Inverse Proportion

Question	Equation	Find k	New Equation	Find Value using Equation
A is inversely proportional to B^2, and when $A = 6, B = 5$. Find A when $B = 2$	$A = \frac{k}{B^2}$	$6 = \frac{k}{5^2}$ so $k = 150$	$A = \frac{150}{B^2}$	$A = \frac{150}{2^2} = 37.5$
(a) y is inversely proportional to x^2 and when $y = 10$, $x = 2$. Find y when $x = 5$	$y = \frac{k}{x^2}$	$10 = \frac{k}{2^2}$ so $k = 40$	$y = \frac{40}{x^2}$	$y = \frac{40}{5^2} = 1.6$
(b) y is inversely proportional to x^3, and $y = 5$ when $x = 3$. Find y when $x = 10$	$y = \frac{k}{x^3}$	$5 = \frac{k}{3^3}$ so $k = 135$	$y = \frac{135}{x^3}$	$y = \frac{135}{10^3} = 0.135$
(c) A is inversely proportional to $\sqrt{B}$ and when $A = 90, B = 9$. Find A when $B = 25$	$A = \frac{k}{\sqrt{B}}$	$90 = \frac{k}{\sqrt{9}}$ so $k = 270$	$A = \frac{270}{\sqrt{B}}$	$A = \frac{270}{\sqrt{25}} = 54$

(d) h is inversely proportional to V^2 and $h = 3$ when $V = 8$. Find h when $V = 4$	(e) B is inversely proportional to $\sqrt{C}$, and when $B = 18, C = 16$. Find B when $C = 0.36$	(f) y is inversely proportional to x^3, and $y = 20$ when $x = 6$. Find x when $y = 67.5$	(g) y is inversely proportional to $\sqrt[3]{x}$. When $x = 8, y = 4$, find x when $y = 0.8$
$h = \frac{k}{V^2}$ $3 = \frac{k}{8^2}$ so $k = 192$ $h = \frac{192}{V^2}$ $h = \frac{192}{4^2} = 12$	$B = \frac{k}{\sqrt{C}}$ $18 = \frac{k}{\sqrt{16}}$ so $k = 72$ $B = \frac{72}{\sqrt{C}}$ $B = \frac{72}{\sqrt{0.36}} = 120$	$y = \frac{k}{x^3}$ $20 = \frac{k}{6^3}$ so $k = 4320$ $y = \frac{4320}{x^3}$ $67.5 = \frac{4320}{x^3}$ so $x = 4$	$y = \frac{k}{\sqrt[3]{x}}$ $4 = \frac{k}{\sqrt[3]{8}}$ so $k = 8$ $y = \frac{8}{\sqrt[3]{x}}$ $0.8 = \frac{8}{\sqrt[3]{x}}$ so $x = 1000$