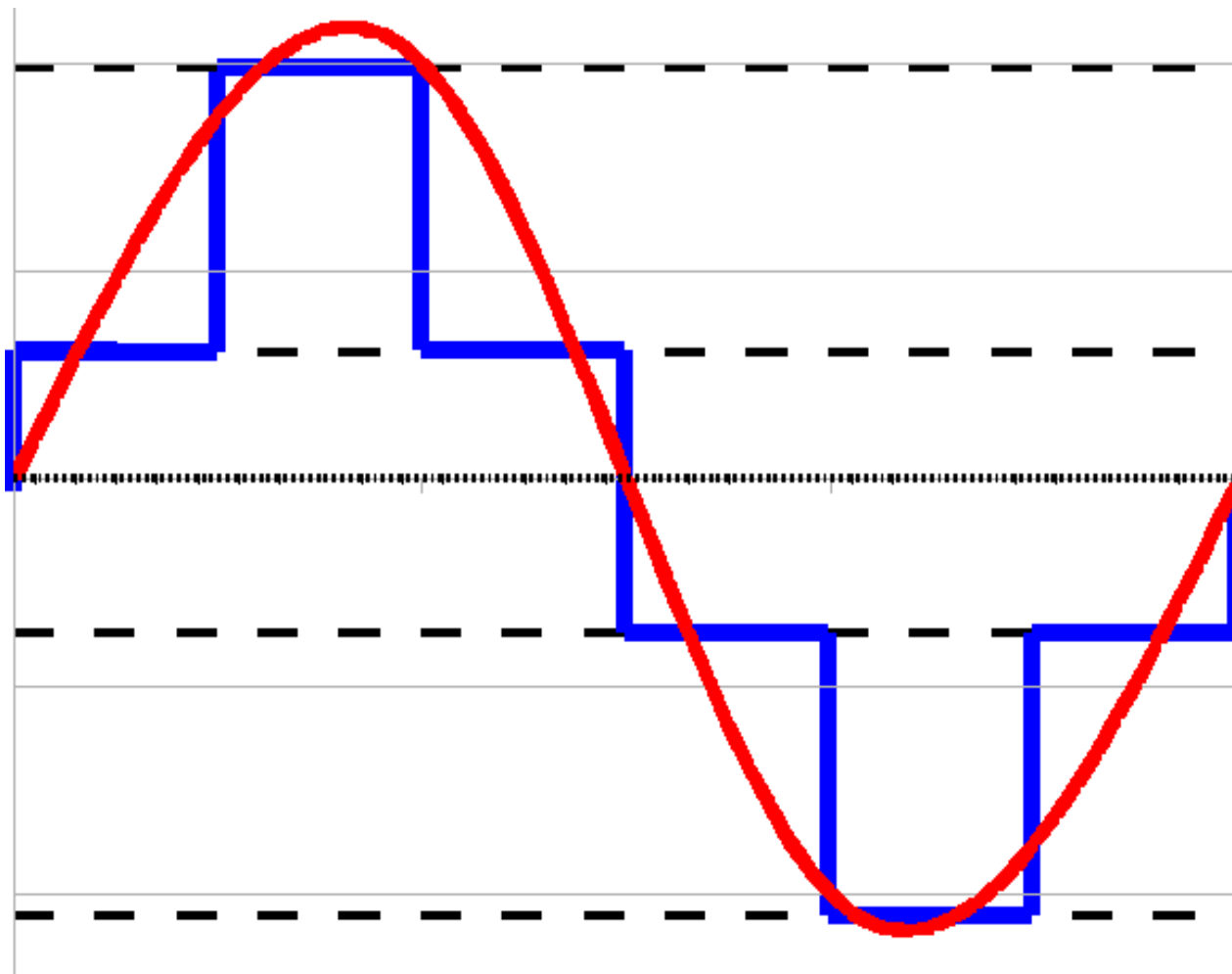
- 44.1 kHz
- 48 kHz
- 88.2 kHz
- 96 kHz

Quantization

- Resolution
- Quality
- Dynamic Range:
 - Loudest vs. Softest (amplitude) of sound recorded.

