Past-paper walk-through

Multimedia ▪ 1.2

eXercise

Questions in this set

- 9618/13 N25 Q1 ▪ 7 marks
- 9618/13 N25 Q7 ▪ 14 marks
- 9618/11 J25 Q3 ▪ 7 marks
- 9618/13 J25 Q1 ▪ 14 marks
- 9618/12 N24 Q7 ▪ 7 marks
- 9618/12 J24 Q2 ▪ 17 marks

Reading the mark scheme

- **B1** a mark that stands on its own – the point is either made or not.
- **M1** a *method* mark: the right approach, even if the number is wrong.
- **A1** an *answer* mark, and it usually needs its M mark first.
- **C1** a working mark on the way to the answer.
- // separates answers the examiner accepts equally.
- **ecf** = error carried forward: a later part is marked on your own earlier answer.
- **owtte** = "or words to that effect" – the wording need not match.

Question 1

9618/13 N25 ▪ Q1 ▪ 7 marks

A student creates sound recordings.

(a) Making changes to a sound recording may impact the accuracy of the resulting sound file or the size of the file.

Draw **two** lines from each change to the impacts it has on the sound file.

Change	**Impact**
increase the duration of the recording	the file size gets bigger
	no change in the file size
increase the sampling rate	the file size gets smaller
	the accuracy of the sound file improves
decrease the sampling resolution	no change to the accuracy of the sound file

Question 1

[3]

Question 1

9618/13 N25 ▪ Q1 ▪ 7 marks

A student creates sound recordings.

(b) The file names of the sound recordings are stored using the ASCII character set.
Explain how text is represented by the ASCII character set. **[2]**

Question 1

9618/13 N25 ▪ Q1 ▪ 7 marks

A student creates sound recordings.

(c) Give **two** differences between the ASCII and UNICODE character sets.

1. 2. **[2]**

Solution 1

(a) Worked steps

Every one of these lines is decided by the same equation, so write it down before you draw anything:

file size = sampling rate × sampling resolution × duration

The *accuracy* of the recording is a separate matter, and it depends on only two of those three: how often you sample, and how finely you measure each sample. **Duration does not affect accuracy at all** — a longer recording is not a more faithful one.

Take each change and read it off the equation:

Solution 1

- **Increase the duration** — duration is a factor in the size, so *the file size gets bigger*; it is not a factor in accuracy, so *no change to the accuracy of the sound file*.
- **Increase the sampling rate** — more samples per second, so *the file size gets bigger*, and the samples follow the waveform more closely, so *the accuracy of the sound file improves*.
- **Decrease the sampling resolution** — fewer bits per sample, so *the file size gets smaller*, and each sample is rounded more coarsely, so *the accuracy of the sound file worsens*.

Solution 1

Each change earns one mark, and it earns it only when **both** its lines are right. The trap is the duration row: it is the only change of the three that touches size without touching accuracy, so "no change to the accuracy" has to be chosen deliberately rather than left over.

Mark scheme

- 1 mark for each correctly connected change box, max 3 marks

Solution 1

(b)

Mark scheme

- 1 mark per bullet point, max 2 marks
- ▪ Each character has a unique code
- ▪ Each character in the text is replaced sequentially / in order by its code

Solution 1

(c) Mark scheme

- 1 mark per bullet point, max 2 marks
- ▪ ASCII uses 7 / 8 bits Unicode can use many more / up to 32 bits
- ▪ Unicode can represent a wider range of characters including different languages
- 2 increase the duration of the recording decrease the sampling resolution increase the sampling rate the file size gets bigger no change in the file size the file size gets smaller the accuracy of the sound file improves no change to the accuracy of the sound file the accuracy of the sound file worsens
- October/November
- 2025

Question 7

9618/13 N25 ▪ Q7 ▪ 14 marks

A digital video camera records students in a classroom. The data is transferred from the digital video camera over the internet to a server. Artificial Intelligence (AI) is used to analyse the video on the server to identify when students are interacting with the lesson and the teacher.

