



*Grade Level: Grade 6*

*Title:*

## **Qualities of a Scientist & Qualities of a Follower of Jesus**

*Denomination: Catholic*

*Lesson ID: BAS-G6-01-CA*

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*Note: Web sites referenced in this lesson were valid at time of publication.*

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**BE A SCIENTIST – GRADE 6 – CATHOLIC**  
**LESSON TITLE: Qualities of a Scientist & Qualities of a Follower of Jesus**

**GENERAL CONCEPT: Honesty and integrity.**

**SCIENCE LESSON CONCEPT**

- Honesty – a basic science necessity

**GOAL OF SCIENCE LESSON**

- Students will learn that a good scientist is honest in conducting the experiment, recording the data, and proving or disproving the hypothesis.

**OUTCOME EXPECTED**

- Students will conduct an experiment which will result in widely varying results for each team.
- Students will discover how honesty is a required characteristic for a good scientist.

**RELIGION LESSON CONCEPT**

- Honesty – a requirement for a follower of Jesus

**GOAL OF RELIGION LESSON**

- Students will learn that honesty is a requirement in our relationship with God and with others.
- Students will learn that honesty requires us to admit our failures and seek forgiveness.
- Students will gain a new understanding of the virtue of humility.

**OUTCOME EXPECTED**

- Students will learn that honesty is required for a valid reception of the Sacrament of Penance (Reconciliation).
- Students will learn that the virtue of humility is admitting the good and the bad.

## **MATERIALS NEEDED**

- Science Journal page: Our Experiment
- Pen or pencil
- 5 different kinds of plants (cactus being one of them) for each group of students
- Set of 5 labels numbered #1, #2, #3, #4, #5 - one set per group (the same type of plant should be labeled with the same number in each group)
- A small bag of Miracle-Gro plant food
- Water
- Measuring device for water
- Graph paper
- Experiment Directions Sheet
- A significant prize for the winning team
- Enough prizes for each member of every team

## **MATERIALS NEEDED**

- Religion Notebook
- Pen or pencil
- If possible, an opportunity to receive the Sacrament of Penance (Reconciliation)

## SCIENCE METHODOLOGY

- **SAY:** I am going to assign you to competitive research groups. It is very important that each group does the experiment exactly as it is written. Each group should keep its experiment and results secret from the other groups. There will be a prize for the group who achieves the best results. I want you to be very accurate in what you do and how you do it. Keep your research project a secret.
- **ASSIGN** students to research groups.
- **SECRETLY** give one group directions for enhancing that group's results. Tell that group that there is a way that their group's results should be better than the other groups' results. Tell them to give their plants only 1/8 cup of water each day and add a pinch of Miracle-Gro Plant food to the water. Tell them if they tell anyone about our plan, they will automatically lose the competition.
- **GIVE** each group 5 different plants. Each group should receive the same kind and approximate size of plants.
- **GIVE** each group the Experiment Directions Sheet. The sheet should have the following:

GROUP Number:

Directions: You have received 5 different plants each with a corresponding number on its label.

1. Your hypothesis: Plants should receive 3/4 cup water a day to grow well.

## RELIGION METHODOLOGY

- **ASK:** Jesus said that blessed are the meek and humble of heart, for they shall inherit the earth. What does it mean to be humble?
- **ALLOW and RECORD** student replies.
- **DEFINE:** Humility is a virtue which allows a person to accurately view oneself accepting the good and admitting the bad.
- **ASK:** How does being honest help a person to practice the virtue of humility? (tell the truth – good and bad)
- **SAY:** Before we ask God's forgiveness for our sins, we examine our conscience. We ask ourselves if and how we have obeyed God's laws.
- **GIVE** the students a copy of an examination of conscience.
- **HAVE** them record in their Religion Notebook each time they have obeyed one of God's laws by placing a check on the line which corresponds to the item on the Examination of Conscience.
- **FOR EXAMPLE:** Examination item # 1: Have I prayed to God? If the student has prayed, put a check on line #1 in their notebook. The object of this exercise is to support the part of the virtue of humility which calls for acknowledging the good in us.
- **ASK:** Did you realize you were so good?

