

# Starter - Analogue to Digital conversion

01:00

MR. TIMER

• Quick, do some online research and complete the sentences...

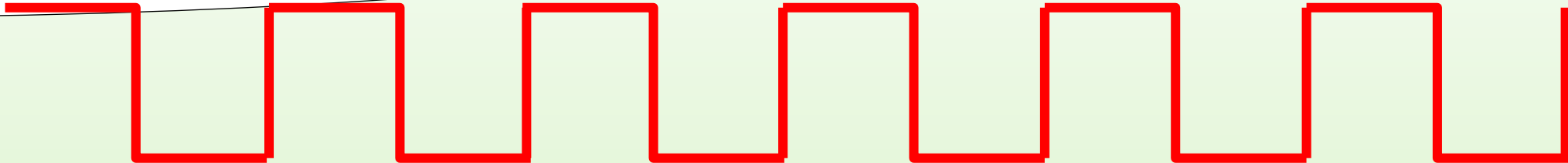
- Analogue sound signals are

1 missing word



- Digital signals are

1 missing word



- Sound is digitized by  
sound wave

Multiple missing words

the



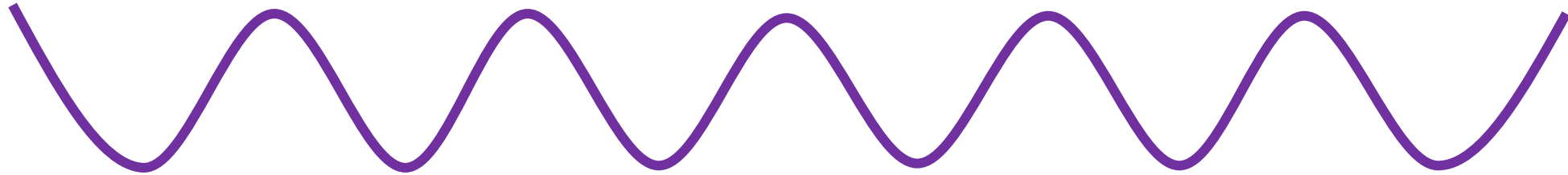
# Starter - Analogue to Digital conversion

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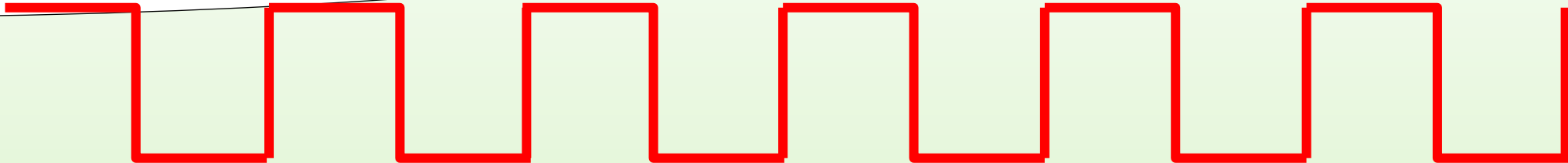
MR. TIMER

• Quick, do some online research and complete the sentences...

