

## Activity- Calculating Time of Death using Rigor Mortis

**Directions:** Refer to Rigor Mortis Reference Tables (on back)

**Part A-** Estimate the approx. time of death for the following situations. Explain your answers:

1. A body was found with no evidence of rigor.
2. A body was found exhibiting rigor throughout the entire body.
3. A body was found exhibiting rigor in the chest, arms, face, and neck.
4. A body was discovered with rigor present in the legs, but no rigor in the upper torso.
5. A body was discovered with most muscles relaxed, except for the face.

**Part B-** Estimate the time of death based on some of the factors affecting rigor mortis:

6. A body was discovered in the weight room of a gym. A man had been doing "arm curls" with heavy weights. The only place rigor was present was in his arms.
7. A frail, elderly woman's body was found in her apartment on a hot summer's evening. Her body exhibited advanced rigor in all places except her face and neck.
8. A body was discovered in the woods. The man had been missing for two days. The average temperature the past 48 hours was 50 degrees Fahrenheit. When the body was discovered, it was at peak rigor.
9. An obese man was discovered in his air-conditioned hotel room sitting in a chair in front of the television. The air conditioner was set for 65 degrees Fahrenheit. When the coroner arrived, the man's body exhibited rigor in his upper body only.
10. After a run, a young woman was attacked and killed. The perpetrator hid the body in the trunk of a car and fled. When the woman's body was discovered, rigor was noticed in her thighs only.

## Rigor Mortis Reference Tables

**Table 1: Progression of Rigor Mortis (@ air temp of 70°F)**

<u>Time After Death</u>	<u>Event</u>	<u>Appearance</u>	<u>Circumstances</u>
<b>2-4 hours</b>	Rigor begins	Body becomes stiff and stiffness moves down body.	Stiffness begins with the eyelids and jaw muscles after about three hours, then center of body stiffens, then arms and legs.
<b>6- 12 hours</b>	Rigor complete	Peak rigor is exhibited.	Entire body is rigid.
<b>18 hours</b>	Begins to go away	Loss of rigor in small muscles first followed by larger muscles.	Rigor lost first in head and neck and last in bigger leg muscles.
<b>By 36 hours</b>	Rigor has usually disappeared	Muscles become flaccid.	Many variables may extend some rigor beyond the normal 36 hours.

**Table 2: Factors Affecting Rigor Mortis**

<u>Factors Affecting Rigor</u>	<u>Event</u>	<u>Effect</u>	<u>Circumstances</u>
<b>Temperature</b>	Cold temperature	Inhibits rigor	Slower onset and slower progression of rigor
	Warm temperature	Accelerates rigor	Faster onset and faster progression of rigor
<b>Activity before death</b>	Aerobic exercise	Accelerates rigor	Lack of oxygen to muscles accelerates rigor
	Sleep	Slows rigor	Muscles fully oxygenated will exhibit rigor more slowly
<b>Body weight</b>	Obesity	Slows rigor	Fat stores oxygen
	Thin	Accelerates rigor	Body loses oxygen quickly