Quantization

- Turns samples into bits (words).
- A bit is either an on/off state (0/1)
- A 2-bit word has 4 values =
- 00
- 01
- 10
- 11



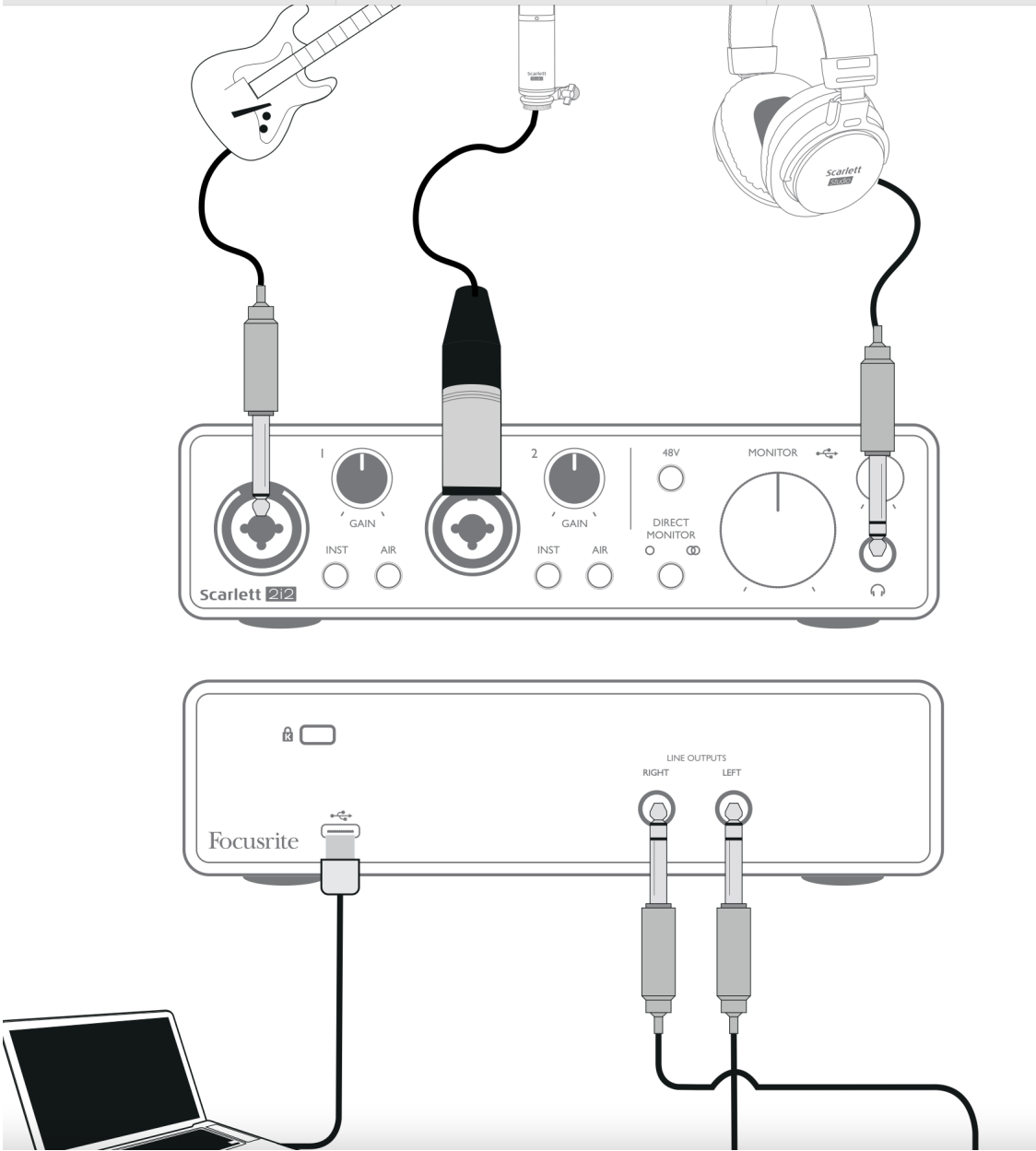
11
10
01
00

Bit Depth and Dynamic Range

- 1 bit = 6 dB of dynamic range
- 8 bits = 48 dB
- 16 bits = 96 dB
- 24 bits = 144 dB
- 8 bits = 256 values
- 16 bits = 64,536
- 24 bits = 16,777,216
- Higher bit values help with “rounding off”

AD/Converters

- Convert analog signals to digital signal(s)
 1. The more you pay:
 2. The great number of inputs & outputs
 3. The higher the sampling rate
 4. The higher the bit depth
 5. The better the sound
 6. The higher quality of workmanship
 7. The better the customer service



Digital Record Media

- File based = HD or “portable media”
- Tape
- RDAT (Rotary-head digital audiotape recorder)
- Helical Scanning (Slant-Track)

Rental Sound Devices 788T

- \$120 a day plus insurance.
- Base cost of unit over \$10,000.

DAW

- Digital Audio Workstation