

# 9

## *Unit Nine*

### *Thinking Skills*

Total Time: 2 Hours, 30 Minutes

**PART 1:** Ice Breaker

**PART 2:** Creative and Critical Thinking

**PART 3:** Creative Thinking Skills

**PART 4:** Critical Thinking Skills

**PART 5:** Follow – Up Activities

**ANNEXURE 1:** Mind Mapping

**ANNEXURE 2:** Squiggle Drawings

**ANNEXURE 3:** Optical Illusions

**ANNEXURE 4:** Fact or Opinion

**ANNEXURE 5:** Logic Puzzles

**ANNEXURE 6:** Identifying patterns

**ANNEXURE 7:** Thinking Skills Resources

**ANNEXURE 8:** Evaluation

**ANNEXURE 9:** Thirsty Crow Story

**ANNEXURE 10:** Fact and Opinion

**ANNEXURE 11:** Critical Thinking Worksheets

## *Part 1: Ice Breaker*

**Time:**

15-20 Minutes

**Objective:**

Participants will take part in an ice breaker activity designed to get them thinking creatively.

**Materials:**

Paper, pen/pencil

**Techniques:**

Ice Breaker

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**TRAINER INSTRUCTIONS:**

1. Welcome the participants and tell them that today we are going to be learning about creative and critical thinking skills. This icebreaker will give them a chance to think creatively. Lead the activity from one of the options below.

Option One: How many ways? – Divide the participants into smaller groups of 3-4. Explain that they will have a few minutes to think of as many ways you could use a particular item as possible. Assign one item to each group (eg, chair, blanket, pencil, etc.). When time is up, invite each group to share their ideas with the entire group.

Option Two: Creative Thinking - Divide the participants into 3 groups. Assign one of the questions below to each group and ask them to brainstorm responses. After a few minutes, invite them to share their responses with the entire group.

- How would your life be different if you didn't need to sleep? What would you do with your extra time?
- If you could choose one thing that costs money and make it free for everyone forever, what thing would you choose? Why?

- If you could talk to trees, what do you think they might say? Create a conversation between you and a tree.

## *Part 2: Creative and Critical Thinking*

**Time:**

20 minutes

**Objective:**

Participants will be able to distinguish between creative and critical thinking skills and understand the importance of each.

**Materials:**

- Marker Board or Chart Paper
- Markers

**Techniques:**

- Presentation
- Group Discussion

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**TRAINER INSTRUCTIONS:**

1. Explain the definitions and differences between creative and critical thinking:
  - Creative thinking – Exploring ideas, generating possibilities, looking for more than one right answer, but it's not just about coming up with new ideas, but making new connections between existing ideas. Creative thinking involves different points of view and bringing a new perspective; it includes curiosity, thinking differently, and thinking spontaneously. (Icebreaker was example of creative thinking)
  - Critical thinking – Ability to analyze, evaluate and apply logic and reasoning to solve problems. Critical thinking is important because it helps us to distinguish between fact and opinion, ask good questions, make detailed observations, and to make decisions based on sound logic and solid evidence.
2. State that both forms of thinking are equally important and balance each other. They need to work together. Creative thinking involves searching for unusual, original and

varied possibilities. Critical thinking involves examining possibilities carefully, organizing and analyzing possibilities, ranking and ordering options and choosing the best option. Effective problem solvers must think both creatively and critically.

3. Help the participants understand the differences by asking which words in the list below describe creative thinking and which describe critical thinking. Write their responses on the marker board or chart paper and discuss why they fall in that category.
  - a. Imagine, dream (Answer: creative thinking)
  - b. Analyze (critical)
  - c. Compare (critical)
  - d. Design (creative)
  - e. Categorize, sequence, rank (critical)
  - f. Create (creative)
  - g. Brainstorm (creative)
  - h. Evaluate (critical)
4. Tell the group to use creative and critical thinking skills for school work/homework – they will make you a stronger student. Use them also in daily life to make decisions.
5. Ask the teens to think of a time they used these skills at school or in home life.
6. Remember, you need to think creatively to look at all options, but then need to analyze to determine best choice.
7. Try to keep from becoming discouraged. In learning to master creative problem solving, the best way—and sometimes the only way—is to learn through mistakes

## *Part 3: Creative Thinking Skills*

### **Time:**

45 Minutes

### **Objective:**

Participants will learn and practice some creative thinking techniques.

### **Materials:**

- Annexure 1: Mind Mapping (Sample for the trainer)
- Annexure 2: Squiggle Drawings
- Crayons or colored markers
- Annexure 3: Optical Illusions

### **Techniques:**

- Individual and Group Activities

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### **TRAINER INSTRUCTIONS:**

1. Note that creative thinking is an ability that we all have, but sometimes we need to develop it through practice.
2. Explain the following techniques to the group and lead the activities where noted. Let them know that this will be just an introduction to the techniques and they will have an opportunity to practice these techniques in the follow up sessions.

