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Practical Thermal Conductivity Problems KATHERINE BALLENTINE, GREGORY BEE, MARSHALL THOMSEN, Eastern Michigan University — Introductory physics books often use simple, practical examples to illustrate the thermal conductivity equation. Heat conduction through a window is a particularly nice example due to its simple geometry. However, the temperature difference across the window is often incorrectly assumed to be approximately the difference between the indoor and outdoor air temperatures. Measurements of actual inside and outside surface temperatures on single pane windows show a much smaller temperature difference than that associated with the ambient air. Using the actual temperature difference across the glass can reduce the predicted heat flow rate by as much as an order of magnitude. Implications for other thermal conductivity problems will also be presented.

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