Critical Thinking

Critical thinking encourages you to take the time to think about whether something makes sense and about how things work. To master this level, you'll practice thinking about things in different ways and build your thinking skills.

Complete 8 of the 12 activities below to complete this level.

When you complete an activity, ask your instructor to write the date and their initials in the box.

Classroom Activities (Complete at least two activities)	
	Creative Solutions: Work with your classmates to come up with creative solutions to some unusual situations.
	Eye Witness: See how much you can remember from something you saw and then discuss the results with the class.
	Think About It: Participate in a class discussion about how the world would be different if something important suddenly changed.
	Fact or Opinion: With your class, talk about the difference between a fact and an opinion, and practice with a list of statements.

Research Projects: Friends and Family (Complete at least two activities)	
	Time Capsule: Work with one or more people in your home to decide what should go in a time capsule.
	How Do I Use This?: Working with another person in your home, think about things around your house and come up with interesting ways to use them.
	What's Going On?: Working with another person in your home, make up a story about what is happening in different pictures.
	Something in Common: Working with another person in your home try to think of ways that two things that seem to be different are actually alike.

Research Projects: On Your Own or Small Groups (Complete at least two activities)	
	Secret Code: Working with a partner, create a key to your own secret code. Then write a note to your partner and see if they can decode it.
	25 Words: Using the 25 Words worksheet, imagine which words you'd choose if you could only use 25 words to communicate.
	A New Animal: Using the New Animal worksheet, invent a brand new kind of animal that doesn't currently exist. Draw a picture of your animal and give it a name.
	New Invention: Working alone or with a partner, come up with a new invention to solve a problem. Make a poster to tell people about your invention.

Critical Thinking: Creative Solutions

Objective:
To practice critical thinking skills by coming up with creative solutions to problem scenarios.

Time:
15-30 minutes (depending on how many scenarios you use)

Materials:
Chalkboard or Dry Erase Board (optional)

Procedure:
Tell the group they are going to work together to solve some problems. Stress that there are no right or wrong answers to the problems. Break the group into smaller groups of 3-4 students. Give all the groups one of the problem scenarios below and give the groups 5 minutes to come up with their two best solutions. Have the groups share their solutions with everyone. Use the discussion questions at the end for a discussion with the whole group.

Problem Scenarios

1. You wake up and see that your alarm never went off, so it is 15 minutes later than you usually get up. Your class is going on a trip today so you can't be late for school. What could you do?
2. You own a restaurant and most of your customers come at lunch time. A new McDonald's is going to open nearby. What could you do to keep your regular customers coming to your restaurant when the McDonalds opens?
3. You and a friend both have an after-school job at a store and often work together. Your friend doesn't take the job very seriously and sometimes hides so that they can use their phone and expects you to cover for them. What could you do?
4. You are a supervisor at a job and you have five employees. You find out that you have $1000 (total) to give out in end-of-the-year bonuses. How do you decide how much each employee would get for their bonus?
5. You find an expensive looking ring in the hallway at school. It doesn't have a name or anything on it, and it's not by any one's locker. What could you do?
6. Your school is having a contest to see which group can come up with the best idea for how to spend $500 to make your school better. How would you spend the money?

Discussion questions:

1. Were you surprised by any of the answers or how different the other groups' answers were?
2. Do you think having people with a variety of experiences (a variety of ages, jobs, from different places, etc.) would change the solutions? Would having a variety of people be more helpful? Why?

Critical Thinking: Eye Witness

Objective:
To think about whether eye witnesses can remember what they saw and how observant we are in our daily life.

Time:
15-20 minutes

Materials:
Chalkboard or Dry Erase Board (optional), three actors, paper and writing tools for students

Procedure:
This activity is designed to be used after at least 20 minutes of another activity. It can be done during and after a meal or anything where the group is in one place but doing something else.

While the group is doing another task or activity, three actors (can be any other adult or older child) should come into the room without saying anything, do something unusual, and then leave. For example, the actor could walk in, hold up a sign with a word or picture on it, and then leave. (Other options could be making some kind of motion, moving something from one place to another in the room, writing something on a board, etc.) The three actors should be spread out over the time you have available so they are not one after the other. Try to make the actor's appearance as distinctive as possible- bright colors, accessories like a hat, or coat, or umbrella, or carrying something noticeable. It is ok to be funny or silly. Just don't acknowledge that the actors are in the room or pay attention to them when they come in, and if any kids in the group ask about it, ignore their questions.