- Brainstorming – In this technique you come up with as many ideas as possible without criticism or judgement; can be done individually or in groups; important to think outside the box even if the ideas seem silly because it might spur you or someone else to think of another idea. (The Icebreaker was an example of using brainstorming.) Discuss other times they have brainstormed – maybe in school, in their children’s committee, etc.
- Mind Mapping – Similar to brainstorming, mind mapping connects words with arrows or lines. Start with word or picture in the center and branch out with connected ideas. Write down as many ideas as you can think of.
- Lead the group in a mind mapping exercise. Using Annexure 1 as a sample, demonstrate how to create a mind map on the marker board or chart paper. Tell the participants that for this activity, they should imagine their committee is in charge of planning an outing and they should use mind mapping to brainstorm all items that need to be considered when planning (eg, food, games, supplies, etc.). Write PICNIC in the center of the mind map. Fill in the blanks with the group’s ideas.
- Physical Activities – Drawing, creating a craft, dancing, making music...all of these activities engage the creative areas of your brain and help you to think differently. Taking part in these types of activities build your creativity.
  - Invite the group to participate in a drawing exercise designed to boost creativity. Distribute Annexure 2 and explain that they are given only a squiggle line and they need to create a picture using that line. There are no further instructions or rules – they should let their creativity flow. Allow 5 minutes or so for the group to complete their drawings. Invite the members to share their work. Note that they can create these types of drawings any time to build their creativity.
  - Look at things from all angles – Often you will see things in a new way if you view them from a different angle. Optical illusions are a perfect example of this. Distribute Annexure 3 and allow a few minutes for the children to examine the illusions. Make the point that beyond optical illusions, there are many other situations where it is important to view things from all sides. Can they think of a time when they viewed a situation from more than one angle?

## *Part 4: Critical Thinking Skills*

**Time:**

45 Minutes

**Objective:**

Participants will learn and practice a few critical thinking skills

**Materials:**

- Annexure 4: Fact or Opinion?
- Large paper and markers
- Annexure 5: Logic Puzzles
- Annexure 6: Patterns
- Annexure 7: Thinking Skills Resources
- Annexure 8: Evaluation

**Techniques:**

- Individual and group activities

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**TRAINER INSTRUCTIONS:**

1. Review the concept that we need to develop critical thinking skills to make good decisions. We need to be able to analyze, evaluate, and apply logic. The following activities will highlight some critical thinking techniques.
2. Explain the following techniques to the group and lead the activities where noted. Let them know that this will be just an introduction to the techniques and they will have an opportunity to practice these techniques in the follow up sessions.
  - Fact or opinion - It is very important to be able to determine the difference between fact and opinion as you are making decisions. A fact can be proven true or false with some kind of evidence. An opinion is not backed by facts;

they are feelings or thoughts. Ask yourself, can it be proven? You don't want to be led in a certain direction just because someone had an opinion about it; you want to base your decisions on facts first.

- Using Annexure 4, lead a discussion on the worksheet. Help the group to identify facts vs opinions by asking "Can it be proven?"
- Ensure that the group understands how to differentiate between fact and opinion
- Remind them to think about fact vs opinion in their daily decisions
- Compare and Contrast – This technique is important for organizing information when looking at two options. . How are they similar, what is different? It can help you determine the pros and cons of your various choices when you understand what is different.
  - Divide the group into small groups and give each group a large piece of paper and marker. Ask them to compare and contrast two different types of food that people eat. (Allow them to choose the two foods to compare.) Allow 5-10 minutes for the groups to write what is similar and what is different about the foods. Then invite them to share their responses with the entire group. (Optional: to save time you may do this as a whole group exercise, writing responses on a marker board or chart paper.)
  - Logic - defined as a reasonable way of thinking about something; how we know whether something is true. Logic puzzles are one tool that can help to organize information to determine what is true based on information that you have. Practicing on logic puzzles helps you learn how to organize information and draw conclusions from it. Distribute Annexure 5 and explain the following guidelines as you work through the first puzzle together.
  - Each logic puzzle has a list of clues and a grid. The assumption is that there is only one true match for each category. In the first puzzle, four children have four different pets. Your job is to find out who had which one.
  - These puzzles require you to use the process of elimination to figure out the answer. For example, if the clue says, "Raj's pet can't fly" you would find the column(s) labeled with animals that cannot fly, and the row labeled Raj, and put an 'X' in the box where they intersect.
  - If a clue tells you the correct choice; for example, "Maya's pet has hair," you can place an O where Maya and animals with hair and intersect, and put 'X's in Maya's row for the other animals. Logic states, if one matches, the others cannot. Keep working through the clues this way. You may have to read some of the clues more than once.

- When there is only one choice left in a row or column, put an O there. That means it is the correct choice. So in this example, you should be left with an O in the pet column for each child
  - Continue working logic puzzles if time permits. You may work together or break the group into smaller groups for them to work in teams. The puzzles in the Annexure get progressively more difficult.
- Making predictions, inferences - An inference is a conclusion we come to by analyzing information. You look at facts and then make a conclusion from those facts. You can use the information you currently have to predict what might happen next. One simple example of inferences is looking at patterns to predict future outcomes.
    - Distribute Annexure 6 and work through the first worksheet with the group. The worksheets in the annexure get progressively more difficult so you may continue to work as a group, or you may divide the group into smaller teams to complete the worksheets, time permitting.
    - Explain that this technique of making predictions or inferences can be used in many situations in which you have a pattern of data or behavior and you want to predict what might occur next.
3. Distribute Annexure 7 and ask the teens to keep the resource handout in their folders for future reference.
  4. Distribute Annexure 8 and invite the teens to complete the evaluation form regarding this Unit.
    1. Explain that they are to give a score from 1-5 (5 being the highest) for each part of the Unit, as well as a score for the Unit overall.
    2. Then they should write comments under the happy face for items they liked/learned, and under the sad face for items they didn't like or are confused about.
    3. Briefly recap what was covered in each part so their memory is fresh when evaluating.
    4. Instruct them to be as specific as possible in their comments.
    5. Items to consider include:
      - Did you understand the topics covered? If not, what was confusing?
      - Was there enough time to cover the material?
      - Did the presentation keep your interest?
      - Were the handouts/power points/videos helpful?

