Grade 8 Computing

Unit 6 · Photos, Sound and Video

ANSWER KEY · FOR TEACHERS

Full marks 35

Give the marks for the points in the marking scheme; an answer in other words that says the same is right.

1 Key words

1. histogram
2. clipped
3. aspect ratio
4. compression artifacts
5. Lossless
6. lossy
7. timeline
8. captions

Each carries 0.5 mark. **K · 4**

2 Label the diagram

1. Trim: drag a clip's end to cut off a dull part
2. Video
3. Split: cut a clip in two, then move or delete a part
4. Playhead

Each carries 0.5 mark. **K · 2**

3 Multiple choice

i. **b.** Its numbers go up, so it becomes lighter. **U · 1**

Contrast pushes numbers away from the middle, 128. 200 is above the middle, so it is pushed further up, towards 255: the light gray gets lighter. A dark pixel, below 128, would be pushed down and get darker.

ii. **b.** dull and gray, like a hazy day **U · 1**

With no pixels near black or white, the photo has little contrast: everything is a middling grayish tone, like a view through haze. More contrast spreads the pixels out. (Too dark would bunch them at the left; blur doesn't show in a histogram at all.)

iii. **c.** Resize it to 1,200 pixels wide and save it as a JPEG at quality 80. **A · 1**

Resizing cuts the pixels to less than a tenth, and quality 80 keeps it looking clean. PNG would make it far bigger; quality 5 would fill it with blocks; a screenshot is a new picture at the screen's size, often a bigger file.

iv. **c.** SVG **U · 1**

SVG is a vector picture: the logo's shapes are drawn again at any size, so it stays sharp. A small JPEG or PNG would look blocky when blown up to banner size.

v. **a.** a video for your school club's page that earns nothing **A · 1**

NC means not for making money. The club's video doesn't earn anything; the other three are all ways of making money with it.

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4 True or false

U · 3

i. ✓ **True**
ii. ✗ **False:** A screenshot is a new picture at the screen's size, often a bigger file than the photo.
iii. ✓ **True**
iv. ✗ **False:** The voice gets weaker with distance; the noise stays the same (and automatic gain turns it up).
v. ✓ **True**
vi. ✗ **False:** Credit says who made it; permission comes from a license that allows the use, or from asking.

Each carries 0.5 mark.

5 Calculations

a.

A · 4

ANSWER

i. 3,000 × 2,000 = 6,000,000 pixels × 3 = 18,000,000 bytes. 18,000,000 ÷ 1,024 ÷ 1,024 ≈ **17.2 MB.**
ii. The width is divided by 3,000 ÷ 750 = 4, so the height is 2,000 ÷ 4 = **500 pixels.** Pixels: 750 × 500 = 375,000, which is 375,000 ÷ 6,000,000 = **1/16** of them.
iii. 375,000 × 3 = 1,125,000 bytes ÷ 1,024 ≈ **1,099 KB** (about 1.1 MB).

MARKING SCHEME

✓ i. 6,000,000 pixels × 3 = 18,000,000 bytes ≈ 17.2 MB.
✓ ii. 2,000 ÷ 4 = 500 pixels high.
✓ ii. 750 × 500 = 375,000 pixels, 1/16 of them.
✓ iii. 375,000 × 3 = 1,125,000 bytes ≈ 1,099 KB.

b.

A · 2

ANSWER

Bits: 128,000 × 180 seconds = 23,040,000 bits.
Bytes: 23,040,000 ÷ 8 = 2,880,000 bytes, which is 2,880,000 ÷ 1,024 = **2,812.5 KB**, about 2.7 MB.

MARKING SCHEME

✓ 128,000 × 180 = 23,040,000 bits.
✓ ÷ 8 = 2,880,000 bytes ≈ 2,812.5 KB (about 2.7 MB).

6 May you use it?

A · 5

ANSWER

Music's license	Your video	Allowed? (Yes or No, and why)
CC BY	a school project	**Yes**, with credit
CC BY-NC	an advertisement for a shop	**No:** an advertisement is for making money
CC BY-ND	a school project	**No:** a soundtrack counts as a changed version, and ND forbids changes
CC0	anything	**Yes**; credit is kind but not needed
no license shown	a school project	**No**, unless the owner agrees when asked: with no license, all rights are kept

MARKING SCHEME

✓ CC BY: yes, with credit.
✓ CC BY-NC: no, an advertisement makes money.
✓ CC BY-ND: no, a soundtrack is a changed version.
✓ CC0: yes, no conditions.
✓ No license: no, unless you ask and the owner agrees.

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7 Short answers

ANSWER **A · 4**

i. **JPEG**: made for photos, small, and accepted by almost every form.
ii. **PDF**: keeps the page exactly as it was laid out and prints the same on any computer.
iii. **MP3** (or M4A): sound only, small, plays on every phone.
iv. **PNG**: lossless, so the small text in the screenshot stays sharp.

MARKING SCHEME

✓ i. JPEG: made for photos, small, accepted by almost every form.
✓ ii. PDF: keeps the page exactly as laid out, prints the same anywhere.
✓ iii. MP3 (or M4A): sound only, small, plays on every phone.
✓ iv. PNG: lossless, so the small text stays sharp.

8 Long answer

ANSWER **A · 4**

1. Read exactly what the form asks for: format, size in pixels, file size, background.
2. Keep the original, and work on a copy.
3. Crop it to the shape asked for, cutting away what isn't needed.
4. Resize it: to the pixels asked for, or about 1,000 to 1,600 pixels across if none are given. This removes most of the bytes.
5. Save it as a JPEG at about quality 80, and check the file size.
6. If it is still over 200 KB, lower the quality a little at a time, checking each time.
7. Zoom in and look: the face or the writing must still be clear, with no blocks or smudges.

MARKING SCHEME

✓ Read what the form asks for, and work on a copy, keeping the original.
✓ Crop to the shape asked for, then resize (to the pixels asked for, or about 1,000 to 1,600 across).
✓ Save as a JPEG at about quality 80 and check the file size; if it is still too big, lower the quality a little at a time.
✓ Zoom in and look: the face or the writing must still be clear, with no blocks or smudges.

9 Think

ANSWER **HA · 2**

No, not on its own. Credit says who made it; it doesn't give permission to use it. Unless the photographer's site shows a license, such as Creative Commons, that allows this use, all rights stay with her. Your friend should ask her (many photographers say yes to a school club, if asked), or choose a photo with a license that allows it, and credit that one. Credit is needed as well as permission, not instead of it.

MARKING SCHEME

✓ No: credit says who made it, but it isn't permission; without a license that allows it, all rights stay with the photographer.
✓ Ask the photographer, or use a photo whose license allows it, and credit it.

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10 Activity: A photo for a form

(not marked)

WHAT STUDENTS SHOULD FIND

A phone photo starts at several thousand pixels across and a few MB. Cropping to a square takes away about a quarter to a third of the pixels. Resizing to 600 × 600 leaves a small fraction of them, and saved as a JPEG at quality 80 the file is usually well under 200 KB (raw, 600 × 600 × 3 bytes is about 1,055 KB, and a JPEG at good quality squeezes a photo 10 times or more). The face should still be sharp when zoomed in; there is no need to push the quality down further.

Marks by level	Knowledge	Understanding	Application	Higher ability	**Total**
Marks	6	6	21	2	**35**

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