

EXAMPLE 7 Write and use a compound inequality

BIOLOGY A monitor lizard has a temperature that ranges from 18°C to 34°C . Write the range of temperatures as a compound inequality. Then write an inequality giving the temperature range in degrees Fahrenheit.



Monitor lizard

Solution

The range of temperatures C can be represented by the inequality $18 \leq C \leq 34$. Let F represent the temperature in degrees Fahrenheit.

$$18 \leq C \leq 34$$

Write inequality.

$$18 \leq \frac{5}{9}(F - 32) \leq 34$$

Substitute $\frac{5}{9}(F - 32)$ for C .

$$32.4 \leq F - 32 \leq 61.2$$

Multiply each expression by $\frac{9}{5}$, the reciprocal of $\frac{5}{9}$.

$$64.4 \leq F \leq 93.2$$

Add 32 to each expression.

► The temperature of the monitor lizard ranges from 64.4°F to 93.2°F .

USE A FORMULA

In Example 7, use the temperature formula

$$C = \frac{5}{9}(F - 32).$$



GUIDED PRACTICE for Examples 5, 6, and 7

Solve the inequality. Then graph the solution.

9. $-1 < 2x + 7 < 19$

10. $-8 \leq -x - 5 \leq 6$

11. $x + 4 \leq 9$ or $x - 3 \geq 7$

12. $3x - 1 < -1$ or $2x + 5 \geq 11$

13. **WHAT IF?** In Example 7, write a compound inequality for a lizard whose temperature ranges from 15°C to 30°C . Then write an inequality giving the temperature range in degrees Fahrenheit.

1.6 EXERCISES

HOMEWORK KEY

 = **WORKED-OUT SOLUTIONS**
on p. WS1 for Exs. 13, 25, and 55

 = **TAKS PRACTICE AND REASONING**
Exs. 15, 36, 56, 59, 61, and 62

SKILL PRACTICE

1. **VOCABULARY** Copy and complete: The set of all points on a number line that represent solutions of an inequality is called the ? of the inequality.

2. **WRITING** The first transformation on page 42 can be written as follows:

$$\text{If } a, b, \text{ and } c \text{ are real numbers and } a > b, \text{ then } a + c > b + c.$$

Write similar statements for the other transformations listed on page 42.

EXAMPLE 1

on p. 41
for Exs. 3–10

GRAPHING INEQUALITIES Graph the inequality.

3. $x > 4$

4. $x < -1$

5. $x \leq -5$

6. $x \geq 3$

7. $6 \geq x$

8. $-2 < x$

9. $x \geq -3.5$

10. $x < 2.5$