

Wave Unit Review Math

(24) Solve for frequency using Period:

$$T = \frac{1}{f}$$

$$3.4 = \frac{1}{f} \quad \text{or} \quad f = \frac{1}{3.4}$$

$$f = 0.3 \text{ Hz}$$

$$v = 28 \frac{\text{m}}{\text{s}}$$

$$v = \lambda f$$

$$28 \frac{\text{m}}{\text{s}} = \lambda (0.3 \text{ Hz})$$

$$\lambda = 93.3 \text{ m}$$

(25)

$$v = 340 \frac{\text{m}}{\text{s}}$$

$$f = 50 \text{ Hz}$$

$$\lambda = ?$$

$$v = \lambda f$$

$$340 \frac{\text{m}}{\text{s}} = \lambda (50 \text{ Hz})$$

$$\lambda = 6.8 \text{ m}$$

(27)

$$v = ?$$

$$\lambda = 0.15 \text{ m}$$

$$f = \frac{2}{1 \text{ sec.}} = 2 \text{ Hz}$$

$$v = \lambda f$$

$$v = 0.15 \text{ m} (2 \text{ Hz})$$

$$v = 0.3 \frac{\text{m}}{\text{s}}$$

Sound Review Word Problems:

① $f = 494 \text{ Hz}$
 $T = 22^\circ \text{C}$
 $\lambda = ?$

$v = 331 + 0.6T$
 $v = 331 + 0.6(22) = 344.2 \text{ m/s}$

$344.2 = \lambda(494 \text{ Hz})$

$\lambda = 0.7 \text{ m}$

② $f = 150 \text{ Hz}$
 $v = 1520 \frac{\text{m}}{\text{s}}$
 $\lambda = ?$

$v = \lambda f$
 $1520 \frac{\text{m}}{\text{s}} = \lambda(150 \text{ Hz})$

$\lambda = 10.1 \text{ m}$

Waves
 $\frac{395 \text{ m}}{10.1 \text{ m}} = 39.1$
Waves

③ $v = 331 + 0.6(25^\circ \text{C}) = 346$

$v = \frac{d}{t}$
 $346 \frac{\text{m}}{\text{s}} = \frac{d}{7 \text{ s}}$

$d = 2422 \text{ m}$

④ $\frac{\lambda}{4} = 22 \text{ cm}$
 $\lambda = 88 \text{ cm} = 0.88 \text{ m}$

$v = 340 \frac{\text{m}}{\text{s}}$

$v = \lambda f$
 $340 \frac{\text{m}}{\text{s}} = 0.88 \text{ m}(f)$

$f = 386.4 \text{ Hz}$

⑤ $t = 1.80 \text{ s}$ for echo
 $t = 0.9 \text{ s}$ to one side

$v = 344 \frac{\text{m}}{\text{s}}$

$v = \frac{d}{t}$
 $344 = \frac{d}{0.9 \text{ s}}$

$d = 309.6 \text{ m}$