- Add any comments that would be helpful for future programs.
- Gather the completed evaluations and include them in your trainer report

## *Part 5: Follow – Up Activities*

### **Time:**

Varies by Activity

### **Objective:**

Participants will have the opportunity to practice the skills learned in this session.

### **Materials:**

**(Depending on Option Selected)**

Option One:

- Craft supplies: Popsicle sticks, tape, string or wool and newspapers

Option Two:

- Annexure 9: Thirsty Crow Story

Option Three:

- Annexure 10: Fact and Opinion

Option Four:

- Annexure II: Critical Thinking Worksheets

### **Techniques:**

- Applying learning to everyday life

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### **TRAINER INSTRUCTIONS:**

1. Explain that participants will have the opportunity to review the material learned today throughout the next few weeks, and take part in activities designed to put the learning into action. They will take part in follow-up sessions to discuss the activities.

Option One: Creations – Provide the teens with materials listed in the materials section. Then, invite them to use their creative thinking skills to create something that will shield them from the rain using only the materials provided. Encourage them to challenge their creativity and think outside the box. Do not show judgment about the product; compliment them on using their creativity. When completed, allow each participant to show off their creation to the group. (Optional: You may invite the teens to work in groups and could even create a competition such as which group can build the tallest structure, most colorful, etc.)

Option Two: Rewriting the Story – Read the story from Annexure 9 to the teens. Divide the participants into smaller groups of 3-4 and ask each group to create a new ending to the story, or create a new beginning that would result in the same ending. As they brainstorm within their groups, remind them to follow the “rules” of brainstorming such as: come up with as many ideas as possible without judgment or criticism, and be creative. They may even find it helpful to organize their ideas using a Mind Map. Then ask them to prepare a quick role play to show their new beginning or end and invite each group to perform in front of the entire group.

Option Three: Identifying Fact vs Opinion – Begin the session by reviewing the difference between fact and opinion, and how to identify each. Invite a few volunteers to play a modified version of the game “Two Truths and Lie” in which the teens say two truths about themselves and one opinion. (For example, I am wearing a red shirt today, vanilla ice cream is the best, I am in the 9th standard.) Ask the group to identify the opinion and discuss how they knew it was not a fact. (Optional: you may vary this activity by dividing the group into smaller groups in which they to come up with the statements for their group; then the other groups would have to determine the fact vs opinion for each group.)

In the second part of this follow up session, distribute Annexure 10 and ask the teens to write a fact and opinion about the subjects on the worksheet. Again, you may divide the group into smaller teams if you wish.

Conclude the session by discussing how important it is to be able to separate facts from opinions in your daily life. When you are making decisions for yourself, you want to be able to recognize the difference, and not be swayed too much by someone’s opinion, because opinions will vary from person to person. Discuss examples such as: the fact is, most people who go to school get jobs that pay better and are more stable. Your friends may have different opinions about school – some may feel that it is a waste of time – but that is just their opinion. You need to look at the facts. Invite the group to discuss other examples.

Option Four: Reviewing Critical Thinking Skills – Take this opportunity to review the critical thinking skills presented in the LSE Unit. Discuss the difference between creative thinking and critical thinking and why they are both important. (Refer to the Unit.) Using Annexure 11, assist the teens as they complete the various worksheets. Explain that these worksheets are designed to help them practice and build their critical thinking skills. The more they practice, the more they will tend to use the skills in daily life. (Note: the participants do not need to complete every worksheet; a variety has been provided to allow for the needs of various group members.)

Option Five: Brainstorming Game – Explain that this game will make them think “backwards” and will be good practice to build their creative thinking skills. Divide the group into smaller groups of 4-5 and instruct each group to select a note taker. State that you will announce an “answer” and their groups need to brainstorm possible questions. (For example, the answer is “butterfly”...possible questions could be “what flies around flowers?” “What is very colorful?” “What has wings?” etc.). Allow 5 minutes for the teams to come up with questions; then ask the teams to list off a few of their responses. The team with the most questions wins that round. Continue by announcing another “answer.” Give the teams 5 minutes to come up with their questions and then share a sampling of their questions as well as the total number they listed. Announce the winner for that round. Continue as time permits. (You may want to provide a small treat to the winners of each round and the overall winners.)

Suggested answers include: (feel free to add your own)

- Once a year
- Pink
- Impossible
- 8:00am
- Cold
- Rope
- Pigs

Option Six: Plus, Minus and Interesting – Divide the group into four smaller groups and give each group chart paper and markers. Explain that they will be given a topic and each group should think of 7 “plus” points about the topic, 7 “minus” points, and 7 interesting points. It will be important to think creatively and use your critical thinking skills to see the pros and cons of each topic. Write your points on the chart paper and when the groups are finished, share your answers with the whole group.

Start with topics such as “If there were no animals” or “If there were two moons.” Then move on to real-life situations such as the importance of eating nutritious food, or the importance of being a good friend to others or what subject to select in class 11th (humanities, science, commerce).

