

CAVES AND CAVERNS

Math Activities

There are a range of math activities for various skill levels.

One-to-One - Match counters to dots on the control card. Then, count bears without cards. Finally, match numeral cards to the correct number of dots.

More and Less - Compare two groups of counters and discuss which group has more and less.

Sequencing - Place the numeral cards on the control card in the correct order (without the dots).

Quantity and Size - Show two lines of counters with the same number of bears, but make one shorter and the other longer. Discuss the difference between quantity and size.

Skip Counting - Introduce even and odd: "even numbers always have a friend." Then, put cards 0 to 9 on the control card. Flip over just the odd or even cards, and count the ones face up.

Memory Game - Put a few numeral cards face down. Try to match pairs, turning over two at a time.

Addition and Subtraction - Use the numeral cards and counters on the control card to demonstrate addition and subtraction. Have the answer turned over to show a question mark. This allows the child to check their work.

Introduction to Algebra - Instead of the answer being a question mark, have another number turned over so the child has to find the missing number. You can also turn over the addition or subtraction card so they have to find the missing operation.

The math activities are explained with more detail in the instruction videos.

Crystal Growing

Each crystal growing activity demonstrates different properties of caves.

Magnesium Sulfate - Use a small container to mix 1/2 cup of Magnesium Sulfate with 1/2 cup almost boiling water. Place the mixture in the fridge. It will grow crystals quickly. Let it grow for up to 3 days. Adding food coloring is optional.

Sodium Borate - Use a large container to mix 3 tbsp of the Sodium Borate with 1 cup of almost boiling water. Make a pipe cleaner into any shape. Suspend this shape in the solution with the nylon thread so it does not touch the bottom. Crystals will grow overnight.

Aluminum Sulfate - Use a large container to make a solution with 1/2 cup of almost boiling water and about 3 tbsp of alum. Grow a seed crystal overnight. Pour the Alum water into a new container. Suspend a seed crystal in the new container and let it grow overnight. [See videos for full instructions]

Sodium Chloride - Use two large containers. In each one, mix 1 cup of almost boiling water with 1 tbsp of non-iodized Sodium Chloride. Place the yarn with an end in each container. You can use a paperclip to keep the yarn from falling out. The middle of the yarn should be at the same level as the solution in each container. The solution will slowly move across the yarn. Place a small container under the yarn to catch drips. Crystals begin to form in a few days.

Dolomite - Put the rock in a medium container and almost cover with vinegar. The vinegar will dissolve various minerals in the rock and begin to form aragonite crystals. Leave this undisturbed till the vinegar is evaporated and the rock is dry. This process may take a couple weeks.

All crystal growing experiments are demonstrated and explained with more detail in the instruction videos.

Other Cave Activities

A beautiful reminder of each country's heritage

Tim's Cave Adventure - Use this book and Tim's adventure to tie all the lessons together. The images and ideas can also be used for open-ended discussion with your child.

Cave Felt Scene - Your child can engage their imagination and build a cave of their own. They can identify the 3 basic formations (stalagmites, stalactites, and columns). The felt scene is also a way for them to build their motor skills. Use the printable to label each object.

Cave Art - Your child can use the pastels and large "cave paper" to draw their own cave art. For a more realistic look, you can crumple up the paper after the drawing is done so it looks like the side of a rock. Extra examples of cave art are available on the resources page for this Toolbox.

Cave in Your House - For a fun experience, you can cover the bottom of a table with "cave paper" and allow your child to create cave art upside down! The table can be mostly covered with a blanket to make it feel like a dark cave.

The chemicals used to grow crystals are safe. However, they should not be ingested and only used with close adult supervision.

All crystal growing experiments require almost boiling water. The containers provided are made to withstand this heat, but get very hot.