

# 4.6

## Cartesian Products of Sets

### • Example 1

Write, in extension, the set of ordered pairs determined by the Cartesian product.

$$\{a, b, c\} \times \{1, 2, 3\}$$

With  $\{a, b, c\}$  as first elements and  $\{1, 2, 3\}$  as second elements, the Cartesian product of the two sets is

$$\{(a, 1), (a, 2), (a, 3), (b, 1), (b, 2), (b, 3), (c, 1), (c, 2), (c, 3)\}$$

### ● ● ● CHECK YOURSELF 1

Write, in extension, the elements of the set determined by the Cartesian product.

$$\{u, v, w\} \times \{2, 4\}$$

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### ● ● ● CHECK YOURSELF ANSWER

1.  $\{(u, 2), (u, 4), (v, 2), (v, 4), (w, 2), (w, 4)\}$ .

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# 4.6 Exercises

Name \_\_\_\_\_

Section \_\_\_\_\_

Date \_\_\_\_\_

## A N S W E R S

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
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9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_

Write, in extension, the set of ordered pairs determined by each of the Cartesian products.

1.  $\{1, 2\} \times \{a, b\}$
2.  $\{s, r, t\} \times \{u, v\}$
3.  $\{1, a\} \times \{2, 3\}$
4.  $\{1, 5, 6\} \times \{1, 2, 4\}$
5.  $\{e, f, g\} \times \{8, 9, 10\}$
6.  $\{y, x\} \times \{a, b, c\}$
7.  $\{w, z\} \times \{2, s, r\}$
8.  $\{4, 8, 10\} \times \{9, 11, 13\}$
9.  $\{a, 3\} \times \{1, 3, 5\}$
10.  $\{-1, -5\} \times \{1, 5\}$
11.  $\{0, 5, 10\} \times \{a, c\}$
12.  $\{-1, 0, 1\} \times \{1, 2, 3\}$