# 9

## *Unit Nine Annexures*

### *Thinking Skills*

#### *Ages 13+*

**ANNEXURE 1:** Mind Mapping

**ANNEXURE 2:** Title

**ANNEXURE 3:** Title

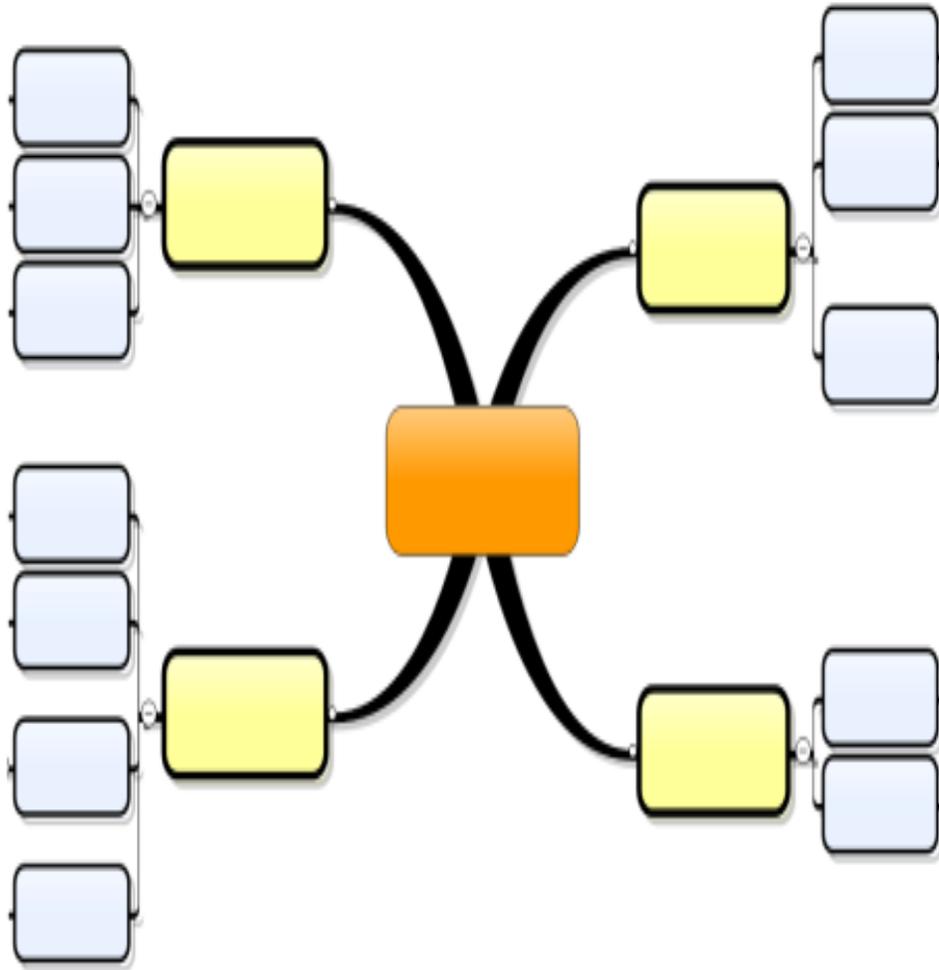
**ANNEXURE 4:** Title

**ANNEXURE 5:** Title

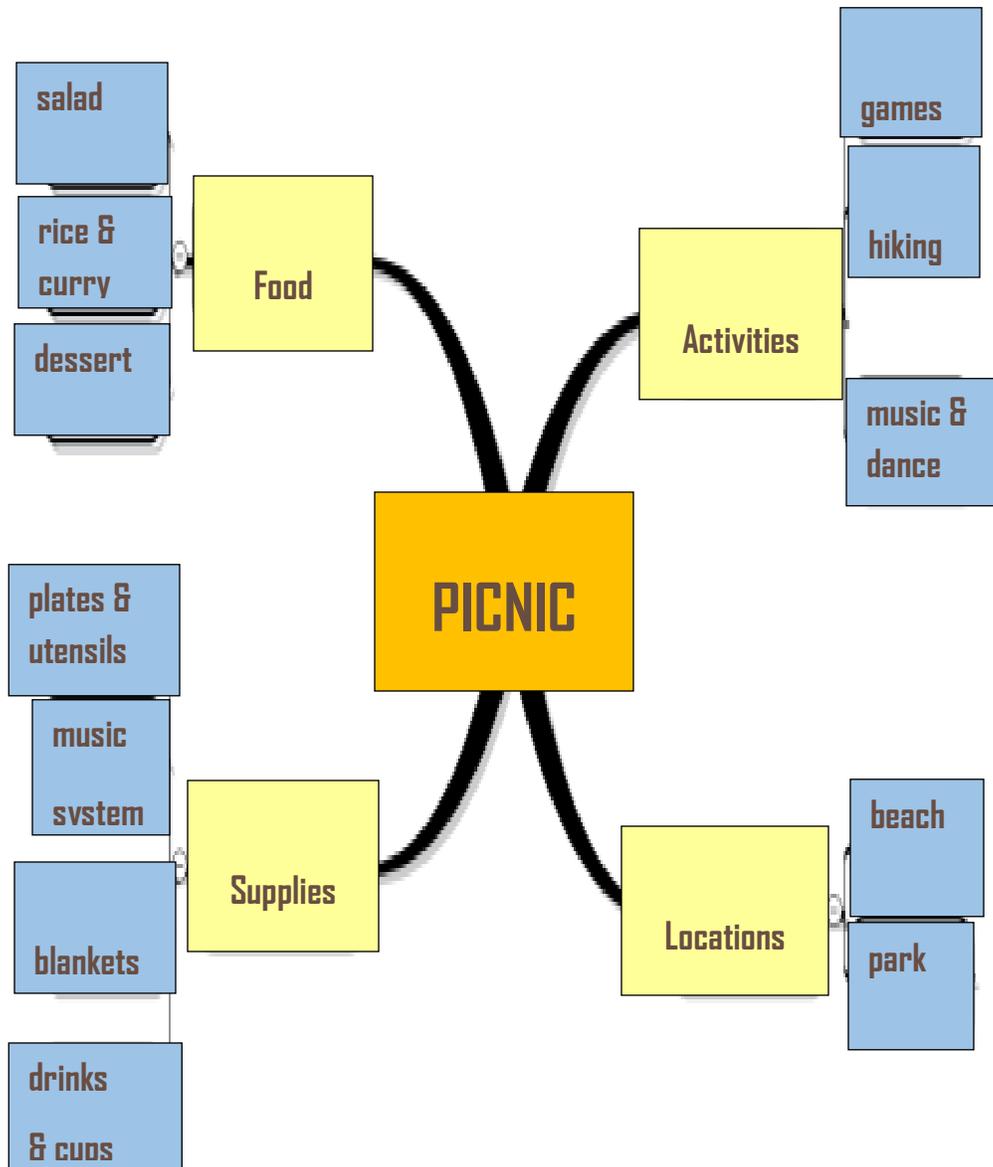
**ANNEXURE 6:** Title

**ANNEXURE 7:** Title

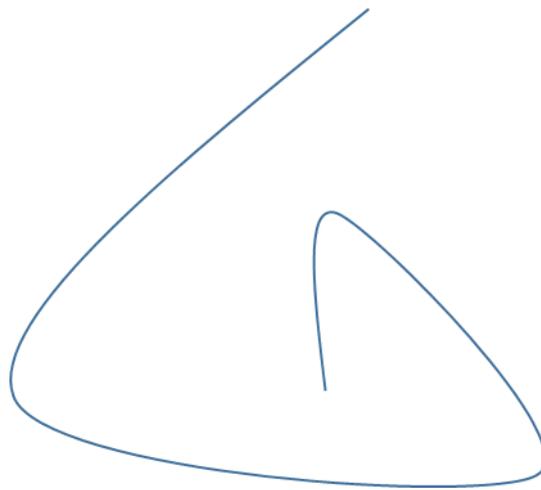
*Annexure 1: Mind Mapping*



## Mind Map Completed Sample



*Annexure 2: Squiggle Drawings*



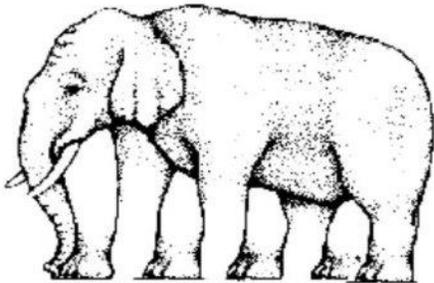
## *Annexure 3: Optical Illusions*



*Do you see two faces or a cup?*



*Do you see a musician or a woman's face?*



*How many legs does the elephant have?*



*Ships or a bridge?*



*Duck or rabbit?*

## *Annexure 4: Fact or Opinion*

- A fact is something that is true or can be proven.
- An opinion is knowledge based on feelings about a given topic.

**Directions:** Write **F** for **Fact** or **O** for **Opinion** beside each sentence.

1. \_\_\_\_\_ Deserts are not as beautiful as forests.
2. \_\_\_\_\_ The Taj Mahal is in the country of India.
3. \_\_\_\_\_ Earth's largest ocean is the Pacific Ocean.
4. \_\_\_\_\_ Dinosaurs are extinct.
5. \_\_\_\_\_ New Delhi is the capital of India.
6. \_\_\_\_\_ Mangoes are delicious.
7. \_\_\_\_\_ Snakes are reptiles.
8. \_\_\_\_\_ Cricket is much more interesting than football.
9. \_\_\_\_\_ Blue is a pretty color.
10. \_\_\_\_\_ China is on the continent of Asia.
11. \_\_\_\_\_ Bollywood music is better than Classical music.
12. \_\_\_\_\_ Oranges taste better than lemons.
