9. We take the force of the left pedestal to be F_1 at $x = x_1$, where the x axis is along the diving board. We take the force of the right pedestal to be F_2 and denote its position as $x = x_2$. W is the weight of the diver, located at $x = x_3$. The following two equations result from setting the sum of forces equal to zero (with upwards positive), and the sum of torques (about x_2) equal to zero:

$$\begin{aligned} F_1 + F_2 - W &= 0 \\ F_1(x_2 - x_1) + W(x_3 - x_2) &= 0 \end{aligned}$$

(a) The second equation gives

$$F_1 = -\frac{x_3 - x_2}{x_2 - x_1} W = -\left(\frac{3.0\,\mathrm{m}}{1.5\,\mathrm{m}}\right)(580\,\mathrm{N}) = -1160\,\mathrm{N}\ .$$

The result is negative, indicating that this force is downward.

(b) The first equation gives

$$F_2 = W - F_1 = 580\,\mathrm{N} + 1160\,\mathrm{N} = 1740\,\mathrm{N}\ .$$

The result is positive, indicating that this force is upward.

(c) and (d) The force of the diving board on the left pedestal is upward (opposite to the force of the pedestal on the diving board), so this pedestal is being stretched. The force of the diving board on the right pedestal is downward, so this pedestal is being compressed.