(a) Describe **one** ethical impact of this use of AI in the classroom. **[2]**

Question 7

Algorithm	Method of data validation

INPUT x
IF x < 1 or x > 26 THEN
   OUTPUT "Invalid"
ENDIF	

INPUT x
IF x <> 'R' AND x <> 'G' AND x <> 'B' THEN
   OUTPUT "Invalid"
ENDIF	

INPUT x FLAG ← FALSE FOR INDEX ← 1 TO LENGTH(x) IF MID(x, INDEX, 1) = "@" THEN	

Question 7

```
    IF MID(X, INDEX, 1) = '@' THEN
        FLAG ← TRUE
    ENDIF
NEXT INDEX
IF NOT FLAG THEN
    OUTPUT "Invalid"
ENDIF
```

Question 7

9618/13 N25 ▪ Q7 ▪ 14 marks

A digital video camera records students in a classroom. The data is transferred from the digital video camera over the internet to a server. Artificial Intelligence (AI) is used to analyse the video on the server to identify when students are interacting with the lesson and the teacher.

(b) A video is made of many bitmap images called frames. 30 frames are recorded every second.

Each frame is 4000 pixels wide by 3000 pixels high. The video records using 16-bit colour depth.

Calculate an estimate for the file size for **one** second of the video in gigabytes.

Show your working. **[2]**

Question 7

9618/13 N25 ▪ Q7 ▪ 14 marks

A digital video camera records students in a classroom. The data is transferred from the digital video camera over the internet to a server. Artificial Intelligence (AI) is used to analyse the video on the server to identify when students are interacting with the lesson and the teacher.

(c) Identify **and** describe **one** method of data verification that can be used when transferring data from the digital video camera to the server. **[3]**

Question 7

9618/13 N25 ▪ Q7 ▪ 14 marks

A digital video camera records students in a classroom. The data is transferred from the digital video camera over the internet to a server. Artificial Intelligence (AI) is used to analyse the video on the server to identify when students are interacting with the lesson and the teacher.

(d) Describe **two** reasons why the server that stores the videos uses magnetic hard disks instead of solid state (flash) memory.

1. 2. **[4]**

Question 7

9618/13 N25 ▪ Q7 ▪ 14 marks

A digital video camera records students in a classroom. The data is transferred from the digital video camera over the internet to a server. Artificial Intelligence (AI) is used to analyse the video on the server to identify when students are interacting with the lesson and the teacher.

(e) The table contains three algorithms that perform data validation. The third algorithm uses the functions `MID` and `LENGTH`.

The functions `MID` and `LENGTH` are defined as follows:

Question 7

- `MID(ThisString : STRING, x : INTEGER, y : INTEGER) RETURNS STRING`
  returns a string of length `y` starting at position `x` from `ThisString`
- `LENGTH(ThisString : STRING) RETURNS INTEGER`
  returns the integer value representing the length of `ThisString`

Complete the table to identify the method of data validation for each algorithm. Each method of data validation must be different.

Algorithm	**Method of data validation**

INPUT x
IF x < 1 or x > 26 THEN
OUTPUT "Invalid"
ENDIF	

INPUT x
IF x <> 'R' AND x <> 'G' AND x <> 'B' THEN
OUTPUT "Invalid"
ENDIF	

INPUT x FLAG <- FALSE FOR INDEX <- 1 TO LENGTH(x) IF MID(x, INDEX, 1) = "@" THEN FLAG <- TRUE	

Question 7

[3]

Solution 7

(a) Mark scheme

- 1 mark per point, max 2 marks e.g.
- ▪ The learning experience could be improved
- ▪ ... by identifying students who are struggling
- ▪ .... and employing more personalised learning
- ▪ There could be early Intervention
- ▪ ... to determine which students require extra support
- ▪ Teachers and students could understand the challenges better
- ▪ ...and identify optimal times for learning

Solution 7

- There could be privacy concerns
- …. students / teachers could be uncomfortable with constant surveillance
- … students might not want their data / actions passed to third parties
- There could be Mental Health concerns
- …. due to constant monitoring and pressure
- …. contributing to student stress and anxiety

Solution 7

(b) Worked steps

A video is just a stack of bitmaps, so start from the size of one frame and multiply up.

