

10. Three vertical forces are acting on the block: the earth pulls down on the block with gravitational force 3.0 N; a spring pulls up on the block with elastic force 1.0 N; and, the surface pushes up on the block with normal force N . There is no acceleration, so

$$\sum F_y = 0 = N + (1.0 \text{ N}) + (-3.0 \text{ N})$$

yields $N = 2.0 \text{ N}$. By Newton's third law, the force exerted by the block on the surface has that same magnitude but opposite direction: 2.0 N down.