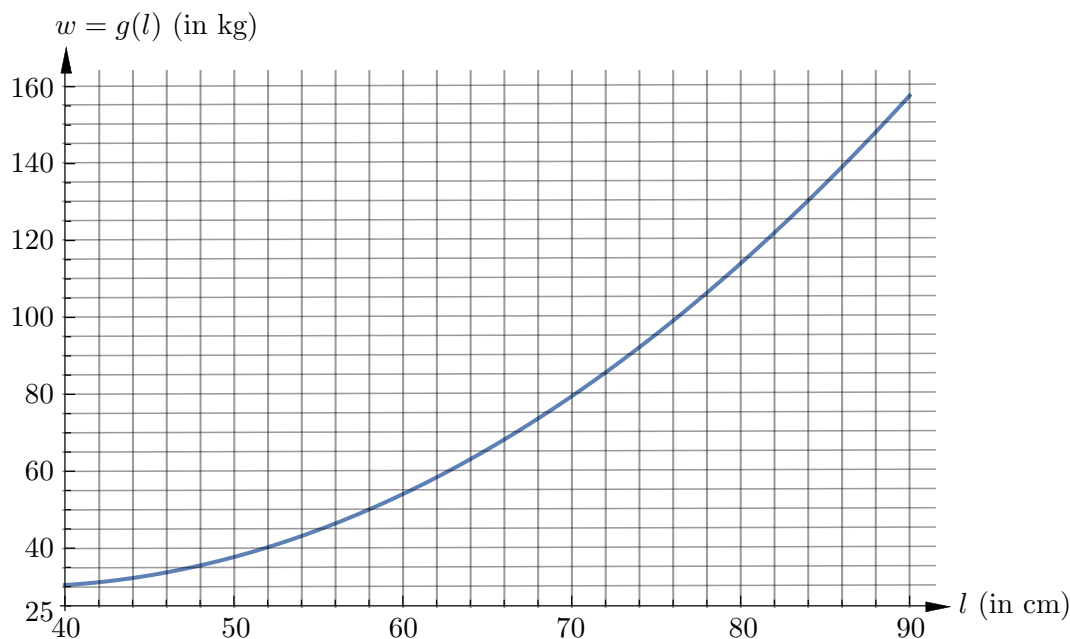


9. [12 points] You would like to investigate the relationship between the swimming speed S (in cm/sec), the weight w (in kg) and the length l (in cm) of salmon. Let f and g be invertible functions that take as input the length of the salmon and give as output its swimming speed and weight respectively. In other words, $S = f(l)$ and $w = g(l)$. You measured the swimming speed and the length of six salmons. The data you obtained is summarized in the table below.

	Salmon 1	Salmon 2	Salmon 3	Salmon 4	Salmon 5	Salmon 6
l	60	80	50	85	76	40
$S = f(l)$	148	161	140	163	158	130

The graph of g is drawn below.



- a. [6 points] Find the value of the following expressions. Include units.

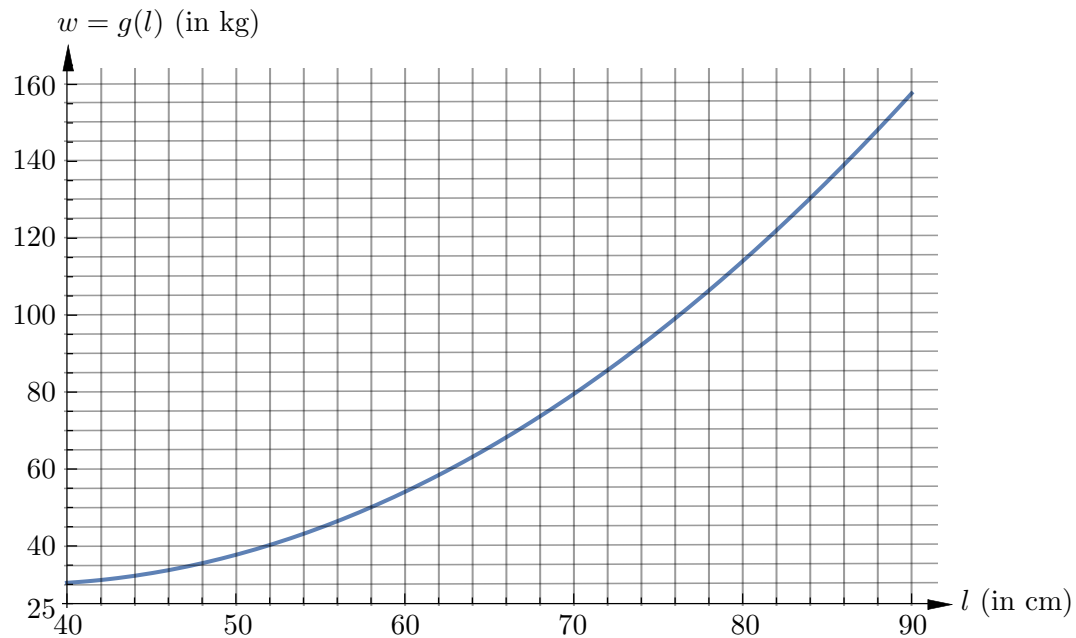
$$g^{-1}(100) = \text{_____} \quad f(80) = \text{_____} \quad f^{-1}(140) = \text{_____}$$

- b. [2 points] What is the **weight** of a salmon that swims at a speed of 130 cm/sec?

Answer = _____.

The graph and table from the previous page has been copied here for your convenience

	Salmon 1	Salmon 2	Salmon 3	Salmon 4	Salmon 5	Salmon 6
l	60	80	50	85	76	40
$S = f(l)$	148	161	140	163	158	130



- c. [4 points] Find the average rate of change of the **weight** of a salmon as a function of its swimming speed over the interval between $S = 148$ and $S = 158$. Show all your work to receive full credit. Include units.

Answer=_____.