



SCIENTIFIC METHOD

| | Unit/Competency/Objective | Cognitive |
|-------------|---|------------------|
| | Fundamentals of Biotechnology | |
| 3.00 | Apply scientific methods | 5% |
| 3.01 | <i>Discuss the nature of science, scientific inquiry and problem solving.</i> | 2% |
| 3.02 | <i>Apply the scientific method in biotechnology</i> | 3% |
| | | |

Unit Materials

| | | |
|------|----------|--------------------------|
| 3.01 | Content | ◆ What is Science? |
| | Activity | ◆ Great Truths |
| | Activity | ◆ What is a Scientist? |
| | Activity | ◆ How Observant are You? |
| | Activity | ◆ Think Creatively! |

Recommended Resources

DNA: The Secret of Life chronicles James Watson and Francis Crick's 1953 revolutionary scientific breakthrough—the discovery of the double helix. This 32-minute video presentation masterfully illustrates the mechanics of the DNA double helix and explores the far-reaching impact of genetics and the Human Genome Project. This film is a must-see for anyone who seeks a better understanding of the science of life.

Purchase the video online from Carolina Biological Supply Company at
http://www.carolina.com/biotech/DNA_secret.asp

- [***DNA: The Secret of Life \(VHS\)***](#)
49-0986 Each \$19.95
- [***DNA: The Secret of Life \(DVD\)***](#)
49-0987 Each \$19.95

Supplemental Resources

Are You Cavity Prone? BioKit

15-4713

With the "Are you Cavity Prone? BioKit, each student determines his susceptibility to dental caries, based upon the rate at which bacteria from his mouth produce acid in Synder test agar, a carbohydrate-based medium. The materials in the kit are sufficient for 30 students.

<http://www.carolina.com/manuals/manuals7/AreyouCavityProne.pdf>

DNA Made Easy Kit (Optional)

Colorful, durable, and instructive. Encourages students to participate in learning about such topics as the double helix, amino acid chains, and replication. Built to last; in normal usage the Plastick™ pieces are virtually indestructible. Each kit contains a 30 × 40" jumbo-sized demonstration board, over 100 Plastick™ pieces that stick without glue or magnets, a 40-page teacher's guide with detailed lesson plans, reproducible student worksheets plus answers, and storage boxes. From Carolina Biological Supply.

WW-17-1040 \$213.50 per kit

https://www3.carolina.com/onlinecatalog/direct_template3.asp?class=457&item=4179&title=DNA+Made+Easy+Kit%26%23153%3B

Crime Scene

The Crime Scene "Forensic Science Kit" is perfect for aspiring detectives on your shopping list. The kit includes real evidence and real forensic tests. Dust evidence for prints to match against suspect prints. Test fabric samples for the presence of blood. Your role, as Crime Scene Investigator, is to solve the murder of Missy Hammond.

http://www.crimescene.com/store/product_info.php/products_id/56

3.01 DISCUSS THE NATURE OF SCIENCE, SCIENTIFIC INQUIRY AND PROBLEM SOLVING.

| Activity | Steps | Comments |
|-------------------------------|---|--|
| What is Science? | <ol style="list-style-type: none"> 1. Provide each student with a copy of "What is Science?" (3 pages) 2. Divide class into 6 groups. Assign each group to a section of "What is Science?" Give them 10 minutes to discuss and study their section of the assignment. 3. Allow each group 3 minutes to "teach" their section of the assignment to the rest of the class. | <ul style="list-style-type: none"> <input type="checkbox"/> Make copies of all three pages for all students in class. <input type="checkbox"/> The content in this section is very important. Teachers can follow the suggested steps or design their own activity: make it a reading assignment, create a lecture, etc. <input type="checkbox"/> Possible sections: What is science, How to think like a scientist, Observation, Hypothesis, Experiment and Conclusion |
| Great Truths | <ol style="list-style-type: none"> 1. Show the date and statement – on a chalkboard or overhead projector. 2. Allow students to call out the real fact. Encourage their ideas and creativity. 3. Share the correct answer. | <ul style="list-style-type: none"> <input type="checkbox"/> Make this a fun activity. It's designed to get students thinking! |
| What is a Scientist? | <ol style="list-style-type: none"> 1. Follow the steps outlined in the activity. | <ul style="list-style-type: none"> <input type="checkbox"/> Post pictures around the classroom. |
| How Observant are You? | <ol style="list-style-type: none"> 1. Follow the steps outlined in the activity. | <ul style="list-style-type: none"> <input type="checkbox"/> You may write the questions on a flipchart or overhead projector and reveal one at a time. |
| Think Creatively | <ol style="list-style-type: none"> 1. Follow the steps outlined in the activity. | <ul style="list-style-type: none"> <input type="checkbox"/> Make this a homework assignment. Send students home with the 5 questions. Let them talk to friends or family, or work through the problems. <input type="checkbox"/> Have students share their "results" in class. |

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