I'm not a robot

Math lesson science lesson

Presenter 1: We are looking at why equations are useful in science.Presenter 1: Equations are important tools. They help scientists make predictions, calculate rates and make conversions.Presenter 2: Here we're looking at two runners. We want to make predictions about who will win the 100-metre race. Let us start by seeing how far they can run in five seconds. In five seconds, Runner 1 travels 25 metres and Runner 2 travels 20 metresPresenter 1: "Faster" means more distance covered at the same time.Presenter 2: Speed equals distance divided by time. This is an equation. It tells us the relationship between the quantity, speed, distance and time.Presenter 1: Runner 1's speed is 5 metres per second. We know this because she ran 25 metres in five seconds.Presenter 2: So, speed equals distance divided by time. 25 metres' distance divided by 5 seconds' time is 5 metres per second.Presenter 1: Now, let's try to work out how long it would take her to run 100 metres. So, now we are looking to calculate time. We will rearrange the equation from speed = distance divided by time to time = distance divided by speed.Presenter 2: So, 100 metres' distance divided by 5 metres per second of speed equals 20 seconds of time. We can predict that it will take her 20 seconds to run 100 metres.Presenter 1: And now let's look at Runner 2. He ran 20 metres in five seconds. Let's work out his speed.**Presenter 2:**Speed is distance divided by time. So, 20 metres divided by 5 seconds equals 4 metres per second.Presenter 1: So, how long will it take Runner 2 to run 100 metres?Presenter 2: We have to rearrange the equation again. So, 100 metres' distance divided by 4 metres per second of speed equals 25 seconds.Presenter 1: So, he is slower, because it takes him longer to cover the same distance.Presenter 2: We can predict that he will finish second in the race.Presenter 1: So, now we can see how important equations are. They help us complete calculations and make predictions. Ever since I was a kid, I have always wanted to fly. In fact, at four years old you could find me on top of a ladder armed with a box fan (plugged in and turned on) and an umbrella, just like Mary Poppins. Unfortunately, I didn't really understand how some things flew… read more Here's our first MATH lesson. It is so easy that one night, I wound up showing it to everyone in the pizza restaurant. Well, everyone who would listen, anyway. We were scribbling down the answers right on the pizza boxes with such excitement that I couldn't help it –… read more Rockets are vehicles that launch people and payloads into space. Newton's Third Law of Motion is the principle of action and reaction. With rockets, the action is the force generated by the exhaust gases shooting out the back end of the rocket through the nozzle. This… read more Launching rockets requires a lot complicated math, but it all starts with Newton's Laws of Motion. We're going to get a taste of the math behind the real rocket science. Using math with rocket science experiments allow scientists to figure out important information… read more Telescopes and binoculars are pretty useless unless you know where to point them. I am going to show you some standard constellations and how to find them in the night sky, so you'll never be lost again in the ocean of stars overhead. You'll need to download and… read more If you haven't memorized your multiplication table yet, I am going to show you how to you need to memorize only three of the 400 numbers on a 20 times table in order to know your table. Download the student worksheet that goes with this lesson. Math isn't about… read more The Sun rotates, but because it's not a solid body but a big ball of gas, different parts of the Sun rotate at different speeds. The equator rotates once every 27 days, which is faster than the rotation at the poles, which spin once every 31 days. Sunspots are a great… read more In school, you are trained to solve math problems on paper, at a desk. The problem with that is, for most people, math problems don't usually come with a desk or a pencil. They pop up in the checkout line when paying for groceries, figuring out your gas mileage at the… read more We are going to make an eyeball model using a balloon. This experiment should give you a better idea of how your eyes work. The way your brain actually sees things is still a mystery, but using the balloon we can get a good working model of how light gets to your… read more If you don't have the patience to do multiplication on paper for every single math problem that comes your way, then you'll really enjoy this math lesson! You'll be able to multiply one and two digit numbers in your head, which you'll be able to use when checking your… read more Light is energy, and it can be defined by four things: intensity (how bright), frequency (or wavelength), polarization (the direction of the electric field), and phase (time shift). We're going to look at different ways to produce light as well as its… read more If you hate long division like I do, then this lesson will be very useful in showing you how to make the most out of your division tasks without losing sleep over it. It's easy, quick, and a whole lot of fun! If you haven't already mastered your multiplication… read more You can't just shine a flashlight through a lens and call it a laser, because the way a laser generates light is what makes it a laser in the first place. The word LASER is an acronym for Light Amplification by Stimulated Emission of Radiation. Lasers are optical… read more When it's too hard to count 'em up and too much time to calculate, it's time to guesstimate the answer. I use this technique all the time to "ball park" my answer so I know if I've made a mistake with my final answer. Download the… read more Burglar alarms not only protect your stuff, they put the intruder into a panic while they attempt to disarm the triggered noisemaker. This experiment teaches students how to make simple burglar alarms, which are really clever switches, out of their basic circuit… read more Pi is a number (slightly greater than 3) that shows