

## Waves 12

$$\textcircled{1} \quad G: \quad 4f = 384$$
$$f = 96 \text{ Hz}$$

$$B: \quad F_B = 5f$$
$$= 5(96)$$

$$F_B = \boxed{480 \text{ Hz}}$$

$\textcircled{2}$  Each note played by an instrument produces sound waves at the fundamental frequency and its harmonics.

For a 5000 Hz fundamental, the harmonics would be 10 000 Hz, 15 000 Hz, and 20 000 Hz.

Thus the stereo must be able to play up to 20 000 Hz.

$\textcircled{3}$  The soprano would have 2 frequencies: 360 and 720 Hz  
The bass would only have one: 360 Hz

$\textcircled{4}$  a) The first line on the left (tallest one).

b) Same fundamental, but the harmonics would be different (more/less, some taller, some shorter).

c) white noise would show all frequencies and all would have the same height.

③ Quality - the more complex a sound,  
the more pleasant it is

complex = the blend of frequencies

Pitch - high frequency = high pitch

low frequency = low pitch

Loudness - aka. volume

- taller amplitude = louder

- shorter amplitude = quieter