- **Pixels in one frame:** $4000 \times 3000 = 12\ 000\ 000$
- **Pixels in one second:** $12\ 000\ 000 \times 30 = 360\ 000\ 000$
- **Bits:** $360\ 000\ 000 \times 16 = 5\ 760\ 000\ 000$
- **Bytes:** $5\ 760\ 000\ 000 \div 8 = 720\ 000\ 000$
- **Gigabytes:** $720\ 000\ 000 \div 1000^3 = \mathbf{0.72\ GB}$

Solution 7

One mark is for the working and one for the answer, so set the whole calculation out on one line before evaluating it:

```
(4000 * 3000 * 30 * 16) / (8 * 1000 * 1000 * 1000)
```

Solution 7

Two habits protect the marks. Divide by 8 **once**, at the point where bits become bytes — folding it in early is where the factor-of-eight errors come from. And answer in the unit the question asked for: the working ends in bytes, and the question wants gigabytes.

Mark scheme

- 1 mark for the working
- 1 mark for the correct answer
- Working:
- (4000*3000*30*16) / (8*1000*1000*1000)
- //(4000*3000*30*2) / (1000*1000*1000)
- Answer: 0.72 gigabytes

Solution 7

(c) Mark scheme

- 1 mark for the name 2 marks for the matching description, max 3 marks
- ▪ Parity Byte Check
- ▪ a parity bit is added to each byte to make the number of 1s match the parity, odd or even
- ▪ each byte can be checked on receipt and request to be resent if the byte does not match parity
- ▪ Parity Block Check
- ▪ a bit is added to each byte, but a parity byte is also set for each block

Solution 7

- ▪ the location of an error can be found using vertical and horizontal parity
- ▪ Checksum
- ▪ A calculation is made from the data and transmitted with the data
- ▪ The receiver performs the same calculation and compares with received checksum to see if they match
- 3
- October/November
- 2025

Solution 7

(d)

Mark scheme

- 1 mark per reason, 1 mark for corresponding justification x2 max 4 marks
- ▪ Lower cost per unit of storage
- ▪ ... so the high capacity of storage required for large number of video files will be less costly
- ▪ A large number of read/write operations are being performed continuously
- ▪ ... and magnetic storage is likely to have a longer life span compared with solid state

Solution 7

(e) Worked steps

Read each algorithm and ask what it *rejects*, not what it accepts — a validation check is named after the thing it refuses.

- A check that compares the input against a fixed minimum and maximum is a **range check**.
- A check that counts the characters, or tests them against `LENGTH`, is a **length check**.
- A check that walks the string with `MID(ThisString, x, 1)` and tests each character is a **type check** (or a **format check** when it also tests the *pattern* — which characters must be letters and which digits, and in what order).

Solution 7

`MID` and `LENGTH` are given precisely because the third algorithm inspects the string one character at a time: `LENGTH` bounds the loop, `MID(…, x, 1)` pulls out the character at position `x`.

The one to be careful with is **presence** versus **format**: an algorithm that only asks whether anything was entered is a presence check, however long the code is.

Mark scheme

- 1 mark for each validation check correctly identified, max 3 marks
- Range Check
- Existence Check
- Format Check

Question 3

9618/11 J25 ▪ Q3 ▪ 7 marks

A computer stores images and text files.

(a) One of the images is a bitmapped image.

Complete the table by writing the answer for each statement.

