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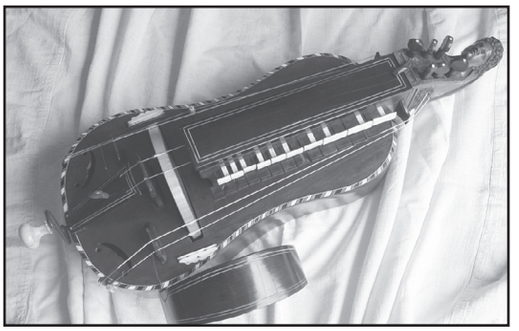

Figure 2.2 First instrument with mechanical gears

STUDENT WORKSHEET

1. What type of early automatic instrument could play music without a human's touch?

2. What was the first instrument to use gear technology? (It was cranked.) *(See Figure 2.2)*

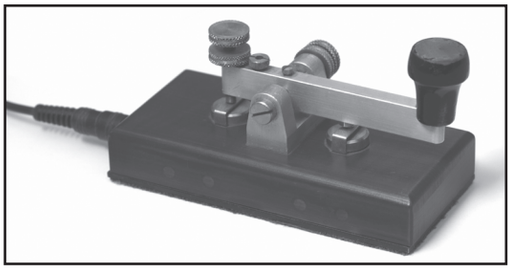

Figure 2.3 Device that transmits Morse code

3. What invention from 1832 could play a single audible tone using electrical current—and used those tones to communicate with Morse code? (It would later inspire electronic keyboards.) *(See Figure 2.3)*

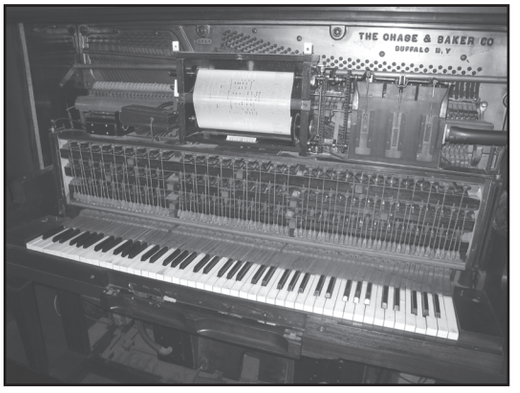

Figure 2.4 Piano from 1885

4. What machine, invented in the late 1800s, allowed users to listen to any song at any time by loading rolls of paper into it? *(See Figure 2.4)*

5. What instrument created in the late 1900s could play *any* kind of music?

Figure 2.5 A professional thereminist

6a. Why is the theremin (from 1920) so unusual?

6b. What do each of the two metal bars on the theremin control? *(See Figure 2.5)*

Figure 2.7 Fairlight CMI

8. Name two things that were special about 1979's Fairlight CMI.

It was the first digital sampling synthesizer.
It had a computer screen.
It could record any sound with a mic and play it back.
It had a touch screen with a light pen.

9. Name two artists that paid $20,000 for the Fairlight CMI. *(See Figure 2.7)*

Duran Duran, Stevie Wonder, Peter Gabriel, U2, Prince, David Bowie, Michael Jackson, Madonna, and Queen

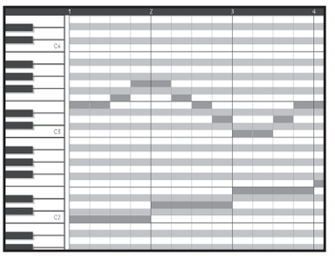

Figure 2.8 Piano roll of Beethoven's *Ode to Joy*

10. Musical Instrument Digital Interface (MIDI) was invented in the 1980s. What did it do? *(See Figure 2.8)*

It let musical instrumentsconnect and play with each other (like an early version of USB).

11. Where is MIDI used besides music?

*Theatre lighting, video games (*Rock Band, Guitar Hero, *and* DJ Hero)*, video and audio syncing in movies, Disney robots*

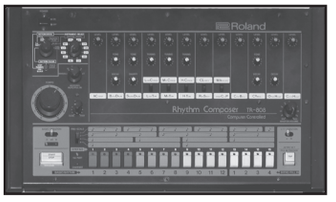

Figure 2.9 Roland TR-808

12. What is a sequencer?

Hardware or software that creates, manages, and plays music in a particular order

13a. What type of Roland drum sequencer was used in old-school hip-hop/dance music? *(See Figure 2.9)*

The Roland TR-808

13b. Who uses it to make music—and even named an album after it?