After the regular activity ends, lead a discussion with the class. Hand out paper and pens or pencils to each student. Explain that eye witnesses are often very helpful in solving a case when a crime is committed. But people tend to think their ability to remember what they saw is better than what they actually remember. Tell them that three people came into the room during their last activity and to take a minute and write down everything they can remember about what each person looked like and what they did. Ask them not to discuss or look at each other's answers until everyone is finished. After a few minutes, walk through each of the actors and see how many details the group can remember about each actor. Write down the answers on a board or flip chart if you have one available. If students disagree or have conflicting memories, that's ok. Once you've gone through each actor, either have the actor come back in and do the same activity, or share the right answers. Then use the following questions for discussion.

Discussion Questions:
1. Did you notice or pay attention to the people when they came in? Did it seem important at the time?
2. When did you start to think something strange was going on?
3. Was it easy or hard to remember the details?
4. Ask for a show of hands of anyone who wrote down something that turned out to be wrong. (be honest!) Of those who raised their hands, how many were sure it was right when they wrote it down?
5. Do you think police should use eyewitnesses to solve a case? Why or why not?

Critical Thinking: Think About It

Objective:
To help students practice critical thinking skills by thinking about how life would be different if something important suddenly changed.

Time:
10-15 minutes.

Materials:
Chalkboard or Dry Erase Board (optional)

Procedure:
Tell the group that you want them to practice thinking differently about things, so you are going to give them scenarios to think about and discuss. There are no right or wrong answers- encourage creativity in their responses. After working through the scenarios, discuss whether they found the exercise difficult or easy, and whether they came up with some ideas they could actually use in real life.

Discussion questions:

1. Explain that there are some places in the world like parts of Alaska, Russia, Norway, and Iceland near the North Pole where it is daylight even at night during some days in summer, and some days in winter where it is dark all day. How would life be different if it was always daylight? If it was always dark out?
2. Before engines were invented for trains, cars, and boats, people could only travel as far as they could walk or as far as a horse or camel or other animal could go in a few hours. What would life be like if you could only get to place to place by walking? How would things be different?
3. When astronauts are in space there is no gravity so people and things float around instead of staying down where you put them. How would things be different if there was no gravity on earth? How would you handle eating food? Going to the bathroom? Moving from place to place? Keeping your things in particular places?
4. What would life be like if every adult on earth looked exactly the same? How would you meet or talk to people? What would stores be like if everyone was the same size? Do you think people would do things other than changing how they look to make themselves different? Do you think more people would want plastic surgery or make other changes to their appearance to be different?
5. What if you woke up one morning in another country surrounded by people who spoke another language and with only the clothes you slept in? What would you do? How would you communicate?
6. People have only had electricity for about 150 years. 100 years ago, only half of homes in the US had electricity. Recently there have been days where the power companies in California have had to shut off power to whole towns because of the dangers of fire. What would life be like if you didn't have electricity? (Think about hospitals, cell phones, schools, travel, etc.) Would it be easier to live in 1875 when no one had ever had electricity, or to live right now and have it taken away?

Critical Thinking: Fact or Opinion

Objective:
To help students practice distinguishing between fact and fiction.

Time:
10-15 minutes

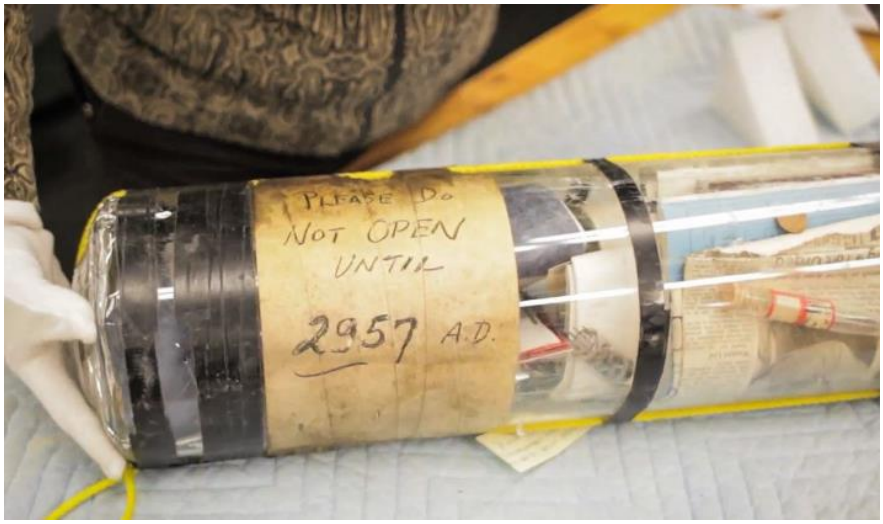
Materials:
Chalkboard or Dry Erase Board

