

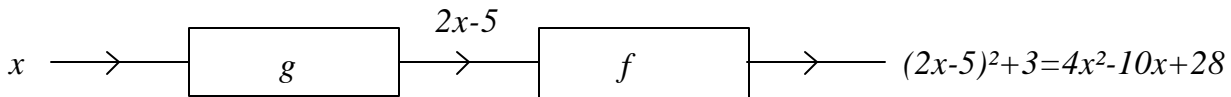
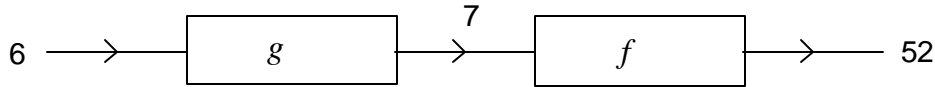
MAKING NEW FUNCTIONS AND COMPOSITE FUNCTIONS

- Functions may be multiplied, divided, added and subtracted to make new functions.

eg. if $f(x) = x^2 + 3$ and $g(x) = 2x - 5$, then $f(x) + g(x) = x^2 - 2x - 2$

- In the *composition* of functions, the new function $f \circ g$ is obtained by using the output of g as the input of f ie. $f \circ g(x) = f(g(x))$. The range of g must be included in the domain of f if $f \circ g$ is to exist.

Eg. if $f(x) = x^2 + 3$ and $g(x) = 2x - 5$



$$f \circ g(x) = f(g(x)) = f(2x-5) = (2x-5)^2 + 3 = 4x^2 - 10x + 25 + 3 = 4x^2 - 10x + 28$$

- ☺ Show that $g \circ f \neq f \circ g$ in the above example.