Mathematics 10-3

Unit M: Measurement in SI and imperial

Imperial units and fractions

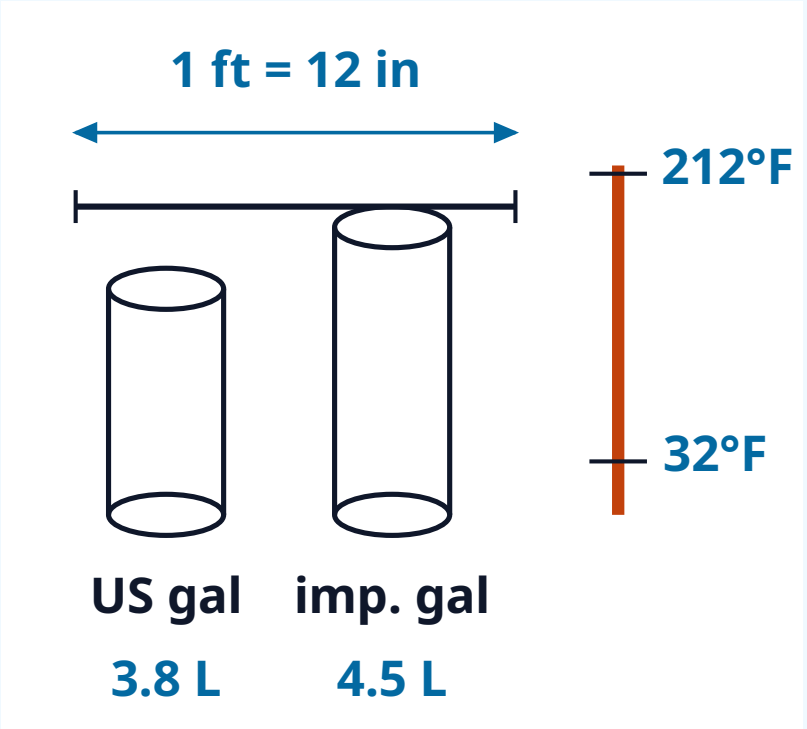
A tape that still speaks inches

- A framer’s tape, a plumbing fitting, and some aviation sheets in Canada still list feet and inches beside SI.
- These units come from older English trade measures.
- A tape splits each inch in half, then in half again: 1/2, 1/4, 1/8, and 1/16.



Imperial units

- One foot equals 12 inches, one yard equals 3 feet and also 36 inches, and one mile equals 1760 yards.
- A floor patch is measured in square feet.
- A box is measured in cubic inches.
- Nails and butter use ounces, and 16 ounces make 1 pound.
- A US gallon is about 3.8 litres, and a British imperial gallon is about 4.5 litres.
- Water freezes at 32 degrees Fahrenheit and boils at 212 degrees Fahrenheit.



Key terms

inch

A small imperial length. Twelve inches make one foot, and the inch is halved into fractions. (in)

foot

An imperial length equal to 12 inches. Three feet make one yard. (ft)

gallon

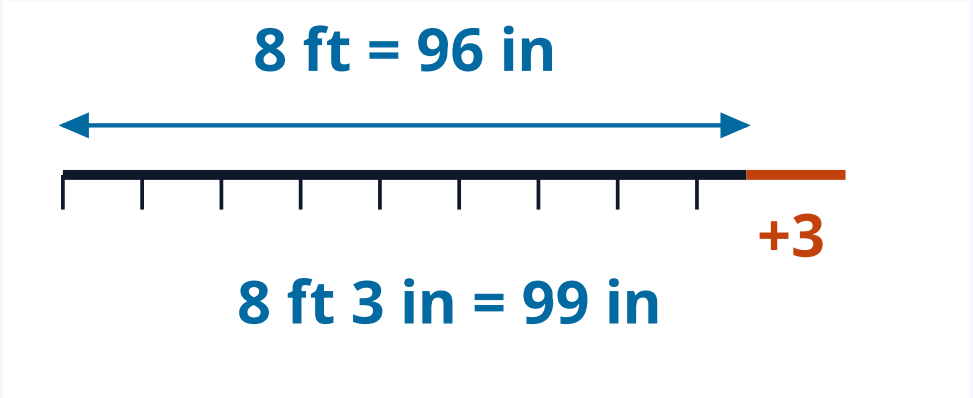
A capacity unit that comes in two trade sizes in this course: the US gallon and the British imperial gallon. (gal)

Fahrenheit

An imperial temperature scale. Water freezes at 32 degrees Fahrenheit and boils at 212. (F)

Feet and inches on the tape

- The symbol ft stands for feet and the symbol in stands for inches.
- Change feet and inches into inches by multiplying the feet by 12 and then adding the extra inches.
- A board of 8 feet 3 inches equals 99 inches, because 8 times 12 equals 96 and 96 plus 3 equals 99.



