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| **Skill 4.01 Exercise 1** |
| Provide some examples of analog signals. |

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| **Skill 4.02 Exercise 1** |
| Navigate to the wave on a string demonstration: <https://phet.colorado.edu/sims/html/wave-on-a-string/latest/wave-on-a-string_en.html>  Set the simulator to “oscillate” and “no end” |
| What is a sufficient sampling rate for the default signal shown? |
| Use the slider to change frequency from 1.5 to 3 hz. What happens to the wavelength as you increase the frequency? |
| What is a sufficient sampling rate for a signal with a frequency of 3 hz? |

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| **Skill 4.03 Exercise 1** |
| What is the relationship between quantization interval and the quality of the analog signal stored? |
| What limits the quantization interval? |

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| **Skill 4.04 Exercise 1** |
| Consider the signal below, |
| A quantization interval of 30 resulted in how many possible y values? How does the precision of the stored values change as the quantization interval is increased? Decreased? |
| How should the resulting binary sequence be encoded? |

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| **Skill 4.05 Exercise 1** |
| Name two factors that effect the quality of a converted analog signal? How can these factors be changed to increase the quality? |

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| **Skill 4.06 Exercise 1** |
| What is the advantage of analog signals over digital? Does music sound better when played on vinyl or CD? Why? |