- Analogue sound signals are continuous



- Digital signals are discrete



- Sound is digitized by repeatedly measuring and recording the sound wave

**IGCSE CS**



**NORD ANGLIA EDUCATION**

THE BRITISH  
SCHOOL OF  
BEIJING, SHUNYI

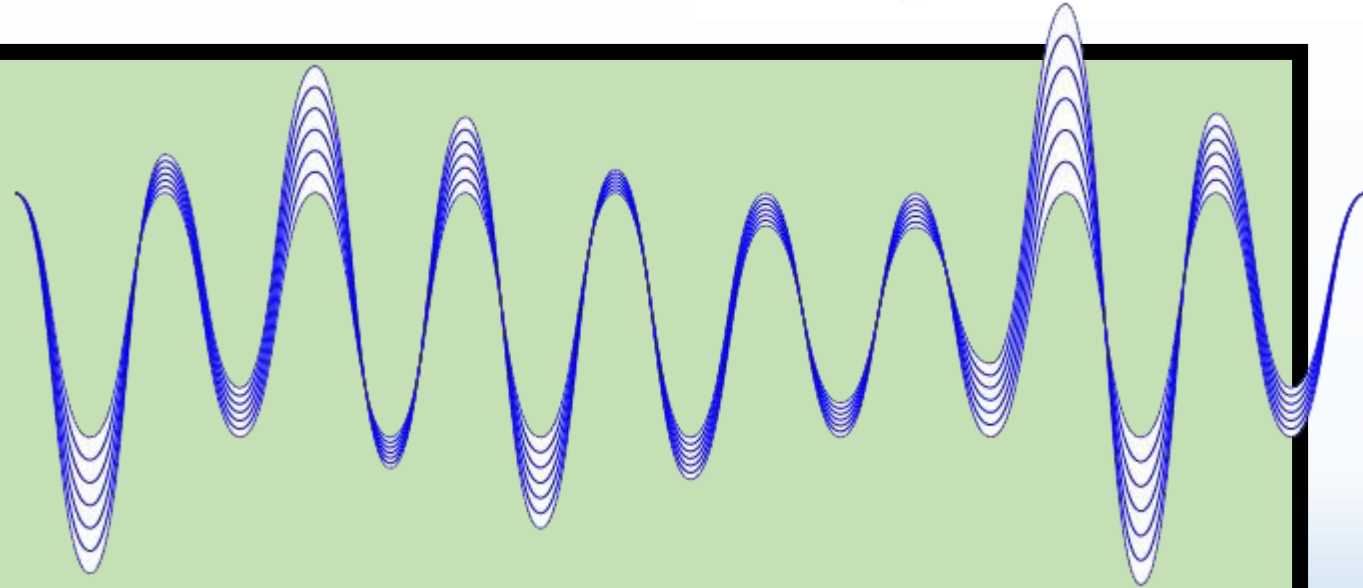


**Cambridge Assessment  
International Education**

Cambridge International School

# **Lesson 5 Sound**

## **Unit 1 Data Representation**

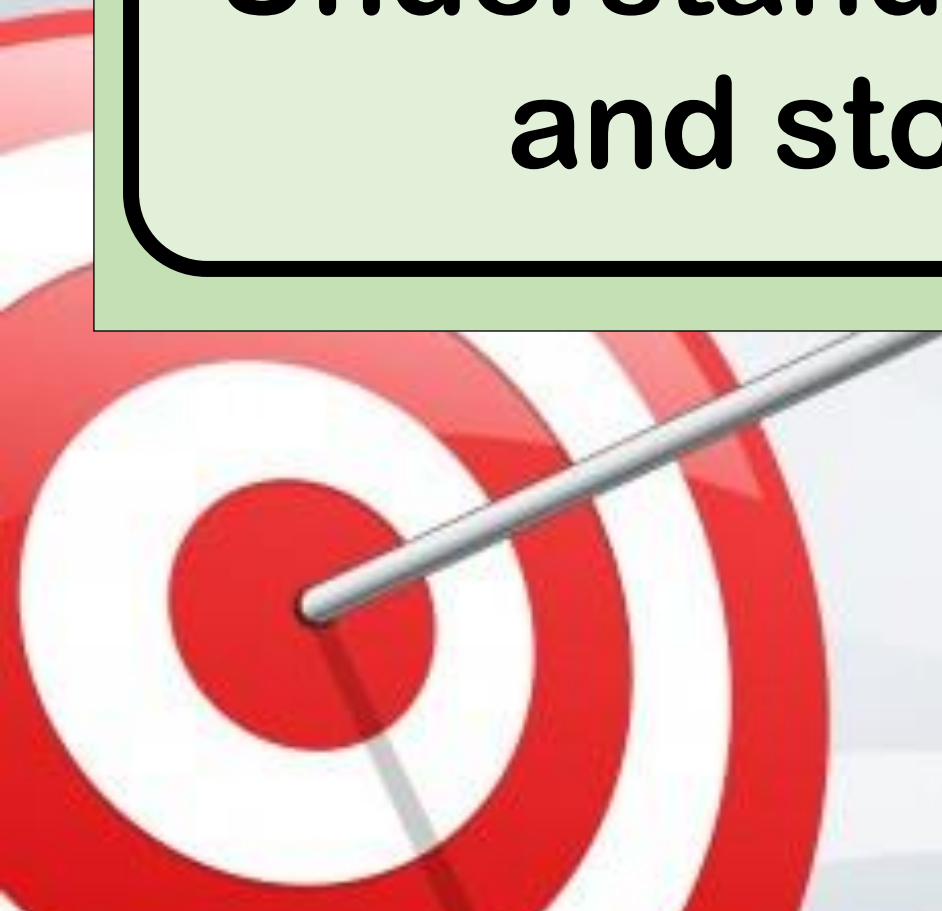


**Mr. Teasdale**

Today we are  
going to...