13. \_\_\_\_\_ Roses are the prettiest flowers.
14. \_\_\_\_\_ We live in a brick house.
15. \_\_\_\_\_ School starts in ten minutes.
16. \_\_\_\_\_ Tigers are the most beautiful animals in the world.

## Annexure 5: Logic Puzzles

### Pets Logic Puzzle (Easy)

Four children have different pets. Find out who has which one.

	Bird	Cat	Dog	Fish
Arjun				
Raj				
Maya				
Sahana				

- Raj's pet can't fly.
- Maya's pet has hair, so does Sahana's.
- Sahana's pet doesn't bark.

### Sports Logic Puzzle (Easy)

Four good friends have four different favorite sports. Read the clues to find out who prefers which sport.

	Kickball	Tennis	Football	Volleyball
Rahul				
Anjali				
Deepak				
Jaya				

- Anjali likes neither volleyball nor football.
- Deepak used to like football and kickball best, but he has changed his mind.
- Neither of the boys here likes volleyball best.

## ANSWER KEY

### Pets Logic Puzzle

	Bird	Cat	Dog	Fish
Arjun	O	X	X	X
Raj	X	X		O
Maya	X	X	O	X
Sahana	X	O	X	X

- Raj's pet can't fly so place an X at bird.
- Maya's pet has hair so place an X on the bird and fish.
- Sahana's pet has hair, so place an X on the bird and fish
- Sahana's pet doesn't bark so place an X on the dog
- Now you can see that Arjun has a bird because there are Xs in that spot for everyone else.
- Sahana has a cat because it's the only spot open on her row
- Maya has a dog because the only spots open on her row are cat and dog, and Sahana is the one with the cat,
- Raj has a fish because it's the only pet left on the grid.

