

## PROBLEM SOLVING

### EXAMPLE 5

on p. 54  
for Exs. 74–78

74. **GYMNASTICS** The horizontal bar used in gymnastics events should be placed 110.25 inches above the ground, with a tolerance of 0.4 inch. Write an absolute value inequality for the acceptable bar heights.

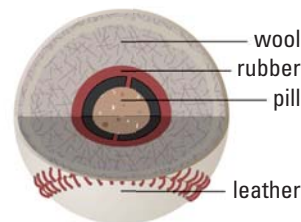
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75. **SOIL PH LEVELS** Cucumbers grow in soil having a pH level of 6.5, with a tolerance of 1 point on the pH scale. Write an absolute value inequality that describes the pH levels of soil in which cucumbers can grow.

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76. **MULTI-STEP PROBLEM** A baseball has a cushioned cork center called the *pill*. The pill must weigh 0.85 ounce, with a tolerance of 0.05 ounce.

- Write an absolute value inequality that describes the acceptable weights for the pill of a baseball.
- Solve the inequality to find the acceptable weights for the pill.
- Look back at Example 5 on page 54. Find the minimum and maximum percentages of a baseball's total weight that the pill can make up.



77. **MANUFACTURING** A regulation basketball should weigh 21 ounces, with a tolerance of 1 ounce. Write an absolute value inequality describing the weights of basketballs that should be *rejected*.

78. **MULTIPLE REPRESENTATIONS** The strength of eyeglass lenses is measured in units called *diopters*. The diopter number  $x$  is negative for nearsighted vision and positive for farsighted vision.

Nearsightedness (focus is in front of retina)		Retina	Retina	Farsightedness (focus is behind retina)	
Mild	$ x + 1.5  < 1.5$			Mild	$ x - 1  < 1$
Moderate	$ x + 4.5  < 1.5$			Moderate	$ x - 3  < 1$
Severe	$ x + 7.5  < 1.5$			Severe	$ x - 5  < 1$

- Writing Inequalities** Write an equivalent compound inequality for each vision category shown above. Solve the inequalities.
- Making a Graph** Illustrate the six vision categories by graphing their ranges of diopter numbers on the same number line. Label each range with the corresponding category name.

### EXAMPLE 6

on p. 54  
for Exs. 79–81

79. **SLEEPING BAGS** A manufacturer of sleeping bags suggests that one model is best suited for temperatures between 30°F and 60°F, inclusive. Write an absolute value inequality for this temperature range.

80. **TEMPERATURE** The recommended oven setting for cooking a pizza in a professional brick-lined oven is between 550°F and 650°F, inclusive. Write an absolute value inequality for this temperature range.