up when you divide the circumference of a circle by its diameter, no matter what size the circle is. It also shows up in other shapes like spheres, ellipses, cylinders, and cones as well as unusual places like… read more Most of the electricity you use comes from moving magnets around coils of wire. Electrical power plants either spin HUGE coils of wire around very powerful magnets or they spin very powerful magnets around HUGE coils of wire. The electricity to power your computer,… read more Cryptography is the writing and decoding of secret messages, called ciphers. Now for governments these secret ciphers are a matter of national security. They hire special cryptanalysts who work on these ciphers using cryptanalysis. The secret is, solving substitution… read more What keeps building from toppling over in the wind? Why are some earthquake-proof and others not? We're going to look at how engineers design buildings and bridges while making our own. Can you build a bridge using only popsicle sticks and hot glue that can carry a… read more One day, my kid asked me how a calculator comes up with its answers. That's a great question, I thought. How does a calculator do math? After thinking about it, I realized this was a great way to teach him about binary numbers. I am going to show you how to not… read more Ancient people teach us a thing or two about energy when they laid siege to an enemy town. Although we won't do this today, we will explore some of the important physics concepts about energy that they have to teach us by making a simple catapult. Materials:… read more Cryptarithms are a puzzle where the digits are replaced by letters or symbols. When the numbers are replaced by letters of the alphabet and it spells something readable, it's called Alphametics. Download the student worksheet that goes with this lesson. Rules: Each… read more We're going to make a quick and easy drawing machine that will teach your kids about the conservation of energy! By storing energy in the rubber band (called "elastic potential energy"), you can see for yourself how this transforms into movement… read more Having trouble with your 6, 7, 8, and 9 multiplication tables? Sneak a peek at this nifty trick for multiplying single digits together. All you need is a set of hands and about ten minutes, and you'll be a whiz and multiplying with your hands. Download the… read more If you're scratching your head during math class, wondering what you'll ever use this stuff for, here's a cool experiment that shows you how scientists use math to figure out the optical density of objects, called the "index of… read more This is a really neat game invented in 1967 by two mathematicians that was soon after published in Scientific American, where it caught fire with people all over the world. It's a very simple game with a lot of interesting mathematics in it, and all you need are two… read more Did you love the content in this section? If so, then I highly encourage you to check out my award-winning online science program called e-Science! It's a hands-on K-12 science curriculum designed to teach your kids real science, and you don't even have to… read more When students walk into my classroom and find "science" listed on the daily schedule, the energy in the room goes up a few notches. Kids love hands on science, and they live for the portions of our week dedicated to predicting, investigating, and learning in a kinesthetic way. Unfortunately, due to lengthy required reading and math blocks, most elementary teachers aren't allotted much time in their schedules to teach science. Because of this, I often look for opportunities to integrate science into the study of other subjects. Math lends itself well to integration with science, since (as I tell my students) numbers are science's language. One way to integrate the two subjects involves adding a hands on component to a math unit in which students must investigate a question. For example, during a unit on area, I ask students to create an investigation to find out how surface area affects the number of weights a raft can hold. Each team needs several lengths of tin foil, a tub or sink of water, and uniform weights (such as pennies or metal washers). They can experiment with different sizes of rafts, making sure to figure out the surface area of each one and record the number of weights it holds before sinking. Data can be graphed as a class, and patterns can be analyzed. Do different shapes of the same surface area hold the same number of weights? How does lengthening each side of the raft by one centimeter affect the total surface area? Does a raft with doubled surface area hold double the number of weights? Students will begin to make connections on their own, and their understanding of surface area will be greatly enhanced. Another example of a science/math investigation can take place during a unit on geometric shapes. Ask students to design a tower using squares, triangles, rectangles, and/or other shapes the class is studying. The tower should be as tall as possible and still be able to hold up a ping pong ball. Materials can consist of whatever items you have in your classroom (straws, pipe cleaners, tape, paper clips, craft sticks, etc . . .). Discussion questions might include: How do engineers design towers? What shapes do most towers have incorporated into their design? When do towers need to hold up lots of weight? When do they need to be tall? As an assessment, ask students to draw a sketch of their tower, naming the geometric shapes used and the reasoning behind the design. They can also analyze the tower's performance in reference to the shapes they used. What shapes seemed to be best for building a successful tower? Why? Older students can be asked to choose one shape in the tower and measure its angles using a protractor. How should the angles add up if they measured a square? A triangle? A hexagon? For more ways to integrate science with math, try one of the following lesson plans. Integrating Math and Science: The Integration of Science and Math Through Ecosystems Students examine ecosystems in this lesson. Working in groups