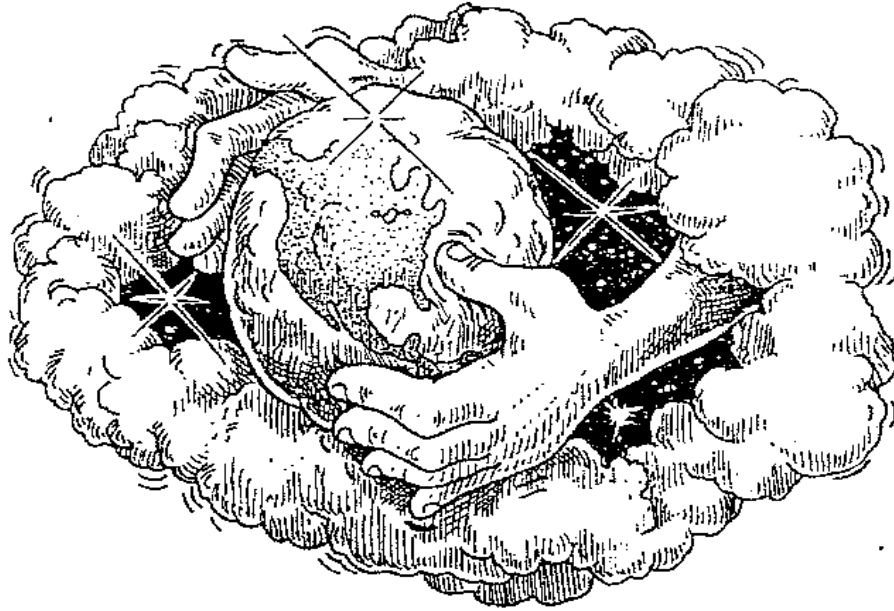


## SCIENCE DEMONSTRATIONS WITH SPIRITUAL APPLICATIONS



For since the creation of the world, God's invisible qualities,  
His eternal power and divine nature, have been clearly seen,  
being understood from what has been made,  
so that men are without excuse.

Romans 1:20

Engaging activities and demonstrations  
with spiritual applications to present God's  
Truth in ways kids will remember.

**Presented by Jim Blackie**

Please contact me with any questions,  
comments, or fresh ideas of how to use  
science to share God's Truth with children!

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# The Cross of Jesus Christ!

Receiving Jesus cleanses you of sin

## Scripture

1. Though your sins be as scarlet, they will be white as snow (Isaiah 1:18)
2. Anyone who is in Christ is a new creation, the old is gone, the new has come (2 Corinthians 5:17)
3. But to as many as received Him... He gave the right to become children of God (John 1:12)

## Presentation

Show a cup with clear liquid. This represents our heart. A few drops of "indicator" turn it bright red ("scarlet"), representing sin in our life (Isaiah 1:18). In the other hand, show a cross, representing Jesus' death for our sins. When Christ is invited in, he forgives our sins and cleans our heart! Swirl the cross into the cup and the water goes clear!

## Materials

1. Clear cup or jar
2. Wooden cross with lid attached at bottom
3. Phenolphthalein indicator solution
4. Ammonia or washing soda solution (base)
5. Vinegar (acting as mild acid)



Cup with few drops of base solution

Cross with vinegar (acid) in lid

Phenolphthalein Indicator

## Preparation

1. For this demonstration you will need to obtain some "phenolphthalein" indicator solution. It's a clear, very safe chemical that is 99% alcohol and readily available from on-line sources.
2. Fill your clear cup about 2/3 full with water and add 6-8 drops of the base solution. Ours is 4% sodium carbonate (Washing Soda) in water, but ammonia also works. The water in the cup should still look clear.
3. In the base of the cross, put a tablespoon of vinegar. This mild acid will "neutralize" the base and turn the pink indicator back to clear.
4. Have your phenolphthalein indicator ready! A couple drops turn the water in cup pink!

## Teach

1. Explain how the cup represents our heart. A clear cup is like a clean heart. But remind children that "all have sinned and fallen short of the glory of God (Romans 3:23). A few drops of the phenolphthalein "sin-tester" reveals our heart is not really clean before God. The indicator solution will turn the water a dark pink (pretend it's red), representing sin.
2. Jesus knocks at the door of our heart. If we invite Him in, He forgives our sin and cleans our heart! As you put the cross into the cup of red (pink) water, it returns to clear. Our sins are forgiven when Christ is in our life! Leave the cross in the cup to show that it's Jesus in our heart that makes it pure!