Beyonce, Jay-Z, Sublime, Public Enemy, Britney Spears, Outkast, Lil Wayne, the Black Eyed Peas, and Kanye West, whose album 808s & Heartbreak *used the 808 extensively.*

Figure 2.10 Pro Tools in a professional studio

14a. What kind of sequencer is Avid's Pro Tools?

Digital—it's the number-one digital audio workstation (DAW).

14b. What is it used for?

Most of today's hits (any style) are recorded on it.

15. What could Pro Tools be compared to in the writing world? The art world? *(See Figure 2.10)*

Microsoft Word and Adobe Photoshop

Grading

40 points .....Build four patterns (drums—10 points each)

10 points .....Add Bassline or Tonematrix

25 points .....Sequence patterns correctly (3.5 pts. each for A1–A2–A1–A3–A1–A4–A1)

25 points .....Effort / creativity / focus (see rubric and evaluate yourself)

---

100 points .....*Totally awesome!*

Effort / Creativity / Focus Grading Rubric

0–5 points .....I did just about nothing and put forth extremely low effort.

6–10 points .....I did a little more than the minimum and put forth just a little effort.

11–15 points .....I worked with average creativity and put forth average effort.

16–20 points .....I did great work, had great focus, and put forth great effort.

21–25 points .....I did top-notch work, had superior creativity, and put forth excellent effort.

Extra Credit for Your First Song

+10 points.....Use any second "synth"

+10 points.....Create additional patterns on a music module (+10 per pattern)

+20 points.....Add vocals / lyrics

+10 points.....Use any effects unit

+10 points.....Use any samples located in the sample menu

Extra Songs

You may create extra one-minute songs for up to 50 points each!

+10 points.....Use a different "synth"

+10 points.....Use a different "drum"

+10 points.....Use a different setup

+10 points.....Add vocals / lyrics

+10 points.....Use any effects unit

Figure 8.8 Afrika Bambaataa and DJ Yutaka

Figure 8.9 Run-D.M.C. custom Adidas shoes

Figure 8.10 Flavor-Flav of Public Enemy

Figure 8.11 Vintage Akai MPC60 pad controller

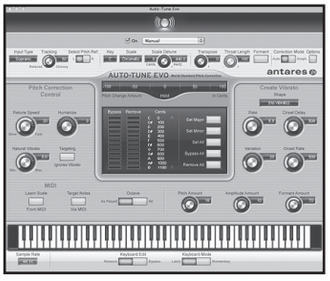

Figure 8.12 Autotune on GarageBand

13. Why was the Sugarhill Gang's 1979 album important in the history of rap music?
It was the first rap music recording and included the term "hip-hop."

14. Afrika Bambaataa started an organization of positive, anti-violent, anti-racist artists, dancers, DJs, and MCs called the Zulu Nation. What was special about Afrika's song "Planet Rock?" *(see Figure 8.8)*
It was the first rap song to use a drum machine instead of turntables.

15. By 1986, some hip-hop became mainstream. What was unique about Run-D.M.C.'s collaboration with Aerosmith in 1986? *(see Figure 8.9)*
It was a mix of rock and rap.

16. By 1986, hip-hop began to change. One group, Public Enemy (featuring Flavor Flav), wrote what kind of music? *(see Figure 8.10)*
Music about politics and social problems—"smart" or intellectual hip-hop

17. By 1987–1988, artists such as NWA, Ice-T, and Geto Boys rapped about tough life on the streets, gangs, crime, and poverty. What kind of music did they invent?
Gangsta rap

18. What is the art of imitating the sound of drums and scratching with the voice?
Beatboxing

19. What is the competitive art of using spray paint to tag buildings, subways, and other urban areas called?
Graffiti

20. Many rap songs, such as Vanilla Ice's "Ice Ice Baby" and Jay-Z's "Hard Knock Life," have traditionally used familiar songs to back up their music. What is this called? *(see Figure 8.11)*
Sampling

21. What is a popular way to change the sound of vocals in hip-hop today? (T-Pain is known for popularizing it.) *(see Figure 8.12)*
Using Auto-Tune

22. Today, rap has hybridized with other different styles of music—for example, country (Kid Rock) and swing /jazz (Outkast). Why is this important for hip-hop's future?
Hip-hop can appeal to listeners of all ages and backgrounds.