they make a list of what they would need to live in the classroom for different time increments, including a day, week, and year. They discuss worldwide use of resources. They discuss how much paper is wasted in their class, and ways to reduce usage. Which Type of Ball Bounces the Highest? In this fun experiment students use various balls to determine which one bounces the highest. They then graph the results. Roving Thru the Universe This lesson has students compare the size of the solar system to that of their community. They discuss the importance of learning about the solar system, and discuss how math skills are used to study scientific experiments. Are you looking for creative ways to engage your students in science lessons while also reinforcing their math skills? Integrating math into primary school science lessons can be a fun and effective way to enhance learning. Here are some tips to help you seamlessly embed math into your science curriculum. Why is it important to integrate math into science lessons? By incorporating math into science lessons, students can see the real-world applications of mathematical concepts. This integration helps students understand the practicality of math and how it is used in various scientific fields. It also encourages critical thinking and problem-solving skills, which are essential for both math and science. How can you incorporate math into science lessons? One way to integrate math into science lessons is by using data analysis. Have students collect data during science experiments and then analyze and interpret the data using math skills such as graphing, calculating averages, and making predictions. This hands-on approach not only reinforces math concepts but also enhances the scientific inquiry process. What are some examples of math integration in science lessons? For example, when studying the water cycle, students can measure and record rainfall data over a period of time, create graphs to show the data trends, and calculate the average rainfall for the month. This activity not only teaches students about the water cycle but also reinforces math skills such as measurement and data analysis. How can you make math integration fun for students? Make math integration fun by incorporating games and hands-on activities into your science lessons. For example, you can have students work in groups to solve math problems related to the science topic or create math-based challenges that require critical thinking and problem-solving skills. By making math elements interactive, hands-on and engaging, students are more likely to enjoy the learning process. Integrating math into primary school science lessons can benefit students in numerous ways. Not only does it reinforce math skills, but it also enhances critical thinking, problem-solving, and scientific inquiry skills. By incorporating math into science lessons, you can create a more engaging and enriching learning experience for your students. 10 activity ideas that integrate math into science lessons: Measuring Plants' Growth Activity: Students plant seeds and measure their growth over several weeks. Math Integration: Record measurements in centimeters, create growth charts, and calculate the average growth per week. Weather Watchers Activity: Track daily weather conditions and temperatures over a month. Math Integration: Use graphs to display data, calculate the average temperature, and compare weather patterns. Shadow Tracking Activity: Observe and measure shadows at different times of the day. Math Integration: Record shadow lengths, use rulers for measurement, and create line graphs to show changes over time. Density and Buoyancy Experiment Activity: Test various objects to see if they float or sink in water. Math Integration: Measure and record the mass and volume of objects, calculate density, and create a data table. Building Simple Machines Activity: Construct simple machines like levers or pulleys using everyday materials. Math Integration: Measure angles, lengths, and forces. Compare distances that the machines can move or amounts that they can carry. Exploring Symmetry in Nature Activity: Collect leaves, flowers, or insects and identify lines of symmetry. Math Integration: Draw symmetrical patterns, count symmetrical parts, and discuss geometric concepts. Ice Melting Challenge Activity: Put a cube of ice outside and see how long it takes to melt. Math Integration: Record how long it takes to melt at the beginning of the day, middle of the day and then end of the day. Compare the times. Discuss differences in activities we do at each of those points in time. Magnetism and Distance Activity: Test how the distance between magnets affects their strength. Math Integration: Measure distances with rulers, record results, and create scatter plots or graphs to analyse the relationship. Solar System Scale Model Activity: Build a scale model of the solar system using different-sized balls for planets. Math Integration: Calculate the scale distances between planets and measure these distances accurately. Discuss the 3D objects taht the planets are. Classification and Sorting of Rocks Activity: Collect and classify different types of rocks based on their properties. Math Integration: Use Venn diagrams for classification, tally charts for counting types, and graphs to represent the collected data. Each of these activities combines hands-on science exploration with essential math skills, fostering a deeper understanding of both subjects for primary school students. Campaign Math & 123s ScienceGrade SchoolKindergartnersPreschoolersExperiment Resources Get your preschoolers learning, and have a total blast, with 10 super simple hands-on science and math activities! These are perfect ways to inspire preschoolers and toddlers with science fun. Remember that homemade bubble solution I shared? Super simple, easy to do, and using supplies you already have at home. My kind of activity. I got the opportunity to check out a copy of the Gryphon House book Hands-On Science and Math by Beth R. Davis, ES, NBCT. This book is fantastic full of fascinating science experiments for young kids to