PRACTICE Problems

• Additional Problem
• Solutions to Selecte

39. A piece of aluminum house siding is 3.66 m long on a cold winter day of −28°C. How much longer is it on a very hot summer day at 39°C?

40. A piece of steel is 11.5 cm long at 22°C. It is heated to 1221°C, close to its melting temperature. How long is it?

13.4 Solids

91. A bar of an unknown metal has a length of 0.975 m at 45°C and a length of 0.972 m at 23°C. What is its coefficient of linear expansion?

92. An inventor constructs a thermometer from an aluminum bar that is 0.500 m in length at 273 K. He measures the temperature by measuring the length of the aluminum bar. If the inventor wants to measure a 1.0-K change in temperature, how precisely must he measure the length of the bar?

93. Bridges How much longer will a 300-m steel bridge be on a 30°C day in August than on a −10°C night in January?