## What's Happening?

The phenolphthalein is an acid-base indicator that responds to base (alkali) solution. It's pink in the presence of a base but clear in the presence of an acid or neutral solution.

# God Sees our Heart! Sally Sinful and Suzie Saint!

The Holy Spirit Reveals What Is In My Heart!

## Scripture

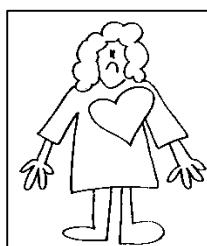
1. Man looks on the outside, but God looks on the heart (1 Samuel 16:7)
2. Examine me, Oh Lord, and prove me, test my mind and my heart (Psalm 26:2)
3. Create in me a clean heart, oh God (Psalm 55:10)

## Presentation

Picture of Sally Sinful and Suzie Saint are compared. We can see their outside expression and behavior, but only God can see their heart. Using a bottle of spray Windex (with ammonia), it's as if the Holy Spirit can reveal our heart to us and lead us to repentance and forgiveness.

## Materials

1. Suzie and Sally pictures (with big hearts)
2. Spray Windex (with ammonia)
3. Phenolphthalein indicator solution
4. Q-Tip (use a phenolphthalein "pen")



Sally Sinful  
(Sin in her heart)



Suzie Saint  
(Jesus in her heart)

## Preparation

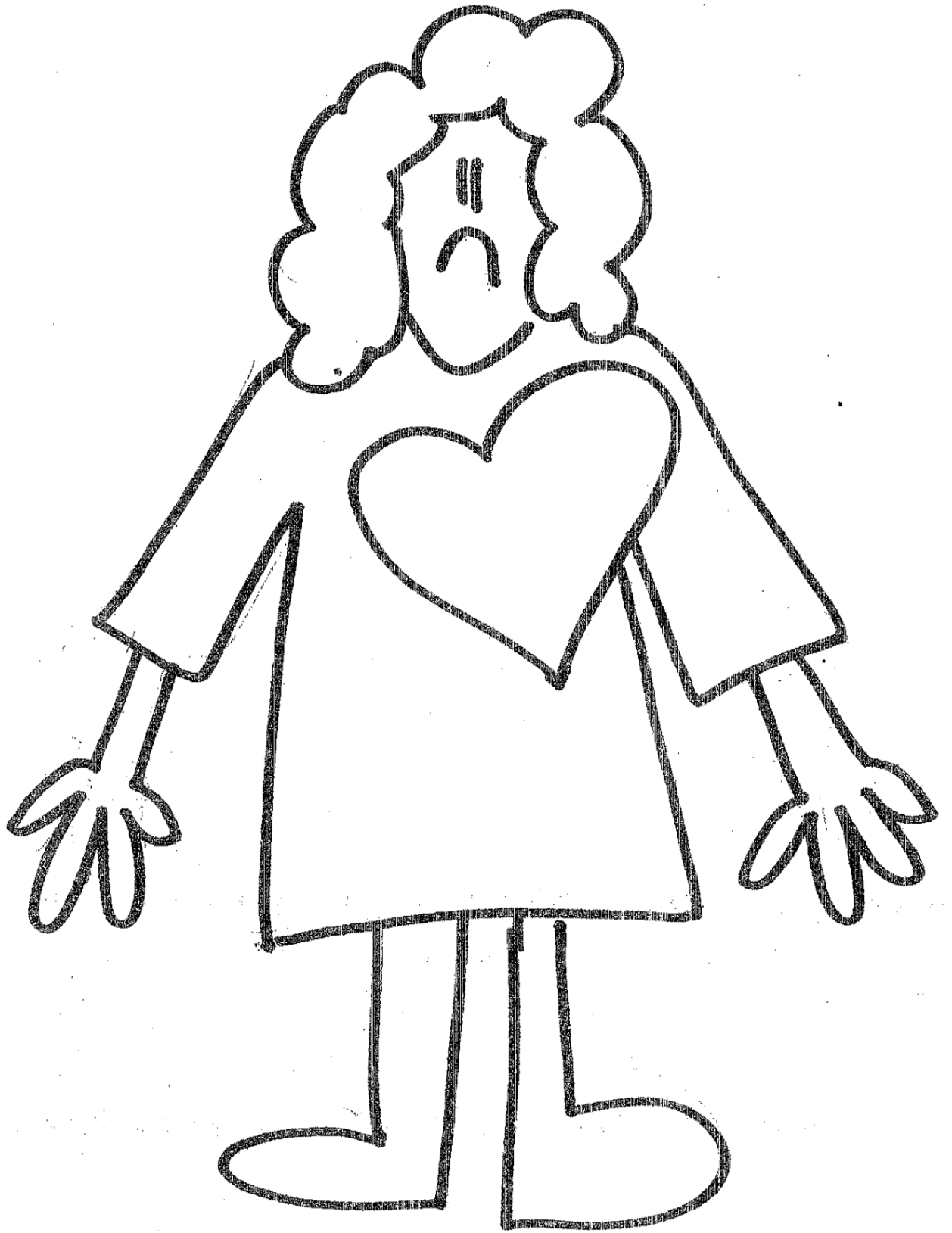
1. For this demonstration you will need to obtain some "phenolphthalein" indicator solution. It's a clear, very safe chemical that is 99% alcohol and readily available from on-line sources.
2. Dip your Q-tip into the phenolphthalein indicator. Using it as a marking pen, write "sin" in Sally's heart and a cross in Suzie's heart. This may take a little practice, as the alcohol in the indicator diffused easily on the paper and can make a mess. The phenolphthalein solution will evaporate quickly and act as an invisible ink, waiting to change color when sprayed.

