Example

1. What is the speed of sound in air that is 25 ºC?

$v = 331 + 0.59 T_{a,r}$

$= 331 + 0.59(25)$

$= 331 + 14.7$

$= 345.7 \text{ m/s}$

2. A fighter pilot wants to travel three times the speed of sound. How fast must she travel if the air temperature is 15 ºC?

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What is the distance to shore if a ship captain hears the echo of his horn in 5.2 s if the temperature is -21°C?

$t = 5.2\,s$

$v_{sound} = 331 + 0.59\,T_{air}$

$= 331 + (0.59)(-21)$

$= 331 - 12.4$

$= 319\,m/s$

$v = \frac{d}{t} \Rightarrow 319 = \frac{d}{5.2}$

$1659\,m = d$

↑ to shore and back to boat

dist to shore = 829 m

Problems 34-37
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