Statement	**Answer**
the term for the smallest element that makes up an image	
the largest number of different colours that can be represented with a bit depth of 8 bits	
the term for the dots per inch (dpi) when an image is displayed	

Question 3

[3]

Question 3

Statement	Answer
the term for the smallest element that makes up an image	
the largest number of different colours that can be represented with a bit depth of 8 bits	
the term for the dots per inch (dpi) when an image is displayed	

[3]

Question 3

9618/11 J25 ▪ Q3 ▪ 7 marks

A computer stores images and text files.

(b)(i) Give **two** advantages of using the Unicode character set instead of using the ASCII character set.

1. 2. **[2]**

(b)(ii) The Unicode character ' ' has the binary value: 0010 0111 0110 1110

Convert the binary value for the character ' ' into denary. **[1]**

(b)(iii) The Unicode character ' ' has the hexadecimal value 2140

Convert the hexadecimal code for the character ' ' into denary. **[1]**

Solution 3

(a) Mark scheme

- 1 mark for each correct answer
- Statement
- The term for the smallest element that makes up an image.
- pixel
- The largest number of different colours that can be represented with a bit depth of 8 bits.
- 256 // 2^8
- The term for the dots per inch (dpi) when an image is displayed.

Solution 3

- Screen resolution

Solution 3

(b)(i)

Mark scheme

- 1 mark each to max 2
- - A wider range of characters can be represented
- - so characters from more languages can be represented
- - and symbols such as emojis can be used

Solution 3

(b)(ii) Worked steps

Sixteen bits is a long column of place values, so convert **through hexadecimal** rather than adding sixteen powers of two.

- Split into nibbles: `0010 0111 0110 1110`
- Each nibble is one hex digit: `2`, `7`, `6`, `E`
- Now expand base 16, whose place values are 4096, 256, 16, 1:
  $2 \times 4096 + 7 \times 256 + 6 \times 16 + 14 \times 1$
- $= 8192 + 1792 + 96 + 14 = \mathbf{10\,094}$

Solution 3

Four multiplications instead of sixteen, and far fewer places to slip. Remember `E` is 14 — the hex digits run A = 10 through F = 15.
Adding the binary place values directly gives the same answer, but the ones are at positions 8192, 1024, 512, 256, 128, 64, 32, 8, 4 and 2, and missing one of them is the usual error.

Mark scheme

- 1 mark for:
- 10,094

Solution 3

(b)(iii) Worked steps

Already in hexadecimal, so this is one expansion.

- 2140 in base 16: $2 \times 4096 + 1 \times 256 + 4 \times 16 + 0 \times 1$
- $= 8192 + 256 + 64 + 0 = \mathbf{8512}$

Write the four place values 4096, 256, 16, 1 above the digits before you start — they are 16^3 down to 16^0, and getting them from memory is where four-digit hex conversions go wrong.

Solution 3

The zero still occupies a column. Dropping it turns 2140 into the three-digit 214 and the answer into 532.

Mark scheme

- 1 mark for:
- 8,512

Question 1

9618/13 J25 ▪ Q1 ▪ 14 marks

A student paints a picture in an art class.

(a)(i) Calculate the file size of the image created by the digital camera in megabytes (MB).

Show your working. **[2]**

(a)(ii) The student takes a second photograph with a lower bit depth.

Explain the effect of decreasing the bit depth on the image and on the image file.

Effect on image

Effect on image file **[4]**

Question 1

Description	Term
the number of times the amplitude is measured per time interval	
the number of bits used to store each amplitude measurement	
the type of sound wave before it is recorded by a computer	

[3]

Question 1

Character	Denary	8-bit Binary	Hexadecimal
!	33		21
L		01001100	4C
ü	252	11111100	

[3]

Question 1

9618/13 J25 ▪ Q1 ▪ 14 marks

A student paints a picture in an art class.

(b) A teacher records an audio file of the student playing the piano during a music lesson.

Complete the table by giving the term for each description about sound representation on a computer.

Description	Term
the number of times the amplitude is measured per time interval	
the number of bits used to store each amplitude measurement	
the type of sound wave before it is recorded by a computer	

Question 1

[3]

Question 1

9618/13 J25 ▪ Q1 ▪ 14 marks

A student paints a picture in an art class.

