Questions on Scales.

1. What lead the Greek philosopher and mathematician Pythagoras to come up the Pythagorean scale?
2. In music, what is the basis of the Pythagorean Scale?
3. If you hold a guitar string down in the middle each side of the string will be a _____ lower (or half) than the original sound of the full length.
4. What is an octave?
5. In what way is the Pythagorean scale limited? What problems arise from its limitation?
6. Define a perfect fifth and a perfect fourth.
7. What is the ratio of a string's length that produces a perfect 5th? A perfect 4th?
8. Why do notes with a ratio of 2/3 (a perfect fifth) and other ratios sound good together?
9. Explain the contribution Ptolemy made to the Pythagorean scale.
10. Explain how the Pythagorean formula eventually calculates notes which are not on the desired scale.
11. Why is it that most people cannot hear the small frequency differences between notes on the Polemic scale and the Pythagorean scale?
12. What is a mode?
13. A particular choice of starting note and system of generating a note scale is called a _____?
14. What is a temperament?
15. What is a semitone?
16. How many semitones are in an octave? How many cents are in a semitone?
17. Why did the question of music scales become more complicated beginning with the 14th century?
18. How are modern musical scales in Western culture different from older classical music?
19. Why and when was the equal tempered scale developed? What problems did it solve?
20. Who popularized the equal tempered scale?
21. On the equal temperament scale _____ cents is about 0.3 Hz.
22. What is the current scale that most modern composers use? What is the compromise of using this scale?
23. Explain the significance of the ratio of 1.225, chosen for the equal tempered scale?
24. When tuning a piano, how are the higher notes tuned as compared to the lower notes?
25. What is a Railsback curve?
26. Why are the overtones in a piano not exactly harmonic? What is the result of this mismatch?
27. Barbershop quartets, generally, have a very rich sound and use a specific type of scale. What scale do they use? Why is it easier for the quartet to use this scale and what happens when their frequencies combine?
28. Why has the note A gradually changed in frequency overtime?