Arjun has a bird

Sahana has a cat

Maya has a dog

Raj has a fish

## ANSWER KEY

### Sports Logic Puzzle

	Kickball	Tennis	Football	Volleyball
Rahul		X	O	X
Anjali	O	X	X	X
Deepak	X	O	X	X
Jaya	X	X	X	O

- Anjali likes neither volleyball or football, so place an X in those spots
- Deepak used to like football and kickball best, but he changed his mind, so place an X at football and kickball.
- Neither of the boys here likes volleyball best so place an X at volleyball for Rahul and Deepak.
- We know that Deepak likes tennis because it's the only spot left on his row.
- We know Jaya likes volleyball because there is an X in that column for everyone else
- We know Rahul likes football because there are Xs in the column for everyone else
- So Anjali has to like kickball because it's the only sport left.

Deepak likes tennis

Jaya likes volleyball

Rahul likes football

Anjali likes kickball

## Let's Get Moving Logic Puzzle (Medium)

Three people are going to the beach, each using a different mode of transportation in a different color. Who's using what?

	<b>Car</b>	<b>Motorcycle</b>	<b>Boat</b>	<b>Blue</b>	<b>Orange</b>	<b>Green</b>
<b>Priya</b>						
<b>Govind</b>						
<b>Farah</b>						

- Priya loves orange, but she hates the water.
- Govind did not use the green vehicle.
- Farah drove the car.

## ANSWER KEY

### Let's Get Moving Logic Puzzle

	Car	Motorcycle	Boat	Blue	Orange	Green
Priya	X	O	X		O	
Govind	X		O	O	X	X
Farah	O				X	O

- Priya loves orange so place an O in the orange spot for Priya and an X in the orange spot for everyone else.
- Priya hates the water so place an X in the boat spot for Priya.
- Govind didn't use the green vehicle, so place an X in the green spot for Govind.
- Farah drove the car, so place an O in the car spot for Farah and an X in the car spot for everyone else.
- So Priya's only choice left for vehicle is the motorcycle – place an O in that spot and an X for everyone else.
- Govind's only choice for vehicle is boat – place an O in that spot.
- Govind's only choice for color is blue so place an O in that spot.
- Farah's only choice for color is green so place an O in that spot.

Priya has an orange motorcycle

Govind has a blue boat

Farah has a green car

## Line Leader Logic Puzzle (Medium)

Five kids are standing in line waiting for the school to open. What is the order of the line?

	First	Second	Third	Fourth	Fifth
Vishnu					
Arya					
Manisha					
Riya					
Vikas					

- Vikas is in the exact middle of the line.
- Vishnu is directly behind Riya.
- Manisha is not first or last.
- Arya is before Vikas (but not necessarily directly in front of)

## ANSWER KEY

### Line Leader Logic Puzzle

	First	Second	Third	Fourth	Fifth
Vishnu	X	X	X	X	O
Arya	O	OX	X	X	X
Manisha	X	O	X	OX	X
Riya	X	X	X	O	X
Vikas	X	X	O	X	X

- Vikas is in the exact middle of the line so put an O in the third place spot for Vikas, and X in all other spots for Vikas, and an X in third place for all other children
- Since Vishnu is directly behind Riya, he cannot be in first so place an X in first
- Manisha is not first or last so place an X in first and last place for Manisha and an O in second and fourth place
- Since Arya is before Vikas, she needs to be in either first or second place so place an O in each and an X in fourth and fifth
- Vishnu is directly behind Riya and Riya is in fourth place so Vishnu must be in fifth.

Arya is first, Manisha is second, Vikas is third, Riya is fourth and Vishnu is fifth.

## Pet Adoption Mix-Up Logic Puzzle (Difficult)

Payal, Lily and Priyanka Kumar, three very responsible girls, loved animals and wanted to care for their own pets. Their parents agreed that they were finally old enough to adopt one pet each and drove them to the pet center to pick out the pets they wanted to adopt.

After playing with many dogs, cats and rabbits, each girl decided to choose a different type of pet from the others and their parents filled out adoption papers for each pet. When they were finished, the attendant said that the pets would be delivered to their home the next day after the paper work had been processed.

Minutes after the Kumar family left the pet center, a mischievous parrot flew over to the stack of adoption papers and started shredding the papers with his sharp claws. The attendant gasped and ran over to rescue the papers but found them in pieces.

“Oh no!” the attendant moaned, “I do not want to disappoint those wonderful girls. I guess I’ll have to try to piece this information together so the pets can be delivered tomorrow like I promised.”

With much of the paper shredded to bits, here is all of the information the attendant had to work with.

1. The girl who adopted the dog did not name it Tutu.
2. Lily’s pet, who she named “Fluffy,” is not the type of animal that hops.
3. Rex, who is not a dog, was adopted by Priyanka.
4. The rabbit was not adopted by Payal.

Can you help the attendant figure out which pet each girl chose and the name of each pet? Use the chart below to help make your deductions. Put an “X” in the grids that are false. Put a dot or a checkmark in each grid that is true.