(c)(i) The computer uses the Unicode character set.

Give **two** characteristics of the Unicode character set.

1. 2. **[2]**

(c)(ii) Some of the school's computers use the extended ASCII character set.

The table gives some characters from the extended ASCII character set, their denary, 8-bit binary and hexadecimal numbers.

Complete the table by filling in the missing numbers.

Character	Denary	8-bit Binary	Hexadecimal
!	33		21
L		01001100	4C
ü	252	11111100	

Question 1

[3]

Solution 1

(a)(i) Worked steps

File size is the number of pixels times the bits per pixel, converted to the unit asked for.

- Bits: $2\,000\,000 \times 16$
- Bytes: divide by 8.
- Megabytes: divide by 1000×1000.

Set the whole thing out on one line before evaluating it — one mark is for the working:

```
2000000 * 16 / (8 * 1000 * 1000)
```

Solution 1

- $= \dfrac{32\,000\,000}{8\,000\,000} = \mathbf{4}$ MB

Solution 1

Divide by 8 **once**, at the point where bits become bytes; folding it in early is where the factor-of-eight errors come from. And answer in the unit the question names — the working ends in bytes and the question wants megabytes.

Mark scheme

- 1 mark for correct working:
- e.g.
- 2000000 * 16 / (8 * 1000 * 1000)
- 1 mark for answer:
- 4MB

Solution 1

(a)(ii) Mark scheme

- 1 mark each
- Image:
- - There will be fewer shades of colour available
- - so the image does not match the original as detail is lost
- Image file:
- - Fewer bits are used to store each pixel
- - so less data is stored, therefore the file size is reduced

Solution 1

(b)

Mark scheme

- 1 mark for each correct term:
- Description
- Sound term the number of times the amplitude is measured per time interval
- Sampling rate the number of bits used to store each amplitude measurement
- Sampling resolution the type of sound wave before it is recorded by a computer
- Analogue

Solution 1

(c)(i)

Mark scheme

- 1 mark each to max 2
- - 8 / 16 / 32 / bits per character
- - Represents 28 / 216 / etc. characters
- - Represents every language and other characters such as emojis

Solution 1

(c)(ii) Worked steps

Each row of the table is the same value written three ways, so fill any gap from whichever column is already there.

- `!` — denary 33, so binary `0010 0001` and hex `21`.
- `L` — denary 76, so binary `0100 1100` and hex `4C`.
- `ü` — denary 252, so binary `1111 1100` and hex `FC`.

Solution 1

The quickest route in both directions is through the **nibbles**: split the eight bits into two groups of four, and each group is one hex digit. `1111 1100` is `F` and `C`; going the other way, `4C` is `0100` and `1100`.

Two marks are lost more often than any others here. Keep the binary **eight bits** wide, padding with leading zeros — 33 is `0010 0001`, not `100001`. And use uppercase letters for the hex digits above 9, with $\texttt{C} = 12$ and $\texttt{F} = 15$.

A quick check on the last row: 252 is four short of 256, and `1111 1100` is `1111 1111` minus 3 — that is $255 - 3 = 252$. **Mark scheme**

- 1 mark for each correctly completed space
- Character

Solution 1

- Denary
- 8–bit Binary
- Hexadecimal
- !
- 33
- 0010 0001
- 21
- L
- 76
- 0100 1100

Solution 1

- 4C ü
- 252
- 1111 1100
- FC

Question 7

9618/12 N24 ▪ Q7 ▪ 7 marks

A student takes a photograph of a science experiment.

(a)(i) Define the following bitmap terms. **[2]**

(a)(ii) Explain why changing the image resolution will affect the image quality and file size. **[2]**

(a)(iii) Identify **one** lossless method of compressing an image. **[1]**

(b) The student draws a picture on paper that is scanned into the computer and saved as a vector graphic.

