

## Waves 11

$$\begin{aligned} \textcircled{1} \quad \text{a)} \quad f_{\text{beat}} &= |f_2 - f_1| \\ &= |529 - 524| \\ f_{\text{beat}} &= \boxed{5 \text{ Hz}} \end{aligned}$$

$$\text{b)} \quad T = \frac{1}{f} = \frac{1}{5} = \boxed{0.2 \text{ s}}$$

\textcircled{2} \quad \text{a)} \quad T = \text{time it takes for 1 beat to occur}

$$T = \boxed{5 \text{ s}}$$

$$\text{b)} \quad f = \frac{1}{T} = \frac{1}{5} = \boxed{0.2 \text{ Hz}}$$

\textcircled{3} \quad \text{The jet is moving away from the crew, so they would hear a lower frequency.

\textcircled{4} \quad \text{The cells are moving toward the observer, so the reflected frequency would be higher.