		Pet's Name			Pet		
		Fluffy	Rex	Tutu	dog	cat	rabbit
Name	Payal						
	Lily						
	Priyanka						
Pet	dog						
	cat						
	rabbit						

## PET ADOPTION PUZZLE ANSWER KEY

		Pet's Name			Pet		
		Fluffy	Rex	Tutu	dog	cat	rabbit
Name	Payal	X	X	●	X	●	X
	Lily	●	X	X	●	X	X
	Priyanka	X	●	X	X	X	●
Pet	dog	●	X	X			
	cat	X	X	●			
	rabbit	X	●	X			

1. The girl who adopted the dog did not name it Tutu so place an X at the intersection of dog and Tutu
2. Lily's pet, who she named "Fluffy," is not the type of animal that hops so Fluffy is not a rabbit. Place a circle at the intersection of Lily and Fluffy, and an X where Fluffy and rabbit intersect and where Lily and rabbit intersect. Put a circle at dog and Lily and cat and Lily because they are both possible. Put an X for Tutu and Lily and for Payal and Fluffy. That means Payal adopted Tutu.
3. Rex, who is not a dog, was adopted by Priyanka so put an X at intersection of Rex and dog, and a circle at intersection of Rex and Priyanka. Also, place an X in Rex's column where it intersects with names of girls because since Priyanka's pet is named Rex, no one else's pet can be named Rex. And place an X in Priyanka's row for pet's names because we already know her pet was named Rex.
4. The rabbit was not adopted by Payal so place an X at the intersection of rabbit and Payal
5. Now fill in the columns and rows:
6. We know Priyanka's pet is a rabbit because it's the only open spot left under pet on the right column. X out dog and cat for Priyanka.

**Payal adopted Tutu the cat, Lily adopted Fluffy the dog, Priyanka adopted Rex the rabbit**

## Annexure 6: Identifying Patterns

Name : \_\_\_\_\_

Score : \_\_\_\_\_

### Identifying Shape Pattern

Complete the shape pattern.

1)								
2)								
3)								
4)								
5)								
6)								
7)								
8)								

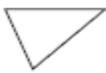
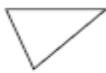
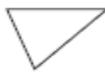
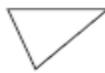
Printable Math Worksheets @ [www.mathworksheets4kids.com](http://www.mathworksheets4kids.com)

Name : \_\_\_\_\_

Score : \_\_\_\_\_

### Identifying Shape Pattern

Complete the shape pattern.

1)								
2)								
3)								
4)								
5)								
6)								
7)								
8)								

Printable Math Worksheets @ [www.mathworksheets4kids.com](http://www.mathworksheets4kids.com)

Name : \_\_\_\_\_

Score : \_\_\_\_\_

### Identifying Shape Pattern

Complete the shape pattern.

1)										
2)										
3)										
4)										
5)										
6)										
7)										
8)										
9)										
10)										

Printable Math Worksheets @ [www.mathworksheets4kids.com](http://www.mathworksheets4kids.com)

Name : \_\_\_\_\_

Score : \_\_\_\_\_

### Identifying Shape Pattern

Complete the shape pattern.

1)										
2)										
3)										
4)										
5)										
6)										
7)										
8)										
9)										
10)										

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## ANNEXURE 6 ANSWER KEYS

Name : \_\_\_\_\_

Score : \_\_\_\_\_

**Answer Key**

Complete the shape pattern.

1)								
2)								
3)								
4)								
5)								
6)								
7)								
8)								

Printable Math Worksheets @ [www.mathworksheets4kids.com](http://www.mathworksheets4kids.com)

Name : \_\_\_\_\_

Score : \_\_\_\_\_

**Answer Key**

Complete the shape pattern.

1)								
2)								
3)								
4)								
5)								
6)								
7)								
8)								

Printable Math Worksheets @ [www.mathworksheets4kids.com](http://www.mathworksheets4kids.com)

Name : \_\_\_\_\_

Score : \_\_\_\_\_

**Answer Key**

Complete the shape pattern.

1)										
2)										
3)										
4)										
5)										
6)										
7)										
8)										
9)										
10)										

Printable Math Worksheets @ [www.mathworksheets4kids.com](http://www.mathworksheets4kids.com)

Name : \_\_\_\_\_

Score : \_\_\_\_\_

### Answer Key

Complete the shape pattern.

1)										
2)										
3)										
4)										
5)										
6)										
7)										
8)										
9)										
10)										

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## Annexure 7: Thinking Skills Resources

### Critical and Creative Thinking

**Creative thinking** – exploring ideas, generating possibilities, looking for more than one right answer, but it's not just coming up with new ideas, but making new connections with existing

**Creative thinking** involves:

- different points of view
- new perspectives
- curiosity
- thinking differently
- thinking spontaneously

**Critical thinking** – ability to analyze, evaluate and apply logic and reasoning to solve problems.

**Critical thinking** is important because:

- helps us distinguish between fact and opinion
- ask good questions
- make detailed observations
- make decisions based on sound logic and solid evidence

Both forms of thinking are equally important and they need to work together. **Creative thinking** involves searching for unusual, original and varied possibilities. **Critical thinking** involves examining possibilities carefully, organizing and analyzing possibilities, ranking and ordering options and choosing the best option.

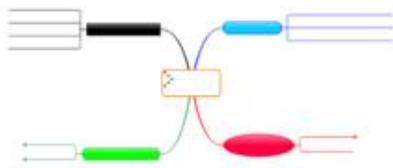
**Remember to:** Use creative and critical thinking skills for school work/homework – they will make you a stronger student. Use them also to make daily life decisions. You need to think creatively to look at all options but then analyze to determine the best choice. Try to keep from becoming discouraged. The best way to master creative problem solving is to learn through mistakes.