Procedure:
Ask if anyone in the group can explain the difference between a fact and an opinion. Explain that it can sometimes be difficult to tell the difference. A fact is an actual thing that exists and can be proved, observed, or measured. An opinion is a personal belief or thought about something that cannot be proven by checking a reliable source, asking an expert, doing an experiment, or measurement. Opinions often use words like better, worst, should be, or seems that involve making a judgement about something or involve how someone *feels* about something. We also need to consider the source when deciding whether something is fact or opinion. For example, just because something in a story is on the internet doesn't necessarily mean it is true. Before you decide something is a fact, see if it can be backed up by other reliable sources.

Label two columns on the board with Fact and Opinion. Above Fact, write, "Is it true?" and "Can it be proven." Above Opinion, write "Agree/Disagree." Stress that a fact is something that is true and can be proven, and an opinion is something on which people can agree or disagree. Go through each of the examples and decide as a group whether it is a fact or an opinion, then ask the group for examples. If the group is confused or get stuck, use the prompts on the board to help them figure it out. Some statements could be either/or, so you may need to explain in more detail how the statement could be fact or opinion depending on whether some sort of evidence is involved. Have the group come up with some examples of their own for each category. Try to incorporate the fact/opinion question into other activities and discussions in your program.

Examples:
1. George Washington was the first President of the United States. (Fact)
2. George Washington was our best President. (Opinion)
3. Everyone loves to watch TV. (Opinion)
4. The Earth is round. (Fact)
5. Today seems hotter than yesterday. (Opinion, because of "seems")
6. That school is the best one in our county. (Tricky! Could be an opinion, but could be a fact if it is based on some kind of measureable proof like test scores or rankings)
7. Movies are more interesting than books (Opinion)
8. No one watches TV commercials anymore. (Opinion- though you could measure whether fewer people watch ads, "no one" is an exaggeration)
9. That store is the most expensive. (Maybe opinion- but could be fact if you have actually compared prices)
10. Our school's lunches are awful. (Opinion, but you could take a survey or find a way to measure things about the lunches)

Critical Thinking: Time Capsule



This time capsule was found at the Massachusetts Institute of Technology (MIT) in Boston when a crew was digging for a new building. It was made of glass so that it could last for 1000 years. It was buried in 1957 for someone to find and open after 2957.

A time capsule is a box or other type of container that has items in it that have to do with the time, place, or person that made the capsule. They are made to be opened on a future date. Sometimes people make time capsules when a new building is being built or to celebrate an important event. People choose items for a time capsule that tell a story about the time and place they were made.

Imagine that you are going to make a time capsule to represent you and your family right now that will be opened by someone in your family in 100 years. Work with at least one person in your home to decide what five items you would place in your family time capsule that represents what life is like and what is important to your family right now. List the five things here and explain why you would include them.

1.

2.

3.

4.

5.

Critical Thinking:
How Do I Use This?

Work with someone else in your home to practice your thinking skills. Choose at least eight things from around your home (try to pick things from more than one room). For each thing, try to think of as many different ways to use that thing as possible other than what you normally do with it. For example, you use a toothbrush to brush your teeth but you could use it to clean a shoe, brush your hair, or paint a picture. Write the name of the thing on the left in the boxes below and then write the new uses in the box on the right. Your answers can be funny or silly. Try to think of 4-5 ideas for each item.

Name of Thing:	New Uses:
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

Critical Thinking: What's Going On?

Working with another person in your home (can be an adult or a kid) write a story to describe something happening or that just happened in each of the pictures below. Your story can be funny or serious. Don't just explain what you see, make up a whole story.

Image Credit: @dariusbashar on unsplash.com

What is happening in this picture?

Image Credit: @danieltuttle on unsplash.com

What is happening in this picture?

Image Credit: @jamie452 on unsplash.com

What is happening in this picture?

