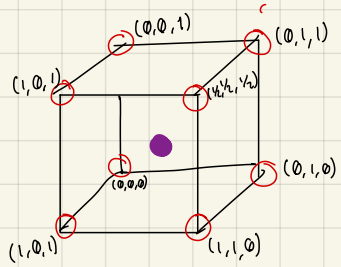
a).

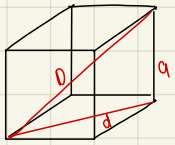


○ Cloruro
● Cesio

$r_{ion^+} = 0.170\ [nm]$
$r_{ion^-} = 0.181\ [nm]$
$n_{cloro}\ 8\ (1/8) = 1$

CCCu

b)



Ti:
$D = 2r_{Cs} + 2r_{Cl}$
$D^2 = a^2 + d^2$

Sabemos $d^2 = a^2 + a^2$
$d^2 = 2a^2$

$\Rightarrow D^2 = a^2 + 2a^2$
$D^2 = 3a^2$
$a^2 = \frac{D^2}{3}$

$$a = \frac{(2r_{Cs} + 2r_{Cl})}{\sqrt{3}}$$

$\Rightarrow V = a^3$

$$Fea = \frac{n \sum_{i=1}^{i=n} n_i \cdot V_i}{V_{celda}} = \frac{(1)(\frac{4}{3}\pi)(r_{Cs}^3 + r_{Cl}^3)}{\left(\frac{(2r_{Cs} + 2r_{Cl})}{\sqrt{3}}\right)^3}$$

$$Fea = \frac{(4/3\ \pi)(0.170^3\ nm^3 + 0.181\ nm^3)}{\left(\frac{2(0.17) + 2(0.181)}{\sqrt{3}}\right)^3}$$

$$Fea = 0.6884\ [nm^3/nm^3] = 0.6884$$

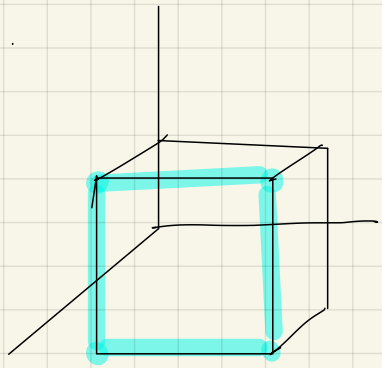
c) $$\rho = \frac{\sum_{i=1}^{n} n_i P_{mi}}{V_{cell}\ N_A}$$

$$\rho = \frac{(1)(132.919\ g/mol) + (1)(35.45\ g/mol)}{\left(\frac{2(0.17) + 2(0.181)}{\sqrt{3}}\right)^3 (6.022 \times 10^{23}\ 1/mol)}$$

$\rho = 4.1922 \times 10^{-21}\ g/nm^3$

$\Rightarrow 4.1922 \times 10^{-21}\ g/nm^3\ [1\ g/nm^3]\ \left|\frac{1 \times 10^7\ nm}{1\ cm}\right|^3 = 4.1922\ [g/cm^3]$

d) Densidad planar



$$\rho_{(100)} = \frac{\text{n atomos en el plano}}{\text{área del plano}} = \frac{1}{a^2}$$

Dirección	$\frac{2}{2}$	$\frac{0}{2}$	$\frac{0}{2}$
Cortes	1	0	0

$$\Rightarrow a = \frac{2r_{Cs} + 2r_{Cl}}{\sqrt{3}} = \frac{2(0.17\,nm) + 2(0.181\,nm)}{\sqrt{3}}$$

$$a = 0.40529\,nm$$

$$\Rightarrow \rho_{100} = \frac{1\,ion\,Cl}{(0.40529\,nm)^2} = 6.0876\left[\frac{iones}{nm^2}\right]$$