explore hands-on science and math activities. All these stem activities are right up my alley. They're simple, easy setup, and use supplies I already have on hand. These are ten of the hands-on science and math activities you can find in the book. There are over 40 activities in the book, each with full explanation and photos. We loved these hands-on science and math activities, and wanted to share a sneak peek with you! If you want more stem activities and more info, make sure you grab a copy of Beth's book! In the book, you'll find discussion points and explanations to help your children grasp the concept better. There are even extension ideas to keep the fun going! I love it! A classic Sink or Float activity is a great way for kids to create a theory, and then test it! Fill a tub with water and collect various items to test. You can see how we did a sink or float activity with the kids' toys. You can take this learning game a step further though and have empty bowls with "Sink" and "Float" written on them. Sort the objects after they've been tested and then graph them. A graph is found in the book. I've seen blocks made out of tree trunks and branches but never knew really what to do with them. Hands-On Science & Math gives plenty of activity ideas to do with preschoolers! Cut 10 or so tree "blocks" that are 1-2 inches across. Try measuring, stacking, sorting and ordering by size, and exploring them with a magnifying glass. I'd love to take it a step further and count tree rings to see how old the trunk is! There's something magical about mixing colors together to create another color. In 3 different dishes, make colored water in the primary colors: red, blue and yellow. Using an eye dropper, have the kids suck up two of the colors of water and mix them together in an empty dish. Have them guess what color it's going to make, and observe what color it does. Take the magic to the next level with the Absorbing Color Combinations from the Hands-On Science & Math activities book. We shared a similar color activity on PBS Parents. You need to have Ivory Soap for this experiment. This is a great exploration of how a material can change, but still be the same. Unwrap the soap and microwave it for a couple of minutes and watch the magic happen! Make sure you have your kids take part in that because that is the experiment! Extend the learning by doing the sink or float activity with the bar of soap too. You'll try to blow up a balloon without your own air or helium. Use baking soda and vinegar instead! It's so fun! Put 2 ounces of vinegar in a water bottle and funnel in 1 tablespoon of baking soda in a balloon. Then tightly secure the balloon onto the top of the bottle, without letting the baking soda drop in yet. When ready, gently shake the baking soda out of the balloon and into the bottle. Hold tight where the balloon is secured to the top of the bottle so it doesn't fly off. Extend this stem activity experience by playing with vinegar and baking soda on a tray or egg carton! They'll love the fizzy reactions they get! Add food coloring to 2 ounces of vinegar. I like red or orange (yellow + red), just like lava! Set a paper cup inside a paper bowl, add 2 tablespoons of baking soda to the cup. Using a funnel, quickly add vinegar to the cup! Repeat as many times as the kids want to see the volcano erupt! the eruption results are so fun to watch! This is a super duper fun experiment that will keep the kids busy for quite a while! We love this homemade bubble solution. Place the solution in a shallow dish and give the kids a straw to blow bubbles! Show your kids how to blow gently, if needed. Try to fill up the dish with as many bubbles as you can! A game is a fun way for kids to learn how to estimate! Choose an object that's somewhat small, and that you have a lot of. Buttons would work well for me, or you could do Lego or other small items. Fill a container with the object. Put 10 of your item into another container. Have the kids count the container of 10. Talk together about what 10 things look like, and how different it is from the totally full container. Share your thinking about the containers and how many objects might be in the full one. Encourage your child to talk through their thoughts, too. Once they've recorded their predictions, you can then count the actual number. Take it a step further and sort by size or color and estimate those as well! Making sun prints is something that's been on my to-do list for a long, long time, but I keep forgetting about it. This is a great lesson on the effects of the sun and the reason for sunscreen! Use dark blue construction paper, or get some sun-sensitive paper, and arrange small items on it. Place the arrangements in a super sunny place and wait for the sun to make its prints. It'll take 5-8 minutes. Check the items carefully to see if a print has been made. If not, replace it in the same spot. You should see a darker spot under the object, with lighter color around it where the sun has touched the paper. Once a nice print has been made, remove the items and take inside. Dip the prints in a tub of water for 1-5 minutes. Take them out to dry. Laminate your prints and use them in a matching game. We used the kids' toys to their shape outlines. This fast experiment is one that every car lover will be doing over and over! Use a piece of cardboard, or other hard, flat surface that you can manipulate. This will be the car track or inclined plane. Place 2 books on the floor, and prop the car track on top of them. Start a car rolling at the top of the track and release the car. Measure how far it went from the end of the track. Use a measuring tape or their own feet. To get the most distance, you'll want to do this on an uncarpeted surface. Next, add two more books to the stack and roll the car again, measure again. And repeat as many times as you like! More science activities for preschoolers. And some for toddlers too. See? I told you those were super simple hands-on science and math activities to do with preschoolers and toddlers too! Now, go have some fun with them! Get a sneak peek of the Hands-On Science & Math book here!