Define the vector graphic terms property and drawing list. **[2]**

Solution 7

(a)(i)

Mark scheme

- 1 mark for each correct definition
- Colour depth:
- ▪ the number of bits used to represent a colour // the number of colours that can be represented in an image
- File header:
- ▪ stores data about the image file / metadata

Solution 7

(a)(ii) Mark scheme

- 1 mark for each correct explanation
- Image quality:
- ▪ Decreasing resolution means details within the image are lost because there are fewer pixels // Increasing resolution means the image is more detailed because there are more pixels
- File size:
- ▪ Decreasing the resolution will decrease the file size because there are fewer pixels therefore less data // Increasing the resolution will increase the file size because there are more pixels therefore more data

Solution 7

(a)(iii)

Mark scheme

- 1 mark for correct method
- For example:
- - Run-Length Encoding

Solution 7

(b) Mark scheme

- 1 mark for each correct definition
- Property:
- ▪ an attribute of a drawing object // data about a shape // defines one aspect of the appearance of a drawing object
- Drawing list:
- ▪ all the drawing objects/shapes in an image // stores the commands/descriptions / mathematical equations required to draw each object
- 2

Solution 7

- October/November
- 2024

Question 2

9618/12 J24 ▪ Q2 ▪ 17 marks

2 A computer game is being designed that users will be able to play using a virtual reality (VR) headset.

(a) Complete the description of the principal operation of a VR headset.

Question 2

the user. The headset has speakers that output surround sound to give a realistic experience.

The user's head movements are detected using a sensor.

Question 2

eye movements for analysis.

[4]

(b) The computer uses a buffer when transmitting data to the VR headset.

Explain how a buffer is used when data is transmitted between the computer and the VR headset.

Question 2

(c) The VR headset has Electrically Erasable Programmable Read Only Memory (EEPROM).

Explain the benefits of using EEPROM instead of other types of Read Only Memory (ROM) in the VR headset.

Question 2

(d) The computer can transmit a video made from bitmap images and vector graphic animations to the VR headset.

(i) Describe how the data for a bitmapped image is encoded.

Question 2

(ii) Describe the contents of a vector graphic drawing list.

Question 2

(iii) The bitmap video is **not** compressed before transmission to the VR headset.

Give **two** reasons why the video does **not** need to be compressed.

Question 2

[2]

Solution 2

(a) Worked steps

Fill each gap from what the sentence around it is describing — the passage names an output device, a sensor, the quantities it measures, and an input device.

- The headset has one or two **LCD displays / screens / lenses** that output the image.
- Head movement is detected by a **gyroscope or accelerometer**.
- That sensor measures the **direction and speed** of the movement.
- The outside world is captured by **digital cameras**.

Solution 2

One mark per gap. The distinction that matters is **sensor versus device**: a gyroscope is a sensor because it measures a physical quantity and reports a value; a screen is an output device because it turns data into something a person perceives. Naming "a sensor" in the gap that already says "This sensor is a..." scores nothing. **Mark scheme**

- 1 mark for each correctly completed statement:
- ▪
- (LCD) displays/screens/lenses
- ▪
- gyroscope/accelerometer
- ▪

Solution 2

- direction/speed
- ▪
- digital cameras
- A headset can have one or two (LCD) displays/screens/lenses that output
- the image to the user. The headset has speakers that output surround sound
- to give a realistic experience.
- The user's head movements are detected using a sensor.
- This sensor is a gyroscope/accelerometer. The data is transmitted to a
- microprocessor that analyses the data to identify the direction/speed of
- movement. Some headsets use digital cameras that record the user's eye

Solution 2

- movements for analysis.
- 4

Solution 2

(b) Worked steps

A buffer exists because the computer and the headset work at different speeds, and an interrupt is how one tells the other it needs attention. Three marks from:

- The buffer is a **temporary store** for data on its way to the headset.
- The computer **writes** data into the buffer.
- The headset **reads** data out of it.
- When the buffer is **empty**, an interrupt goes to the computer asking for more data; when it is **full**, an interrupt tells the computer to stop sending.
- Equally, when the headset needs more data — or has enough — it raises an interrupt to start or stop the flow.

