

## Star Garnet



The official gem of The Gem State is the star garnet. The star garnet is a dodecahedron (12 sided) crystal, usually dark purple in color, but can be red. These stones are so rare that they can only be found in two places in the world: Emerald Creek Idaho, and India. The star effect in these rare gemstones is caused because of small fiber-like inclusions of titanium oxide in the stone along the facets. When light reflects off of these inclusions, it can be seen as a star with four or six rays (four is more common). This phenomenon can be used to introduce earth processes and plate tectonics, or could be used in a chemistry class to explore bonding and crystal formation.

### Possible Topics for Discussion:

- What are processes happening deep in the Earth that make garnets?
- Why can you find star garnets in Idaho but not Montana? What is different about the two areas?

### Additional Resources:

- [US Forest Service Emerald Creek Garnet Area](#)
- [Help Kids to Learn Star Garnet](#)

### Performance Standards

2 <sup>nd</sup> Grade	4 <sup>th</sup> Grade	Middle School	High School
<p>2-ESS-1.1. Use information from several sources to provide evidence that Earth events can occur quickly or slowly.</p> <p>2-PS-1.1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.</p>	<p>4-ESS-1.1. Identify evidence from patterns in rock formations and fossils in rock layers for changes in a landscape over time to support an explanation for changes in a landscape over time.</p>	<p>MS-ESS-2.1. Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.</p> <p>MS-PS-1-MS-1. Develop models to describe the atomic composition of simple molecules and extended structures.</p>	<p>HS-ESS-2.3. Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection.</p> <p>HS-PSC-1.1. Develop models to describe the atomic composition of simple molecules and extended structures.</p>



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