

2 Compression and information – Part 2

Name: _____ Class: _____ Date: _____

Recall

In Part A you saw that data is stored as bits. Now how we make data smaller and useful:

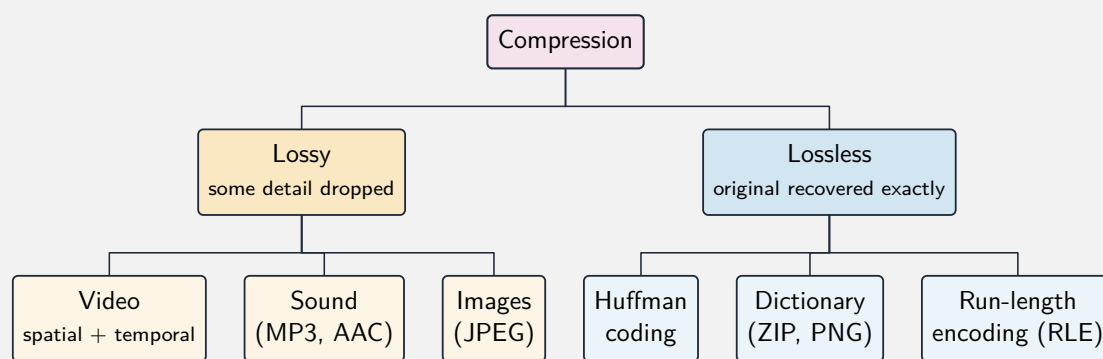
- You may have "zipped" files to make them smaller.
- Photos and music come in different quality settings.
- Data becomes useful when we find patterns in it.

Each idea has a worked example before the Practice.

New ideas

■ 1 Compression

Compression reduces the number of bits needed to store data. There are two kinds:



- **lossless** –you can restore the **exact** original (used for text and programs),
- **lossy** –some data is thrown away to shrink it more (used for photos, music, video).

■ 2 The trade-off

Lossless keeps everything but saves less; lossy saves more but loses some detail permanently. Choose lossless when the data must be exact.

■ 3 Data to information

Raw **data** becomes useful **information** when we find patterns, trends, and answers in it –often using programs to sort, filter, and chart it.

■ 4 Correlation is not causation

If two things rise together, that does **not** prove one caused the other. A pattern in data is a clue, not a proof.

Watch out: lossy compression **permanently** removes data –you cannot get the exact original back. Use it only when a small loss of quality is acceptable, never for data that must stay exact (like a program’s code).

Practice

Try these in order. The methods are all above.

2.1 State the difference between lossless and lossy compression.

[2]

2.2 State which type of compression you would use for a text document, and why.

[2]

2.3 State which type is normally used for photos and music. [1]

2.4 State what turns raw data into useful information. [2]

2.5 Two things rise together in some data. Explain why this does not prove one caused the other. [2]