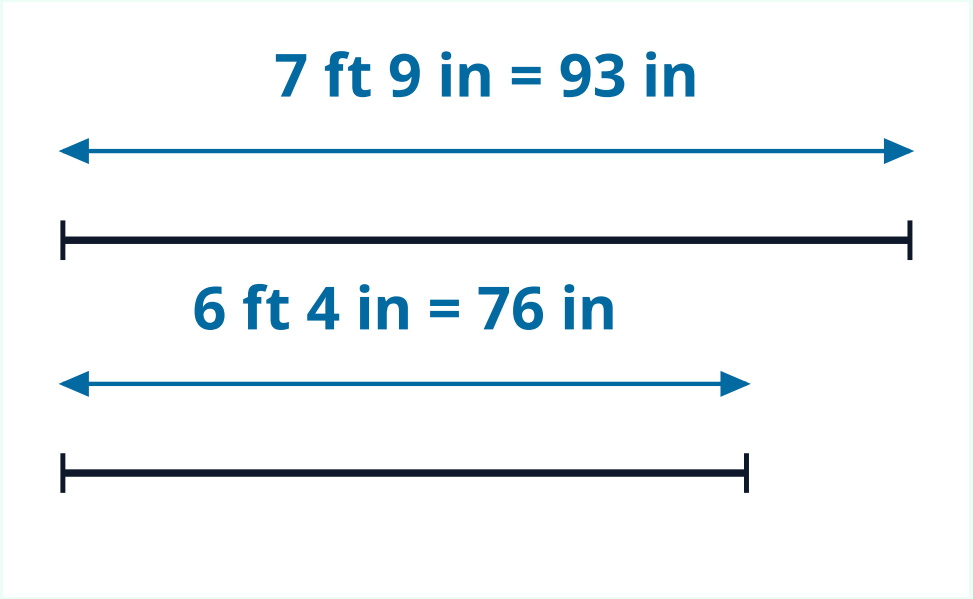
Inches back to feet

- An aviation hose is listed as 54 inches.
- Divide by 12 to find the feet, because one foot equals 12 inches.
- Four groups of 12 use 48 inches, and 54 minus 48 equals 6, so the hose is 4 feet 6 inches.



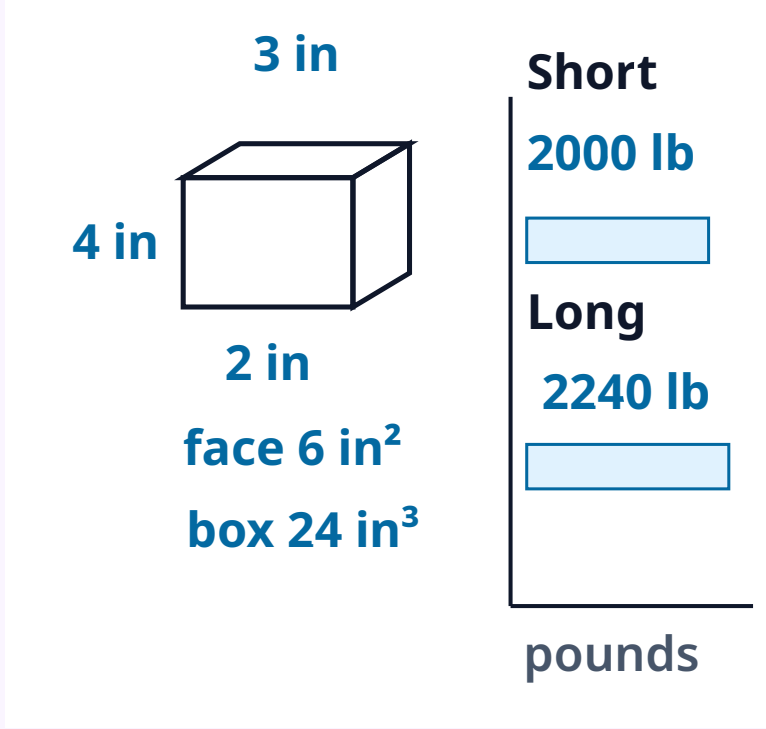
A plumbing run and a doorway

- A plumbing run of 7 feet 9 inches becomes inches when you multiply 7 by 12 and add 9.
- Seven times 12 equals 84, and 84 plus 9 equals 93 inches.
- A doorway height of 6 feet 4 inches equals 76 inches, because 6 times 12 equals 72 and 72 plus 4 equals 76.



Imperial units of capacity and mass

- A US gallon holds about 3.8 litres and a British imperial gallon holds about 4.5 litres.
- A US short ton equals 2000 pounds and a British long ton equals 2240 pounds.
- A US bushel is about 35 litres and an imperial bushel is about 36 litres.
- One pound equals 16 ounces, so 2 times 16 equals 32 ounces.
- A face of 2 inches by 3 inches has area 2 times 3, which equals 6 square inches.
- A 2 by 3 by 4 box starts with 2 times 3, which equals 6, and 6 times 4 equals 24 cubic inches.



Tape and jug check

- Write 8 feet 3 inches as inches, and write 54 inches as feet and inches.
- State the litre size of a US gallon and of a British imperial gallon.