**Understand how sound is sampled  
and stored in digital form**



# Success Criteria

**Must**

Be able to represent a short sound file in binary

SILVER

**Should**

Explain how sampling intervals and resolution affect the size of a sound file

GOLD

**Could**

Describe the concept of MIDI file format, MP3 and MP4 files

PLATINUM



# Analogue to digital convertors



Analogue to Digital



Digital to Analogue



## Literacy Focus

- ☐ Bitmap
- ☐ Colour depth
- ☐ Metadata
- ☐ Pixel
- ☐ Resolution
- ☐ Vector

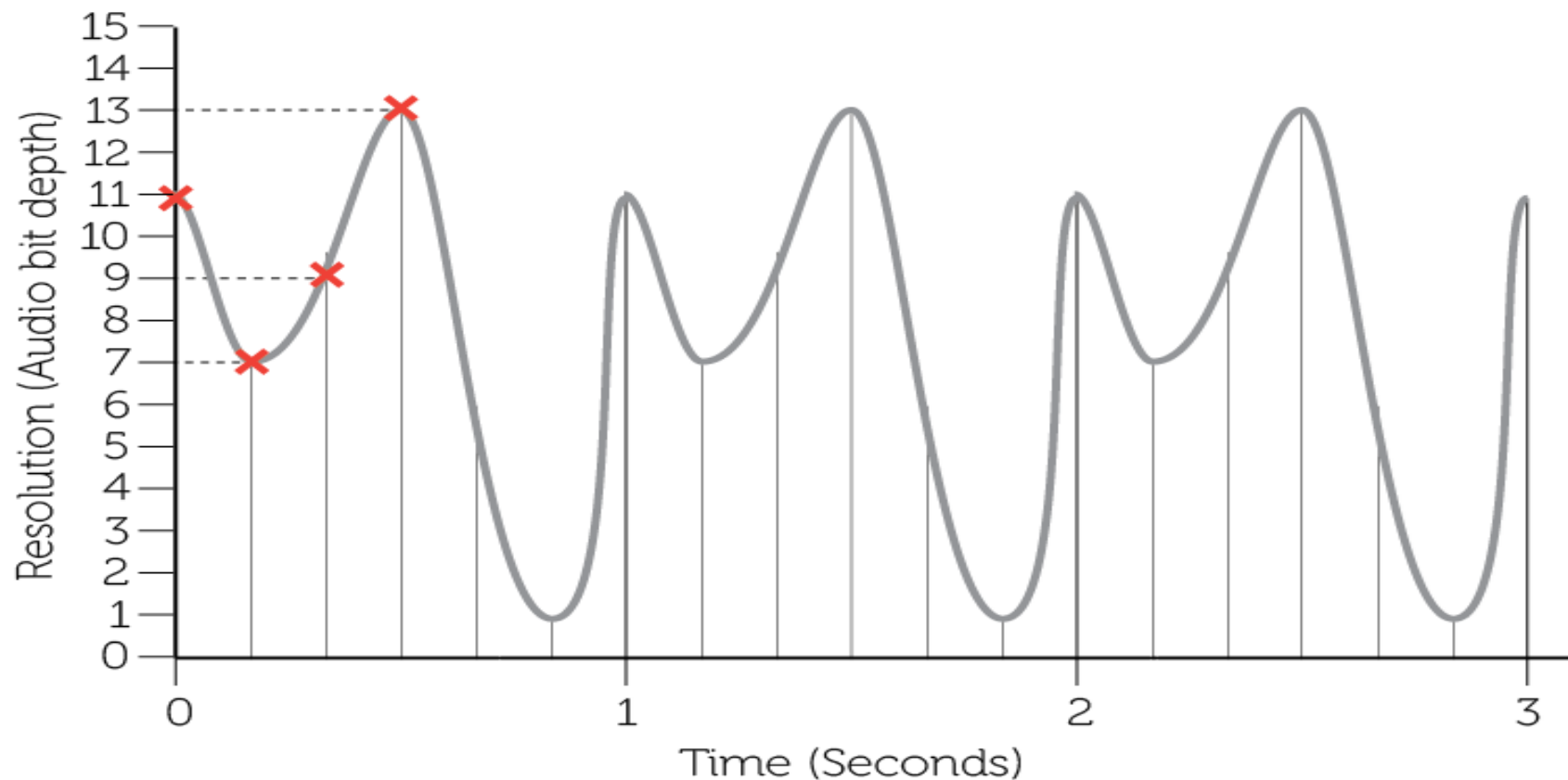
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# Sound sampling