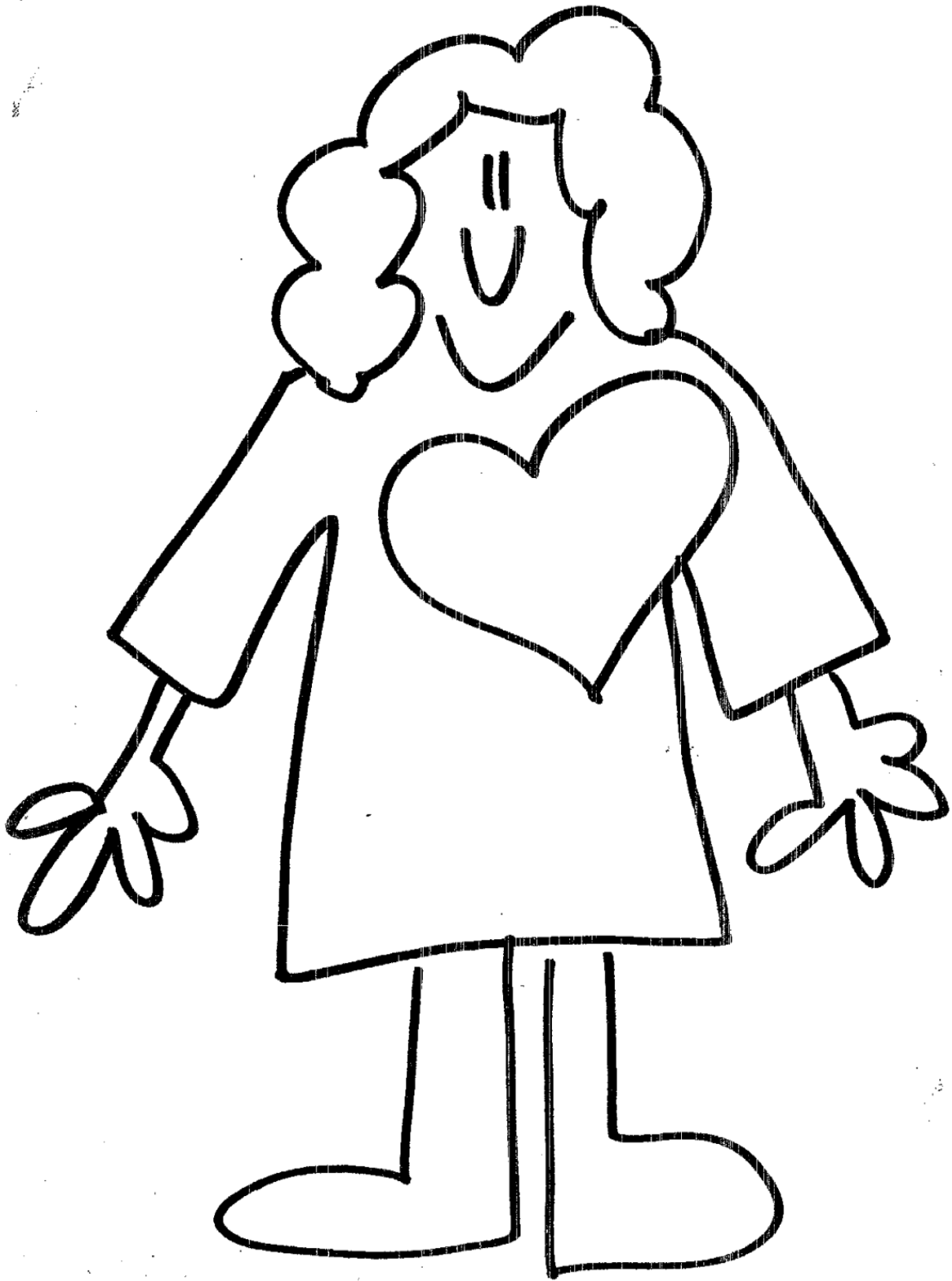
## Teach

1. Explain that our heart is the center of our life. If our heart is sinful, then our life will reflect selfishness and the works of the flesh. If the Lord is in our heart, then our life should demonstrate the fruit of the Spirit. But many times we don't even know our own heart.
2. The Holy Spirit searches our hearts and will lead us in confessing our sin and restoring our relationship with God. "Search me, oh God, and know my heart..." (Psalm 139:23)
3. The spray Windex demonstrates how the Spirit can reveal our heart. Lightly spray the hearts of Sally and Suzie to reveal the hidden writing!

## What's Happening?

The phenolphthalein is an acid-base indicator that responds to base (alkali) solution. It's pink in the presence of a base; the Windex is slightly base due to the ammonia.





# Build Your Life on the Rock!

Remaining Solid When the Storms of Life Come!

## Scripture

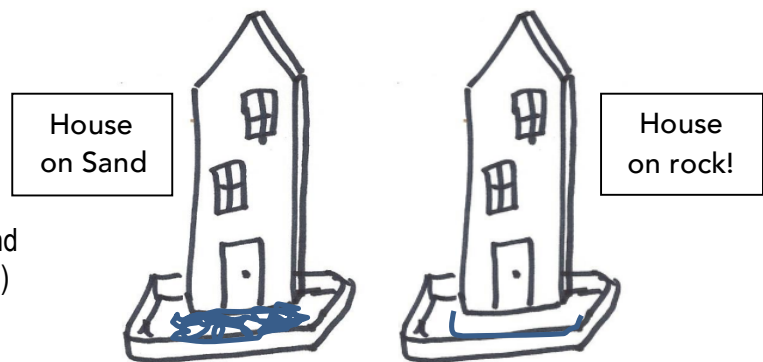
1. The parable of the house on the rock and house on the sand (Matthew 7:24-27)
2. The Lord is my rock, my fortress, my deliverer... (Psalm 18:2)

## Presentation

Two Styrofoam houses are set in glass cake pans. One is set on a piece of ceramic tile (rock) and the other on a scoop of sand. When the storm comes, a jar of water is poured into the cake pan of the house built on the rock—nothing happens, the house remains strong. Another clear liquid (acetone) is poured into the cake pan with sand, and the house slowly dissolves. You can add to the story with a spray bottle of water to mist the audience, representing rain.

## Materials

1. Two Styrofoam houses
2. Scoop of sand
3. Piece of ceramic tile
4. Two glass cake pans