2. You are to carefully measure the water each day and give each plant exactly the same amount of water.
  3. You are to measure the height of each plant from the top of the soil to the highest part of the plant and record it on the Science Journal page.
  4. You are to do this each school day for 2 weeks.
  5. At the end of the 2 weeks you are to create a graph on the graphing paper which shows the growth of each plant.
  6. You are to evaluate your hypothesis. Ask: Did the evidence (data) show that all plants need 3/4 cup water to grow well.
- **HAVE** the students do the experiment.
  - **HAVE** the students record the data on the graph and report to the class if the hypothesis was proven correct or not.
  - **DISCUSS** the importance of honesty in doing the experiment and recording the data.
  - **ASK:** Did every group accurately follow the directions?
  - **SAY:** There was one group that had an unfair advantage. I gave them secret instructions which were different from the other groups. Look at the graphs.
  - **ASK:** Can you tell which group had the secret instructions?

- **SAY:** We need to be honest in our own self-evaluation. We need to honestly admit the times we have failed to do good and chosen to sin, but we also need to honestly acknowledge the times we have chosen to do good and avoided doing evil.
- **ASK:** What do you see when you look into a mirror? (a self image)
- **SAY:** You should be able to see an accurate image of yourself.
- **ASK:** What happens if you look into a mirror at a fun house for example? (one that distorts the image)
- **SAY:** You see a distorted or warped image. The virtue of humility requires that we have an honest and accurate acknowledgement of what is real and true.
- **ASK:** How do we get God's forgiveness? (by saying we are sorry, asking for forgiveness, receiving the Sacrament of Penance)
- **SAY:** Asking for God's forgiveness and receiving it cleanses our soul of sin and restores our image.
- **IF POSSIBLE,** give the students the opportunity to receive the Sacrament of Penance (Reconciliation).
- **POSIT:** Honesty is required for the virtue of humility and for the reception of the Sacrament of Penance.

- **SAY:** Yes, we were dishonest. We wanted to win more than to get correct data. How do you suppose we had such good results? (less water, secret ingredient?)
- **ASK:** Why is it so important that scientists be honest in their proceedings and collection of data?
- **OPTIONAL:** You could show one part of a Star Trek movie: Genesis Planet where the young scientist admits to inserting DNA into the matrix to insure the planets grow instead of obeying the rules.
- **SAY:** Since the competition was not an honest one but because each team followed the directions they were given, everyone gets a prize.
- **POSIT:** Scientific research requires an honest scientist who will follow scientific method even if the hypothesis is proven to be incorrect. Winning is not the important part of research.

## SCIENCE LINKS

[www.sciencealert.com.au/opinions/20092602-18846-2.html](http://www.sciencealert.com.au/opinions/20092602-18846-2.html)

[Teaching scientists the value of virtue \(Science Alert\)](#)

Science students must be taught to act with integrity when faced with fraudulent research, as well as how to deal with the pressures applied to whistleblowers. Good background for teachers and parents.

[www.greatschools.org/cgi-bin/showarticle/678](http://www.greatschools.org/cgi-bin/showarticle/678)

[Favorite Books for Fifth-Graders - GreatSchools.org](#) Our panel of children's book experts recommends these great books for your fifth-grader. ... their lives and risked their own health to do scientific research. ... click on Science on the left for recommended Science topic books.

[www.serc.carleton.edu/introgeo/indoorlabs/why.html](http://www.serc.carleton.edu/introgeo/indoorlabs/why.html)

[Why use indoor labs?](#) Teaching how science is done. A further reason to teach with labs is to give students ... lack of results) will help students develop a habitual scientific integrity and honesty. ...

## RELIGION LINKS

[www.loyolapress.com/five-facts-about-the-sacraments-of-healing-activity...](http://www.loyolapress.com/five-facts-about-the-sacraments-of-healing-activity...)

[Five Facts About the Sacraments of Healing Activity - Loyola ...](#)

In a Sacraments of Healing activity, children learn about the Sacraments of Penance and the Anointing of the Sick. Learn more at Loyola Press. A simple, but effective activity.

[www.catholicmom.com/printables/reconciliation\\_lesson\\_plan.pdf](http://www.catholicmom.com/printables/reconciliation_lesson_plan.pdf)

[Reconciliation Activities](#) The Sacrament of Penance and Reconciliation (Catechism of the Catholic ... Five in a Row- This game will help children to discover that when Jesus forgives ... This site also gives over 20 other relevant sites for specific topics under the Sacrament of Penance.

## KEY WORDS

- HONESTY
- INTEGRITY
- EXPERIMENT
- PROCEDURE
- HYPOTHESIS
- VARIABLES
- SCIENTIFIC METHOD

## KEY WORDS

- FALSE WITNESS
- HONESTY
- INTEGRITY
- HUMILITY
- FORGIVENESS
- VIRTUE
- SACRAMENT
- PENANCE
- RECONCILIATION
- TRUE CONTRITION