

## Chapter 2 Properties of Matter

**Melting and Boiling Points****Math Skill:  
Data Tables**

You may want to read more about this **Math Skill** in the **Skills and Reference Handbook** at the end of your textbook.

Melting and Boiling Points of Some Substances		
Substance	Melting Point	Boiling Point
Hydrogen	$-259.3^{\circ}\text{C}$	$-252.9^{\circ}\text{C}$
Nitrogen	$-210.0^{\circ}\text{C}$	$-195.8^{\circ}\text{C}$
Water	$0.0^{\circ}\text{C}$	$100.0^{\circ}\text{C}$
Acetic acid (found in vinegar)	$16.6^{\circ}\text{C}$	$117.9^{\circ}\text{C}$
Table salt	$800.7^{\circ}\text{C}$	$1465^{\circ}\text{C}$

Which of the substances in the table above are solids at a temperature of  $-40^{\circ}\text{C}$ ?

**1. Read and Understand**

*What information are you given?*

Temperature =  $-40^{\circ}\text{C}$

The melting and boiling points of five substances are listed in the table.

**2. Plan and Solve**

*What unknown are you trying to find?*

Which of the five substances are solids at  $-40^{\circ}\text{C}$ ?

*What guideline can you use?*

Any substance that is a solid at  $-40^{\circ}\text{C}$  must have a melting point greater than  $-40^{\circ}\text{C}$ .

*Check the melting point of each substance in the table to find out whether it satisfies the guideline.*

Water, acetic acid, and table salt are solids at  $-40^{\circ}\text{C}$ .

**3. Look Back and Check**

*Is your answer reasonable?*

Because water, acetic acid, and table salt have melting points equal to or greater than  $0^{\circ}\text{C}$ , they will all be solids at a temperature well below  $0^{\circ}\text{C}$ .

**Math Practice**

*On a separate sheet of paper, solve the following problems.*

1. Which substance in the table is a liquid at  $105^{\circ}\text{C}$ ? \_\_\_\_\_
2. Which substance in the table has a melting point closest to room temperature ( $20^{\circ}\text{C}$ )? \_\_\_\_\_
3. Which substance in the table boils at the lowest temperature? \_\_\_\_\_
4. Which substance has the smallest temperature range as a liquid, hydrogen or nitrogen? \_\_\_\_\_