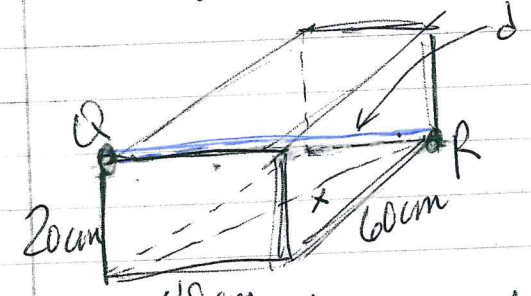
Diagonal in a Box (3-D Pythagorean Th)



$40^2+60^2=x^2$

$x^2+20^2=d^2$

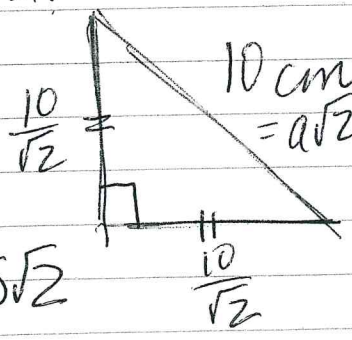
$40^2+60^2+20^2=d^2$

Let a, b & c be dimensions of a rectangular prism.
d = length from corner to opp corner of "box" diagonal

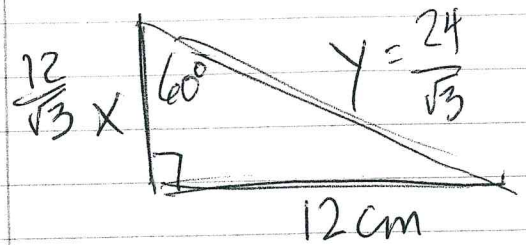
$\therefore\ a^2+b^2+c^2=d^2$

Rationalize the denominator

$\frac{1}{\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}}=\frac{\sqrt{2}}{2}$



$\frac{10}{\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}}=\frac{10\sqrt{2}}{2}=5\sqrt{2}$



$\frac{12}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}}=\frac{12\sqrt{3}}{3}=4\sqrt{3}$

$y=8\sqrt{3}$