5. Two glass jars (one filled with water and one filled with acetone / 18-20 oz. each)
6. Spray bottle with water (rain)



## Preparation

1. For this demonstration you will need to obtain acetone and large pieces of Styrofoam, both available from the warehouse hardware stores. The Styrofoam is sold as insulation and the acetone sold in gallon cans as a solvent. There will probably be a protective layer of plastic on both sides of the Styrofoam that should be removed. Be aware that acetone is flammable and gives off a pretty strong odor, so make sure room is well ventilated
2. The houses can be cut with a box cutter from the Styrofoam and marked with permanent marker. For our class demo, the houses were about 8 inches wide and about 3 feet high.
3. Two glass jars, one with 18-20 oz water, the other with 18-20 oz acetone.

## Teach

1. Explain the parable of the house built on the rock and the house built on the sand. Jesus predicted that the storms of life will come to all of us, but if we trust Him and obey His Word, our house (our life, our family, etc) will be strong and remain solid. Provide examples of “storms” that children can relate to, such as a parent losing their job.
2. Pour water from the jar into the cake pan with the ceramic tile, representing the storm coming to the house built on the rock – nothing happens! The house is built on the rock! This person / family is confident God is in control and will work things out in His timing! When the acetone is added to the cake pan with sand, the house slowly dissolves. As it does, you can mist the students with a spray bottle filled with water to show the rain!

## What's Happening?

The acetone is a solvent that dissolves the Styrofoam.

