

# Converting Units of Measurement



The Table of Measures on page 956 gives many statements of equivalent measures. You can write two different conversion factors for each statement, as shown below. Each conversion factor is equal to 1.

Statement of Equivalent Measures	Conversion Factors
100 cm = 1 m	$\frac{100 \text{ cm}}{1 \text{ m}} = 1$ $\frac{1 \text{ m}}{100 \text{ cm}} = 1$

To convert from one unit of measurement to another, multiply by a conversion factor that will eliminate the starting unit and result in the desired unit.

**Convert meters to centimeters:**

Use  $\frac{100 \text{ cm}}{1 \text{ m}}$ .

$$3 \cancel{\text{ m}} \times \frac{100 \text{ cm}}{1 \cancel{\text{ m}}} = 300 \text{ cm}$$

**Convert centimeters to meters:**

Use  $\frac{1 \text{ m}}{100 \text{ cm}}$ .

$$400 \cancel{\text{ cm}} \times \frac{1 \text{ m}}{100 \cancel{\text{ cm}}} = 4 \text{ m}$$

Sometimes you need to use more than one conversion factor.

## EXAMPLE

Copy and complete:  $2 \text{ d} = \underline{\quad} \text{ sec}$

**STEP 1** Find the appropriate statements of equivalent measures.

$$24 \text{ h} = 1 \text{ d}, 60 \text{ min} = 1 \text{ h}, \text{ and } 60 \text{ sec} = 1 \text{ min}$$

**STEP 2** Write conversion factors.

$$\frac{24 \text{ h}}{1 \text{ d}}, \frac{60 \text{ min}}{1 \text{ h}}, \text{ and } \frac{60 \text{ sec}}{1 \text{ min}}$$

**STEP 3** Multiply by conversion factors to convert days to seconds.

$$2 \cancel{\text{ d}} \times \frac{24 \cancel{\text{ h}}}{1 \cancel{\text{ d}}} \times \frac{60 \cancel{\text{ min}}}{1 \cancel{\text{ h}}} \times \frac{60 \text{ sec}}{1 \cancel{\text{ min}}} = 172,800 \text{ sec}$$

▶  $2 \text{ d} = 172,800 \text{ sec}$

## PRACTICE

Copy and complete.

- |                             |                              |                              |
|-----------------------------|------------------------------|------------------------------|
| 1. 300 sec = <u>   </u> min | 2. 2.6 g = <u>   </u> kg     | 3. 64 oz = <u>   </u> lb     |
| 4. 4 gal = <u>   </u> qt    | 5. 72 in. = <u>   </u> ft    | 6. 94 mm = <u>   </u> cm     |
| 7. 42 ft = <u>   </u> yd    | 8. 5 d = <u>   </u> h        | 9. 3 m = <u>   </u> cm       |
| 10. 2 yd = <u>   </u> in.   | 11. 70 L = <u>   </u> mL     | 12. 10 mi = <u>   </u> ft    |
| 13. 1.5 ton = <u>   </u> lb | 14. 4500 mL = <u>   </u> L   | 15. 15,000 mg = <u>   </u> g |
| 16. 1 mi = <u>   </u> in.   | 17. 80 fl oz = <u>   </u> qt | 18. 5 gal = <u>   </u> c     |
| 19. 1 km = <u>   </u> mm    | 20. 20 c = <u>   </u> qt     | 21. 8 h = <u>   </u> sec     |