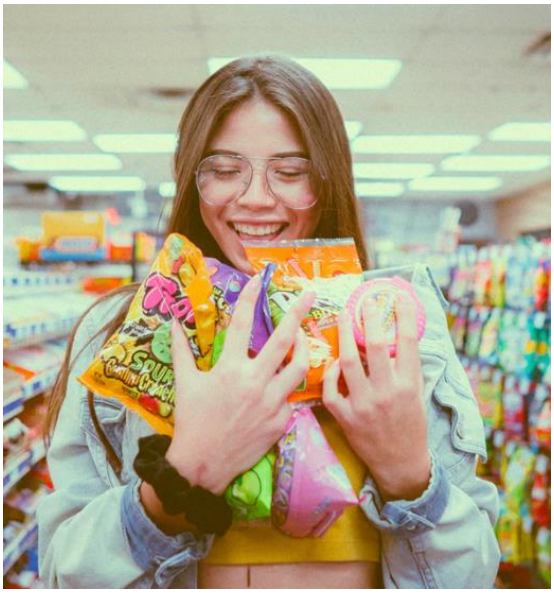


Image Credit: @byfoul on unsplash.com

What is happening in this picture?

Critical Thinking: Something in Common

The pairs of words may seem like they don't go together, but actually are the similar in some ways or have something in common. Work with another person in your home (can be an adult or a kid) to think of 2-3 things each pair has in common.

For example: puppy / baby Both are very young, have legs, are cute, end in "y",

sweater / blanket _____

shoe / belt _____

tomato / orange _____

3 / 7 _____

bubble / balloon _____

water / dirt _____

car / bicycle _____

magazine / television _____

toy / card game _____

pencil / candle _____

money / friends _____

paint / clock _____

running / sleeping _____

night / lunch _____

Critical Thinking:
Secret Code

Secret codes have been around for centuries. In Roman times, Julius Caesar (one of the leaders in that time) used a simple code like you will make here. As time went on, codes became more and more complicated. Codes are still used by the military, spies, and even for things on the internet to protect your information.

A simple code takes each letter of the alphabet and replaces it with another letter, number, shape, or picture. This kind of code is actually called a cipher. The list that tells you both sides of the code is called the key. Anyone with the key should be able to read a secret message that's written in your code.

For example, if the beginning of the alphabet in a code was:

A = 4

B = m

C = ○

D = ❑

E = 9

Then the word "bead" in the code would be "m94❑"

You take each letter in the word and replace it with the letter, number, or shape from the key.

Work with your partner to make a key for your own code. Write out the alphabet, and make a new letter, number, or shape (you could even use emoji!) for each letter. Take turns writing secret messages to each other and seeing if you can decode them using your key.

Critical Thinking: 25 Words

There are about 170,000 words in the English language, and the average person uses about 20,000 – 30,000 words. The average teenager knows about 3,000 words.

What if you were only able to use 25 words? How would you choose the words? Would you keep articles like the words a or the, or would you choose nouns like car or phone, verbs like run or jump, or adjectives like happy or sad? Working alone or with a partner, decide what words you would choose if you could only use 25 words and write them below.

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

14.

15.

16.

17.

18.

19.

20.

21.

22.

23.

24.

25.

Critical Thinking:
A New Animal

Imagine that you had the chance to create a brand new animal. It will be something that has never existed before. Think about the questions below to help you decide what kind of animal to make. Make a poster with a drawing of your animal and a few facts about it. Don't forget to name your new species of animal!

Some questions to think about:

- Does your animal fly in the air, walk on the ground, or swim in the water? (Or maybe more than one of these?)
- What kind of skin will your animal have? Scales like a fish, fur like a dog or cat, bare skin like a person, feathers like a bird, or something else?
- How does your animal get around? Will it need legs, wings, fins, or something else?
- Is your animal usually in a hot or cold place?
- What does your animal eat? Where does it find food?

Critical Thinking:
A New Invention

Working alone or with a partner, come up with an idea for an invention that would make something in your life easier or would solve a problem. Make a poster with a drawing of your invention that explains what it does. Your invention can be realistic or something more imaginary.

Some questions to think about:

- What is the purpose of your invention? What tasks does it make easier or what problem does it solve?
- What is your invention made from? How is it made?
- Is your invention similar to anything else that exists? How is it different?
- Who would buy your invention?
- How much should it cost?
- Is your invention something that could exist right now or would it be something in the future?