Algebraic Proof with Multiples

(a)	**(b)**	**(c)**
Show that $4(x+3)+x-2$ is always a multiple of 5 $4x+12+x-2$ $=5x+10$ $=5(x+2)$	Show that $3(7+2x)-9$ is always a multiple of 6 $21+6x-9$ $=12+6x$ $=6(2+x)$	Show that $4(x+7)+2(1-x)$ is always a multiple of 2 $4x+28+2-2x$ $=2x+30$ $=2(x+15)$
(d)	**(e)**	**(f)**
Show that $7(2x-1)-5(x-2)$ is always a multiple of 3 $14x-7-5x+10$ $=9x+3$ $3(3x+1)$	Show that $(x+7)(x-2)-x^2-1$ is always a multiple of 5 $x^2+7x-2x-14-x^2-1$ $=5x-15$ $=5(x-3)$	Show that $(x+8)(x+1)-x(x+5)$ is always a multiple of 4 $x^2+8x+x+8-x^2-5x$ $=4x+8$ $=4(x+2)$
(g)	**(h)**	**(i)**
Show that $(x+5)^2+(x-3)^2$ is always a multiple of 2 $x^2+10x+25+x^2-6x+9$ $=2x^2+4x+34$ $=2(x^2+2x+17)$	Show that $(3x+5)(2x-1)+(2x-1)(x+3)$ is always a multiple of 4 $6x^2+7x-5+(2x^2+5x-3)$ $=8x^2+12x-8$ $=4(2x^2+3x-2)$	Show that $(3x+2)^2-(x+4)(3x-2)+4(x-3)$ is always a multiple of 6 $9x^2+12x+4-3x^2-10x+8+4x-12$ $=6x^2+6x$ $=6(x^2+x)$