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| **Algebraic Proof with Multiples** |
| **(a)** | **(b)** | **(c)** |
| Show that $4\left(x+3\right)+x-2$is always a multiple of $5$ | Show that $3\left(7+2x\right)-9$ is always a multiple of $6$ | Show that $4\left(x+7\right)+2(1-x)$ is always a multiple of $2$ |
| **(d)** | **(e)** | **(f)** |
| Show that $7\left(2x-1\right)-5(x-2)$ is always a multiple of $3$ | Show that $\left(x+7\right)\left(x-2\right)-x^{2}-1$ is always a multiple of $5$ | Show that $\left(x+8\right)\left(x+1\right)-x(x+5)$ is always a multiple of $4$ |
| **(g)** | **(h)** | **(i)** |
| Show that $(x+5)^{2}+(x-3)^{2}$ is always a multiple of $2$ | Show that $\left(3x+5\right)\left(2x-1\right)+\left(2x+1\right)\left(x+1\right)$is always a multiple of $4$ | Show that$$\left(3x+2\right)^{2}-\left(x+4\right)\left(3x-2\right)+4\left(x-3\right)$$is always a multiple of $6$ |