Converting Units of Measurement

The table of measures on page 1025 gives many statements of equivalent measures. Using each statement, you can write two different conversion factors.

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

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

EXAMPLE **Copy and complete.**

a. 3.5 m = ? cm

$3.5\text{ m} \times \frac{100\text{ cm}}{1\text{ m}} = (3.5 \times 100)\text{ cm} = 350\text{ cm}$

▶ So, 3.5 m = 350 cm.

b. 620 cm = ? m

$620\text{ cm} \times \frac{1\text{ m}}{100\text{ cm}} = \frac{620}{100}\text{ m} = 6.2\text{ m}$

▶ So, 620 cm = 6.2 m.

Sometimes you need to use more than one conversion factor.

EXAMPLE **Copy and complete: 7 days = ? sec**

Find the appropriate statements of equivalent measures.

24 h = 1 day, 60 min = 1 h, and 60 sec = 1 min

Write conversion factors: $\frac{24\text{ h}}{1\text{ day}}$, $\frac{60\text{ min}}{1\text{ h}}$, and $\frac{60\text{ sec}}{1\text{ min}}$

Multiply by conversion factors to eliminate days and keep seconds.

$7\text{ days} \times \frac{24\text{ h}}{1\text{ day}} \times \frac{60\text{ min}}{1\text{ h}} \times \frac{60\text{ sec}}{1\text{ min}} = (7 \times 24 \times 60 \times 60)\text{ sec} = 604{,}800\text{ sec}$

▶ So, 7 days = 604,800 sec.

PRACTICE

Copy and complete.

1. 6 L = ? mL
2. 2 mi = ? ft
3. 80 oz = ? lb
4. 4 days = ? h
5. 77 mm = ? cm
6. 5 gal = ? qt
7. 48 ft = ? yd
8. 1500 mL = ? L
9. 40 m = ? cm
10. 125 lb = ? oz
11. 800 g = ? kg
12. 900 sec = ? min
13. 72 in. = ? ft
14. 2.5 ton = ? lb
15. 90 min = ? h
16. 65,000 mg = ? g
17. 100 yd = ? in.
18. 3.5 kg = ? g
19. 6 pt = ? qt
20. 1 week = ? min
21. 2 oz = ? lb
22. 1 km = ? mm
23. 1 mi = ? in.
24. 5 gal = ? c
25. 288 in.^2 = ? ft^2
26. 24 pt = ? gal
27. 4 kg = ? g
28. 7 hr = ? sec