

SE K.3A Information and Critical Thinking
Concept Page for Teachers

Objective: (K.3A) The student knows that information and critical thinking are used in making decisions. The student is expected to make decisions using information.

Scientific question: How can we use the information we have to make decisions?

Timeframe: This series of labs serves as sponge or bell-ringer activities. The complete sequence will take several weeks, with about 10 minutes of class time for each lab.

Suggested sequence: Labs K.3A-C are divided up in a different fashion from most of the labs in this book. These labs function as a sponge or bell-ringer activity. There are 14 cases provided in this lab. Each case should be presented as shown in K.3A, and then during the next session (perhaps the next day) lab K.3B should be performed for that individual case. Upon completion of all 14 cases, lab K.3C should be performed. Other labs may be performed during this period of time if desired, since K.3 A-C will take several weeks.

Background information: Science is based upon taking **information** and using **critical thinking** to ask questions. These questions are then confirmed by experimentation. Each of these cases will prompt the student to take the information given plus personal experience and then apply critical thinking. Some of these cases are true and some of them are false. Each case allows the student to think about the information presented and decide whether the case is indeed true or false.

Points to clarify with students: It is important to remember that when you are told something, it will not always be true. Sometimes in science, information is incorrectly presented. We will try and determine whether something is true or false.

Things to think about: Allow the students to discuss all of the aspects of each of these cases. Also be cautious that your more vocal students do not dominate the conversation. Your most quiet student needs to share what he or she thinks as well.


Vocabulary: information, critical thinking


information – knowledge that is given to you in many different ways such as from a teacher, or from your parents or from television or radio.

critical thinking - when you listen to information given to you and decide whether it is true or false based upon many factors

Materials list: two small potted plants, one replanted upside down with the roots exposed; a piece of wood with the wood grain showing such as part of a 2x4, a dead spider in a clear plastic bag with two legs removed [if needed you may substitute a plastic spider]; a brick, piece of brick, or small piece of concrete; a rounded river rock from a garden; a piece of lava rock or pumice; a small live fish such as a goldfish or a picture of


a fish; a penny, a nickel, a quarter; a banana; a potato that has been in your pantry long enough for “eyes” to grow out some; a white cotton tee shirt; a medium size flashlight; and a picture of a dog.

Classroom introduction for students:  Should we always believe everything we are told? (*no*) Why not? (*because they may not be right*) We talked about what the word information means. I also told you about critical thinking. Critical thinking is very important as you grow older. It is important to be able to decide whether something is true or false.

Procedure:  Bring out one of the samples from the table below. Use the description given for the item of that case. Using the penny, nickel and quarter for example, read the script about the goose eggs [row 9 in the following table]. Obviously this story is incorrect. Let your students discuss your story for a bit. Ask them to explain why this story is incorrect. Make sure and draw discussion out of your less vocal students as well. Remember that K.3A is about using information to make decisions. Keep the students focused on only the information that was provided.

On day 1 of each case, simply record a sampling of the students’ thoughts, making no corrections other than to maintain focus on the information that was provided. Keep the recorded thoughts for use in day 2 of the lab, which is K.3B.

Please note that the table repeats in K.3B for your use. Remember to only present one case at a time, using day 1 to record thoughts/opinions, day 2 [K.3B] to practice justifying the decision as to whether the case is true or false. You may use one of these cases as bell ringers or sponges at any time during the school year.



Script to Read	Yes That is True	No, That Can't Be Right	Notes to the Teacher
A plant turned upside down in the soil will grow just fine.		x	Take a small plant and cut off most of the foliage leaving two or three inches. Plant the foliage down in a pot of soil with roots exposed.
This piece of wood was once part of a living tree.	x		Get a piece of two x four or other board. Do not use particle board or plywood as they have been processed.
Insects have six legs. This creature has six legs, it has to be an insect.		x	Find a dead spider in your house. Either you or someone who loves you very much, remove two of the spider's legs.
This is a piece of brick (or concrete). It is used to make houses. It is a natural rock.		x	Brick and concrete are made of natural material. But they have been formed and fired in the case of the brick or combined with several natural materials in the case of the piece of concrete.
This is a river rock. It is rounded and smooth because it was rolled in a river over a long long time.	x		You can generally find river rock in a local hardware store or home and garden store. Or borrow one from your neighbor's garden. Or get one out of a river if you live near one.

Script to Read	Yes That is True	No, That Can't Be Right	Notes to the Teacher
This is lava rock. It came out of a volcano.	x		You can generally find lava rock or pumace in a local hardware store or home and garden store. Or borrow one from your neighbors garden. Or get one next to a volcano if you live near one.
This is a small potted plant. It will grow as long as it has light and water and some soil to grow in.	x		Any small potted plant will work in this case.
This is a small gold fish. It breaths air. It has gills that take this air right out of the water.	x		If you have a class fish you can use that. If you do not have a fish, you can always show a picture of a fish. Use a real picture of a fish, not a cartoon.
These are coins. They are made out of metal. Special geese lay eggs that have these coins in them. These eggs are broken and the coins are harvested from them.		x	Bring in a penny, a nickel, and a quarter.
This is a banana. It grows on trees in very warm rainy places.	x		Bring in a banana.
Each of these pieces of potato have an eye in them. It is called an eye, but it really just part of the potato plant. If you plant this piece of potato it will grow into a new potato plant.	x		Take a potato and leave it in your pantry for about a month. You should have several "eyes" growing out of it after a month.
This is a cotton tee shirt. It is made of spun cotton. Cotton is a natural material taken from plants. The shirt is not natural but the material in the shirt is natural.	x		Please use a 100% cotton tee shirt. It would be best if it were white and not a dyed color.

