**1.7*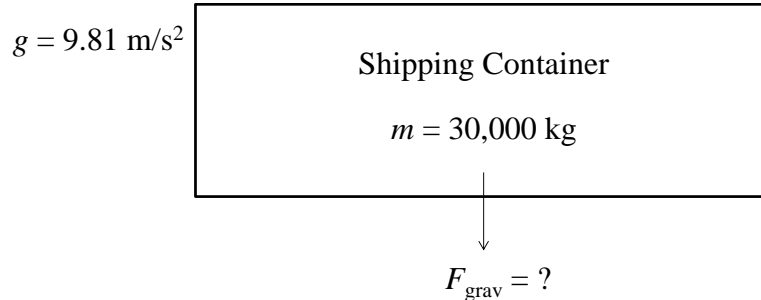* A fully-loaded shipping container has a mass of 30,000 kg. If *local* acceleration of gravity is 9.81 m/s^2, determine the container's weight, in kN.

KNOWN: A fully-loaded shipping container has a specified mass. The local acceleration of gravity is known.

FIND: Determine the container's weight.

SCHEMATIC AND GIVEN DATA:

$g = 9.81$ m/s^2

> Shipping Container
>
> $m = 30,000$ kg

$F_{grav} = ?$

ENGINEERING MODEL:
1. Local gravitational acceleration is constant at 9.81 m/s^2.

ANALYSIS: The force due to gravitational acceleration is computed using Eq. 1.1, where F_{grav} is the container weight and acceleration is local gravitational acceleration (g).

$$F_{grav} = mg$$

Substituting values and solving give

$$F_{grav} = (30{,}000\,\text{kg})\left(9.81\frac{\text{m}}{\text{s}^2}\right)\left|\frac{1\,\text{N}}{1\,\text{kg}\cdot\text{m/s}^2}\right|\left|\frac{1\,\text{kN}}{10^3\,\text{N}}\right| = \underline{\mathbf{294\ kN}}$$