# **Seeing is NOT Believing!**

Christians Walk by faith, NOT by sight!

## Scripture

1. We walk by faith, not by sight (2 Corinthians 5:7)
2. Don't be fooled by the prosperity of the wicked (Psalm 73:2-17)

## Presentation

This demonstration is similar to the hidden ball under the cup “trick.” The cups are moved around quickly while observers try to keep track of which cup has the hidden ball. The difference with this demonstration is we’ve give it a science twist in which water is poured into a cup, then seemingly disappears. Even though everyone saw the water being poured into a cup, it apparently has vanished! Are your eyes fooling you?

## Materials

1. Water-absorbing polymer powder
2. Cups (not clear) and pitcher of water



## Preparation

1. For this demonstration you will need to obtain a water-absorbing powder called sodium polyacrylate, sometimes called “water-lock”. It is completely harmless and used in disposable baby diapers. It’s readily available on-line, I recommend a source called “Educational Innovations” ([www.Teachersource.com](http://www.Teachersource.com)). A four ounce. pack is about \$8.00.
2. Put a spoonful of the water-lock powder into one of your cups without children knowing. This is the cup that will hold the water that appears to disappear.
3. Make sure you practice; about a spoonful of powder will absorb about 8 oz. of water

## Teach

1. Our world today mostly follows the “seeing is believing” motto. But as Christians, we know our eyes can deceive us and we shouldn’t always accept appearances! We affirm God’s word is what is true even when things appear differently. Examples include how our culture values money, beauty, and power as sources of fulfillment and happiness. But as Christians, we know obedience to God, loving and ministering to others are the true sources of fulfillment and happiness.
2. Explain this is a hand-is-quicker-than-the-eye demonstration. “I’m going to try to fool you by pouring water in one cup, then mixing them up. You try to keep your eye on the cup with water even when I’m trying to confuse you.”
3. Pour water into the cup with the powder; the water will absorb, expand, and become stuck in the cup. Mix up the cups and let kids guess which one has the water, but if you tip the cups over, they all appear empty. Your eyes may think the water disappeared. In reality, it’s there. Don’ let your eyes fool you!

## What’s Happening?

The “water-lock” powder greatly expands as it absorbs 100’s of times its weight in water.

# Shadrach, Meshach, and Abednego!

## Flaming Bubbles and the Fiery Furnace!

### Scripture

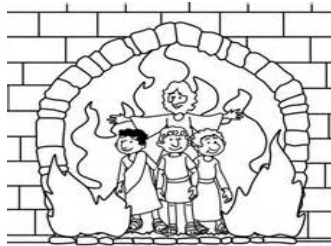
1. Shadrach, Meshach, and Abednego and the fiery furnace (Daniel 3)
2. Think it not strange concerning the fiery trial which is to try you (1 Peter 4:12)

### Presentation

Using butane refill containers, the butane gas can make bubbles in soap solution that can be safely lit on fire! Wow, exploding bubbles! If you make sure your hand is wet & soapy, you can scoop up some of the bubbles, light them on fire in your hand, and tell the story of how God kept the three Hebrew boys safe in the fiery furnace!

### Materials

1. Bowl of soap bubble solution
2. Butane refill bottle
3. BBQ lighter
4. Rags or paper towels to clean hands!



### Preparation

1. Use a medium sized mixing bowl filled with bubble soap solution.
2. Practice this one! Making and lighting butane bubbles, then in your hand!!

### Teach

1. Review the story of the three Hebrew boys (Daniel 3) and Nebuchadnezzar's threat to throw anyone in the fiery furnace who does not bow to his golden statue. They boldly defy the king and are thrown into the fiery furnace, but are miraculously protected by God!
2. Demonstrate the exploding butane bubbles in the bowl. Using regular soap bubble solution, we can fill the bubbles with butane and light the bubbles on fire! Amazing!
3. Make sure your hand is wet and soapy as you scoop up a handful of butane bubbles! You can safely light it on fire WITHOUT burning yourself. The butane burns quickly and the water on your hand insulates you from the heat. (Practice a little wave of your arm, to keep the flame from staying in one spot of your hand.) By repeating the demonstration three times, you can model the three Hebrew boys, unhurt in the fiery furnace by God's protection!

### What's Happening?

The butane fuel burns even though it's in soap bubbles. Your hand is insulated by being wet!



# **A Check List for Spiritual Growth!**

And a fun activity comparing slime and a checklist for spiritual growth!

