

MAT 120

Quiz 3

Fall 2024

1. Which frequency ratio is approximately three Equal Tempered semitones?

- a) $4/3$ b) $5/3$ c) $5/4$ d) $3/2$ e) $6/5$

Correct Answer: $6/5$

2. A frequency ratio of 6 corresponds to a just interval of two octaves and which additional interval?

- a) minor whole tone b) minor third c) major third d) perfect fourth e) perfect fifth

Correct Answer: perfect fifth

3. The number $\frac{\sqrt{5}}{2}$ represents a frequency ratio for an interval. How many *whole* tones is this interval?

- a) 5 b) 1 c) 2 d) 4 e) 3

Correct Answer: 1

4. If F_1 and F_2 are frequencies, with $F_1 < F_2$, and the frequency ratio F_2/F_1 is measured as x cents, then these numbers can be related in which of the following formulas:

- a) $x^{\frac{2}{1200}} = \frac{F_2}{F_1}$ b) $1200 \cdot 2^x = \frac{F_2}{F_1}$ c) $x = 1200 \cdot \ln\left(\frac{F_2}{F_1}\right)$ d) $x = \frac{1200}{\ln 2} \ln\left(\frac{F_2}{F_1}\right)$ e) $2^{\frac{x}{1200}} = \frac{F_2}{F_1}$

Correct Answer: $x = \frac{1200}{\ln 2} \ln\left(\frac{F_2}{F_1}\right)$ or $2^{\frac{x}{1200}} = \frac{F_2}{F_1}$

5. What is the cent value of a perfect fifth which is one Pythagorean comma sharp to a Just perfect fifth?

- a) 682 b) 692.5 c) 702 d) 725.5 e) 723.5

Correct Answer: 725.5

6. The frequency ratio $7/6$ is a flat version of which interval (relative to Equal Temperament):

- a) minor third b) major third c) major sixth d) minor sixth e) perfect fourth

Correct Answer: minor third

7. A four note chord is constructed with pitches separated by frequency ratios from lowest to highest: $6/5$, $7/6$, $8/7$. What is the interval from the lowest to the highest notes? (If the notes have fundamental frequencies from lowest to highest F_1 , F_2 , F_3 , F_4 , then we are asking about the frequency ratio F_4/F_1 .)

- a) minor third b) major third c) major sixth d) minor sixth e) perfect fourth

Correct Answer: minor sixth

8. Which properties are NOT achieved by the Equal Tempered major scale?

- i) $5/4$ Just Major Third ii) semitone is half of cent value of whole tone iii) only one type of whole tone
a) i) only b) ii) only c) iii) only d) i) and ii) only e) ii) and iii) only

Correct Answer: i) only