## Literacy Focus

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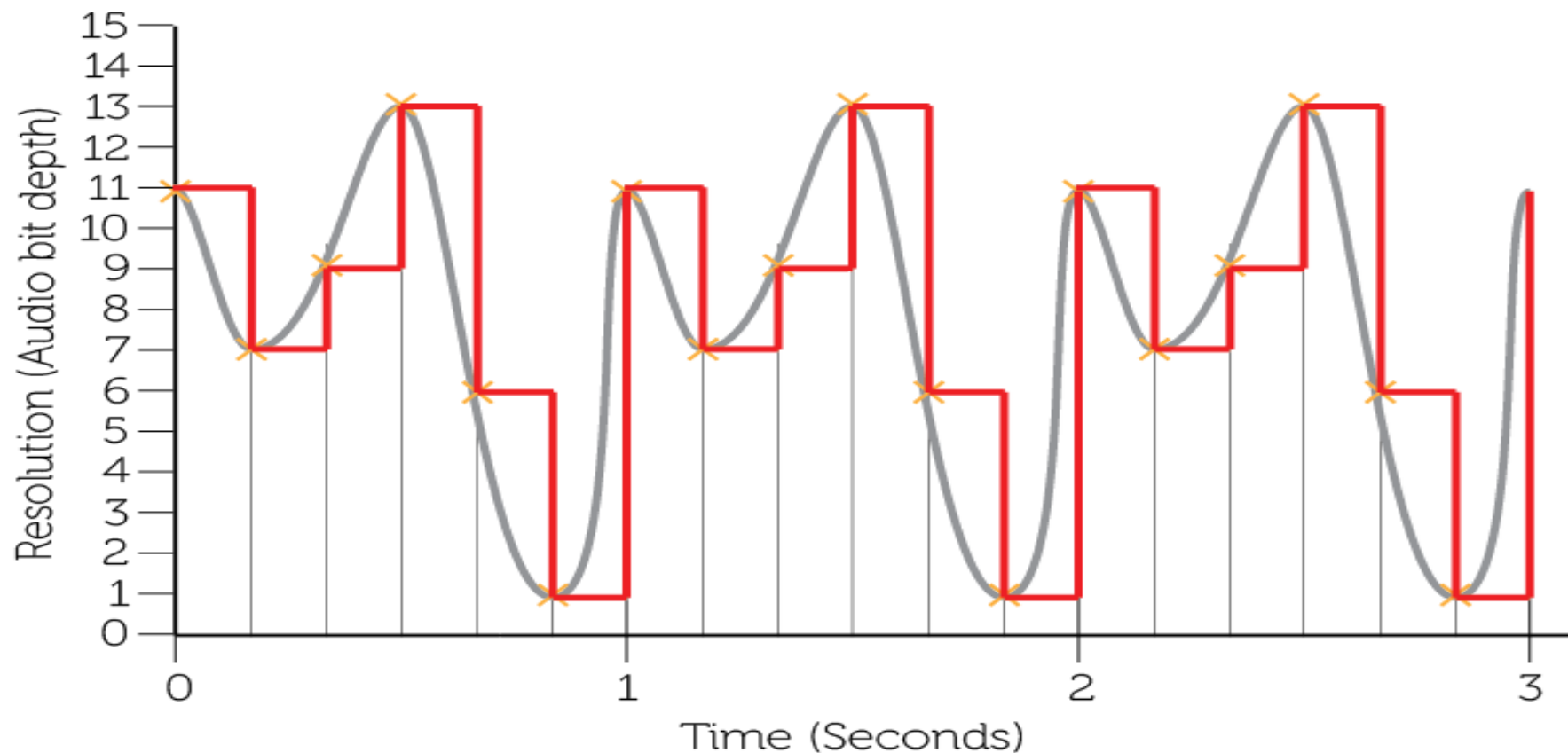
Y10/11  
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# Sound sampling



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## Task! Worksheet 5

- Now do **questions 1-3** on the worksheet

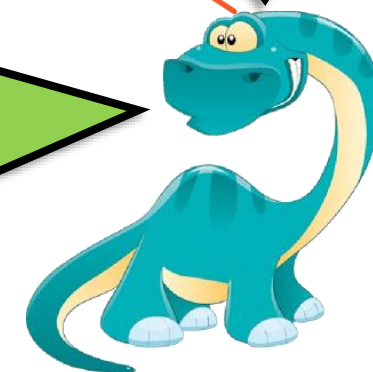


**Need help?**  
Checkout the  
revision notes in  
your notebooks



**Challenge?**

Checkout  
the images  
extension  
task!



### My Success Criteria

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# Digitized sound quality

- Recording quality improves:
  - the more frequently we sample the sound
  - the more accurately we record the wave height
- Increasing sampling rate and resolution means recording more data points
- What happens to the size of the sound file?