## Scripture

1. Grow in the grace and knowledge and of our Lord Jesus Christ (1 Peter 3:18)
2. Be strong in the Lord... (Ephesians 6:10)

## Presentation

This is a fun, all-student activity. Students make a batch of goopy slime to keep! They'll need four items as slime-making supplies: the glue solution, the borax solution, a stirring stick and a paper towel. If they have everything they need, they're ready to go!

In the same way, spiritual growth needs four elements: Bible reading, prayer, Christian fellowship, and sharing our faith. If we have everything we need, we're ready to grow!

## Materials

1. Cup with glue solution (50% glue, 50% water). I suggest 2 oz. glue solution per child
2. Cup with Borax solution (table spoon borax in 1 cup water) I suggest  $\frac{3}{4}$  oz. per child
3. Wooden craft stick for stirring
4. Paper towels for hand cleaning
5. I suggest a poster-sized checklist, slime supplies on one side, spiritual growth on the other.

## Preparation

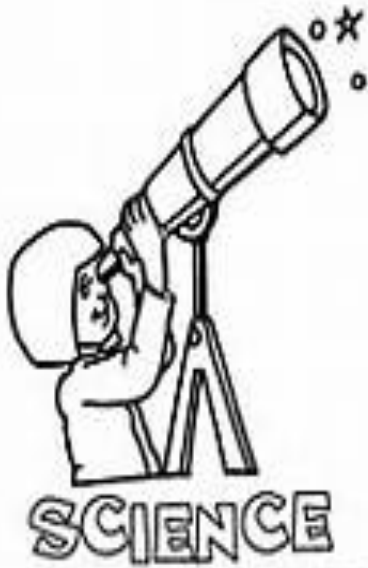
1. You'll need to pre-make your glue solution (50% glue & 50% water dissolved together)
2. You'll need to pre-make your Borax solution (1 tablespoon Borax dissolved in water)  
Borax is a laundry "booster" available at some grocery stores, Target, etc.
3. Cups that work well are from Smart & Final, the 5  $\frac{1}{2}$  oz. cup with the glue solution, and it can be used for mixing the slime, and 3  $\frac{1}{4}$  oz cup with lid for the borax solution. This cup and lid can be used to keep the slime in when the activity is complete.
4. There are many YouTube videos on glue-and-Borax slime as tutorials, if needed.

## Teach

1. Discuss the role of a checklist. "A checklist allows us to make sure we have everything we need and helps us not forget something. Here's a checklist for making slime!" Go over the four items and make sure students have everything they need.
2. Spiritual growth is very important, and here's a checklist: Bible, Prayer, Fellowship, and Witness. If we can check each off, we have all we need to grow spiritually.
3. Have students add their Borax solution into the glue solution and stir. The liquids will quickly "react" into a goopy blob. After a minute or two of stirring, students grab the blob with their hands and mush and squish for a couple more minutes. If all goes well, within a few minutes, they have a fun blob of goo to keep and play with!

## What's Happening?

The glue and borax solutions chemically "react" to form a "polymer" – long chain molecule!



## Science Demos in Sunday School?

Using science activities can be a great way to engage children and present spiritual truth in ways that will grab their attention and they will really remember!

It's based on a simple equation:  $P=1000w$  ...

A "Picture" is worth a "1000 words"

Jesus often used object lessons from the world of nature to illustrate spiritual truth, such as "consider the lilies..."

Here are a few lessons to get you started! But hopefully they are only the beginning. There are tons of fun and easy science activities that are kid-and-teacher friendly available today.

The internet, as you know, is an almost unlimited source of information, including science-fun activities that could be applied to children's ministry. If you've got a vision for these kinds of visual aids and engaging activities, the sky's (literally) the limit!

Here's the formula...

1. Find an activity that will get student's attention.
2. Does it model / parallel a spiritual lesson you want to teach.
3. Gather your supplies, practice a few times, and go for it!

Things to remember...

1. Practice first: famous last words, "watch this" and nothing happens!
2. Be safe! Closely supervise anything that could be potentially hazardous!
3. Prayer! The most flamboyant delivery is useless unless the Holy Spirit empowers it to impress God's Word to the hearts of the children!

A further source I recommend...

Berg Christian Enterprises has a kit called "Sermons in Chemistry."

If you're willing to invest the \$30.00, they'll send you a great little kit with several eye-catching demos that are simple and easy to use.

My favorite is a color-changing demonstration in which a black liquid (sin) turns clear (forgiven) when a red liquid (Jesus' blood) is added! Impressive!