

3. This problem differs from the first one in that it has a non-zero value for the initial velocity. We use the same equation as was used in the first problem with a negative value for the initial velocity, because the rock was initially thrown downward.

$$v = v_0 + a t$$

$$v = -5 \text{ m/s} + (-9.8 \text{ m/s}^2)$$

$$v = -5 \text{ m/s} - 19.6 \text{ m/s} = -24.6 \text{ m/s}$$

Note the negative sign indicating that the velocity is downward. The initial velocity was downward and the acceleration due to gravity is downward, so this should not be surprising.