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# Our hearing range

- Between 20-20,000 Hz
- Varies depending on age
- Take the test!
- Use headphones...



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## Task! Worksheet 5

- Now do **questions 4-10** on the worksheet

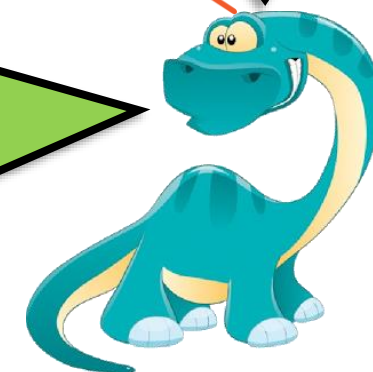


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### My Success Criteria

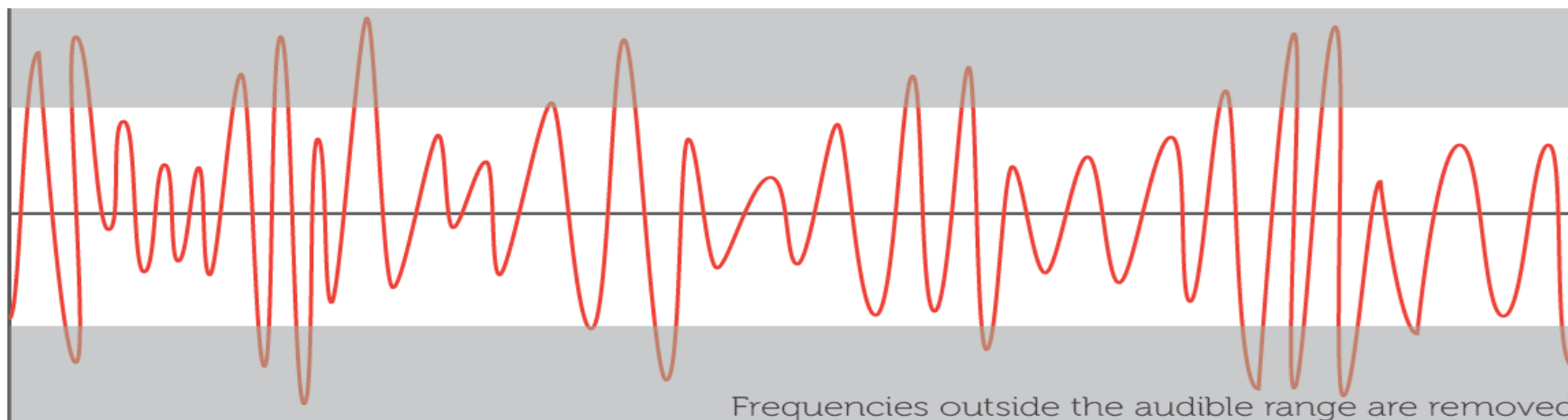
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# Lossy compression – MP3

- Lossy compression removes the sounds in the frequency ranges that we can't so easily hear or that least affect the perceived playback quality
- Lossy compression leaves out some data – this can affect the sound quality



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# Lossless compression

- Lossless compression leaves out repeated data and instead makes a note of how many times it is repeated
- *E.g. 10 x 5 takes less space to store than*

*5+5+5+5+5+5+5+5+5+5*



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# MP4 file format

- MP4 is a digital multimedia format most commonly used to store video and audio
- It can also be used to store subtitles and still images
- It allows different multimedia streams (video, audio, text) to be combined into one file



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# MIDI files

- MIDI stands for Musical Instrument Digital Interface
- A MIDI file:
  - is not a recording of a live music source
  - is a set of instructions for digital instruments to play synthesised sounds
  - can be used to synchronise an orchestra of digital instruments to play simultaneously
  - uses up to 1000 times less disk space than a conventional recording
  - is commonly used for mobile phone ringtones



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# Checkpoint



✓ How confident are you?



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# Cool down

1. Complete the skills 'checklist'
2. Answer the confidence question



3. Reflect on your learning

4. Review..... Quizlet Live

<https://quizlet.com/520861395/live>



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# Let's Review



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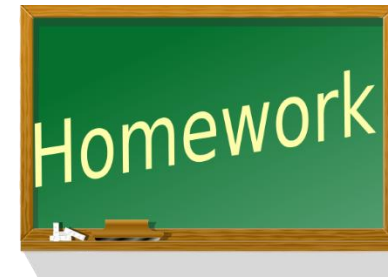
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PLATINUM

# Homework

Homework is in  
your notebooks,  
complete for next  
lesson!



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