Solution 2

Give the **direction** of every transfer and of every interrupt. “An interrupt is sent” without saying by what, to what, and why is half an answer, and this question is marked on exactly those details. **Mark scheme**

- 1 mark each to max 3:
- -
- The buffer is used as a temporary store for data going to the headset
- -
- Data is transferred into the buffer by the computer
- -

Solution 2

- Data is retrieved from the buffer by the headset
- ▪
- When the buffer is empty/full an interrupt is sent to the computer
- requesting more data/stopping further data being sent
- ▪
- When the headset has enough data/needs more data, an interrupt is sent
- by the headset to the computer to stop sending data from buffer
- 3

Solution 2

(c) Worked steps

EEPROM is *electrically erasable* programmable ROM, and each property of the answer follows from one word of that. Three marks from:

- It allows **frequent read, write and erase** operations.
- So the firmware can be updated to **take advantage of new features**.
- Without **fully erasing** the existing contents first — a single byte can be erased, or the whole chip.
- Without **removing the chip** from the headset.
- So the **user** can update it, with no technical expertise.

Solution 2

The comparison being drawn is with ROM, which cannot be changed at all, and with EPROM, which must be removed and erased under ultraviolet light. Say what EEPROM makes *possible*, not just what it is. **Mark scheme**

- 1 mark each to max 3:
- ▪
- EEPROM allows frequent/multiple read/write/erase operations
- ▪
- … so the headset can take advantage of new features
- ▪

Solution 2

- ... without fully erasing the contents of the firmware in the headset first //
- can erase a particular byte or the whole EEPROM
- ▪
- ... without removing the chip(s)/firmware from the headset
- ▪
- ... the contents of the firmware in the headset can be changed by the user
- without technical expertise
- ▪
- Cheaper to manufacture so headset will be cheaper to purchase
- 3

Solution 2

(d)(i) Mark scheme

- 1 mark each:
- ▪
- Image is made of pixels and each pixel has one colour
- ▪
- Each colour has a unique binary code
- ▪
- Code for the colour of each pixel is stored in sequence
- 3

Solution 2

(d)(ii) Worked steps

A vector file does not store pixels. It stores the **instructions for drawing the picture**. Two marks from:

- A **list of the objects** in the drawing.
- For each object, the **command, description or equation** needed to draw it.
- The **properties** of each object — fill colour, line weight, line colour.

The consequence worth stating, and the reason this is asked at all: because the file holds equations rather than a grid of pixels, the image can be scaled to any size without losing quality, and the file size depends on how many objects there are rather than on the resolution. Mark scheme

Solution 2

- 1 mark each to max 2:
- ▪
- List of objects in the drawing
- ▪
- A list that stores the command/description/equation required to draw each
- object
- ▪
- Properties of each object e.g. the fill colour, line weight/colour
- 2
- 9618/12

Solution 2

- May/June 2024

Solution 2

(d)(iii) Worked steps

The question asks why compression is *unnecessary* here, so give reasons specific to this link. Two marks from:

- The headset has a **dedicated connection** — it is not sharing bandwidth with anything else.
- That connection is **already fast enough** to carry the data without slowing the display.
- The video may **already be small enough** that reducing it further gains nothing.
- The video is **not saved**, so storage space in the headset is not a consideration.

Solution 2

Compression buys two things: less bandwidth and less storage. Each of the reasons above says that one of those is not scarce in this situation — which is the shape the answer has to take. Saying "compression reduces quality" is true of lossy compression but does not answer why it is *unnecessary*. **Mark scheme**

- 1 mark each to max 2:
- ▪
- Dedicated connection to the headset // not sharing bandwidth
- ▪
- Already fast connection that can transmit the data without slowing
- ▪

Solution 2

- Video may already be a small file size and does not need further
- reduction
- ▪
- Video is not saved so storage is not an issue in the headset
- 2