

Rare Earth Minerals

Zuri and Friends

Made for Tlaloc

With love from the Faust book maker

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Zuri, Teo and Juno were friends. Pip, their owl, came too. They were at a rock museum. A big metal star sat in a box. "Let's make the star jump!" said Teo. The museum closed soon.



"Jump, star, jump!" Teo grabbed a brown rock. Would a rock work? Pip pointed at a tray. They hurried over.



Juno tried a wood star. Nothing! Zuri tried a steel star. Click! "Magnets pull some metals," said Zuri.

Did you know? Steel has tiny parts that act like little magnets. Wood does not.



Teo held the rock to the box. Nothing! "This rock isn't *a* magnet," said Zuri. "Jump, star, jump!"



Teo wiggled the rock. His knees wiggled too! The star stayed flat. Juno giggled.



Ding! The closing bell rang. Zuri hugged her lantern. Juno pointed. "Look! A picture of our rock!"



"It's the same rock!" said Juno. Zuri followed the pictures. "It has rare earths inside. They help make strong magnets."

Did you know? Workers take rare earths out of rocks. Then they mix and shape them into magnets.



Zuri pointed at purple powder. "Workers took this out of rocks." "It doesn't look like a rock!" said Juno.



Teo found a shiny silver disk. "A magnet!" "Yes," said Zuri. "Made with rare earths." Teo put the rock down.



Bong! The last bell! They raced back. Zuri found a handle on the box. "It moves a magnet inside!" Teo grabbed it.



Teo pushed the handle. Slow, slow. The hidden magnet slid closer. Everyone held their breath.



"Jump, star—" CLACK! The star leaped up and stuck! Teo jumped too. Pip flapped. Juno drew it all. "We did it!"



For grown-ups

Rare earths are 17 elements found in natural materials called minerals. Bastnäsite can contain several rare earths, including neodymium. Its brownish color does not show which ones are inside. Workers separate rare earths from minerals, but the mineral itself is not a finished magnet. Strong neodymium magnets are made by processing neodymium, iron, and boron together. Powerful magnets can pinch fingers and are dangerous if swallowed, so the museum keeps its powerful magnet safely enclosed.