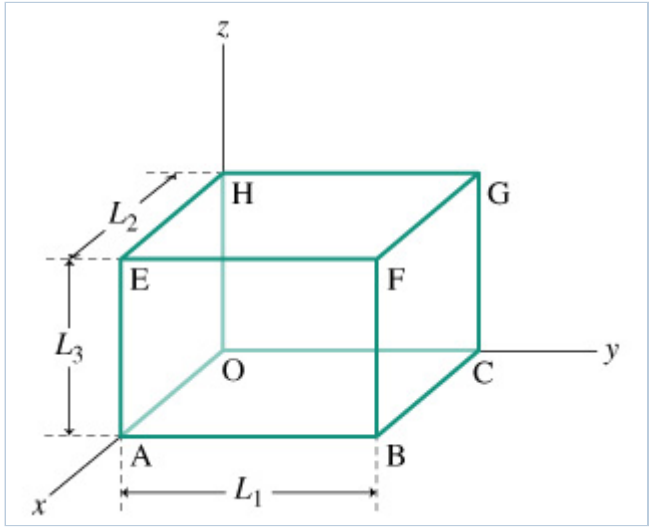
Description: Find vectors between the various corners of a cube.

Constants | Periodic Table

In nature, substances often possess a crystalline structure. The basic component of a crystal is the unit cell, such as the rectangular parallelpiped illustrated in .

In the questions that follow, express your answers in terms of the unit vectors $\hat{i}$, $\hat{j}$, and $\hat{k}$, that is, a vector with components V_x, V_y, and V_z in the *x*, *y*, and *z* directions, respectively, is written $V_x\hat{i} + V_y\hat{j} + V_z\hat{k}$.



Part A

What is the vector $\vec{V}_{\mathrm{CO}}$ from point C to point O?

Express you answer in terms of any of the following: L_1, L_2, L_3, $\hat{i}$, $\hat{j}$, and $\hat{k}$.

View Available Hint(s) (1)

ANSWER:

$\vec{V}_{\mathrm{CO}} = -L_1\hat{j}$

Part B

What is the vector $\vec{V}_{\mathrm{OE}}$ from point O to point E?

Express you answer in terms of any of the following: L_1, L_2, L_3, $\hat{i}$, $\hat{j}$, and $\hat{k}$.

ANSWER:

$\vec{V}_{\mathrm{OE}} = L_2\hat{i} + L_3\hat{k}$

Part C

What is the vector $\vec{V}_{\mathrm{OF}}$ from point O to point F?

Express you answer in terms of any of the following: L_1, L_2, L_3, $\hat{i}$, $\hat{j}$, **and** $\hat{k}$.

ANSWER:

$\vec{V}_{\mathrm{OF}} = L_2\hat{i} + L_1\hat{j} + L_3\hat{k}$

Part D

What is the vector from A to B, $\vec{V}_{\mathrm{AB}}$?

Express you answer in terms of any of the following: L_1, L_2, L_3, $\hat{i}$, $\hat{j}$, **and** $\hat{k}$.

ANSWER:

$\vec{V}_{\mathrm{AB}} = L_1\hat{j}$

Part E

What is the vector $\vec{V}_{\mathrm{BE}}$ from point B to point E?

Express you answer in terms of any of the following: L_1, L_2, L_3, $\hat{i}$, $\hat{j}$, **and** $\hat{k}$.

ANSWER:

$\vec{V}_{\mathrm{BE}} = -L_1\hat{j} + L_3\hat{k}$