## Creative Thinking Practice Techniques

**Creative thinking** is an ability that we all have, but sometimes we need to develop it through practice. These are some ways to practice creative thinking:



**Brainstorming** – come up with as many ideas as possible without criticism or judgement.



**Mind Mapping** – similar to brainstorming, mind mapping connects words with arrows or lines. Start with a word or picture in the center and branch out connected ideas.



**Physical activities** – drawing, creating a craft, dancing, making music. All of these activities engage the creative areas of your brain and help you to think differently.



**Look at things from all angles** – often you will see things in a new way if you view them from a different angle.

## Critical Thinking Practice Techniques

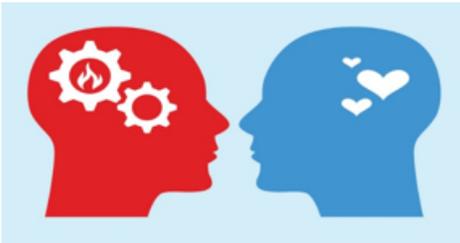
We need to develop **critical thinking** skills to make good decisions. These are some ways to practice critical thinking:



**Fact or opinion** – it is very important to be able to determine the difference between fact and opinion as you are making decisions. A fact can be proven true or false with some kind of evidence. An opinion is not backed by facts; they are feelings or thoughts. Ask yourself, can it be proven?



**Compare and contrast** – this technique is important for organizing information when looking at two options. How are they similar, what is different? It can help you determine the pros and cons of your various choices when you understand what is different.



**Logic** – defined as a reasonable way of thinking about something; how we know whether something is true.



**Making predictions, inferences** – an inference is a conclusion we come to by analyzing information. You look at facts and then make a conclusion from those facts. You can use the information you currently have to predict what might happen next.

## Annexure 8: Evaluation

Unit # 9- Thinking Skills	Score (Circle a number, 5 is the Best)	 What I Liked/Learned	 What I Didn't Like or Things I'm Confused About
Part 1 -- Icebreaker	1 2 3 4 5	_____ _____ _____	_____ _____ _____
Part 2 – Creative and Critical Thinking	1 2 3 4 5	_____ _____ _____	_____ _____ _____
Part 3 – Creative Thinking Skills	1 2 3 4 5	_____ _____ _____	_____ _____ _____
Part 4 – Critical Thinking Skills	1 2 3 4 5	_____ _____ _____	_____ _____ _____
<b>Overall Score</b>		<b>1   2   3   4   5</b>	

## *Annexure 9: The Thirsty Crow Story*

One hot day, a thirsty crow flew all over the fields looking for water. For a long time, he could not find any. He felt very weak, almost lost all hope. Suddenly, he saw a water jug below the tree. He flew straight down to see if there was any water inside. Yes, he could see some water inside the jug!

The crow tried to push his head into the jug. Sadly, he found that the neck of the jug was too narrow. Then he tried to push the jug to tilt for the water to flow out but the jug was too heavy.

The crow thought hard for a while. Then looking around it, he saw some pebbles. He suddenly had a good idea. He started picking up the pebbles one by one, dropping each into the jug. As more and more pebbles filled the jug, the water level kept rising. Soon it was high enough for the crow to drink. His plan had worked!



## *Annexure 10: Fact and Opinion*

**A fact is something that can be proven true with some form of evidence**

An **opinion** is not backed by facts. They are often feelings or emotions.

\*\*\*\*\*

**Write one fact and one opinion for each topic.**

**For example: Ice Cream**

**Fact:** Ice cream is frozen and is made with milk and cream.

**Opinion:** Ice cream is the best dessert.

1. Football

Fact:

---

Opinion:

---

2. Flowers

Fact:

---

Opinion:

---

3. Books

Fact:

---

Opinion:

---

4. Yellow

Fact:

---

Opinion:

---

5. School

Fact:

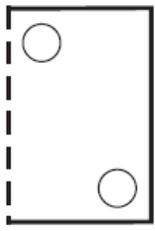
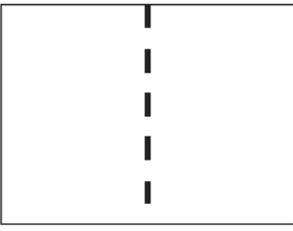
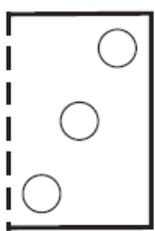
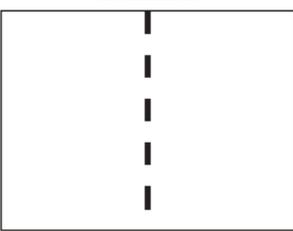
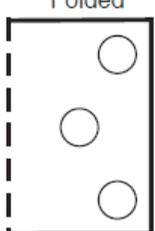
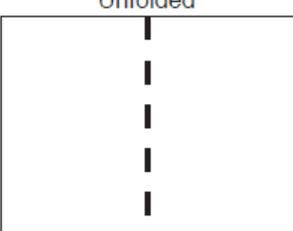
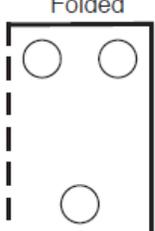
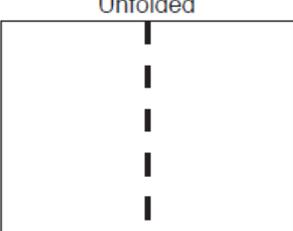
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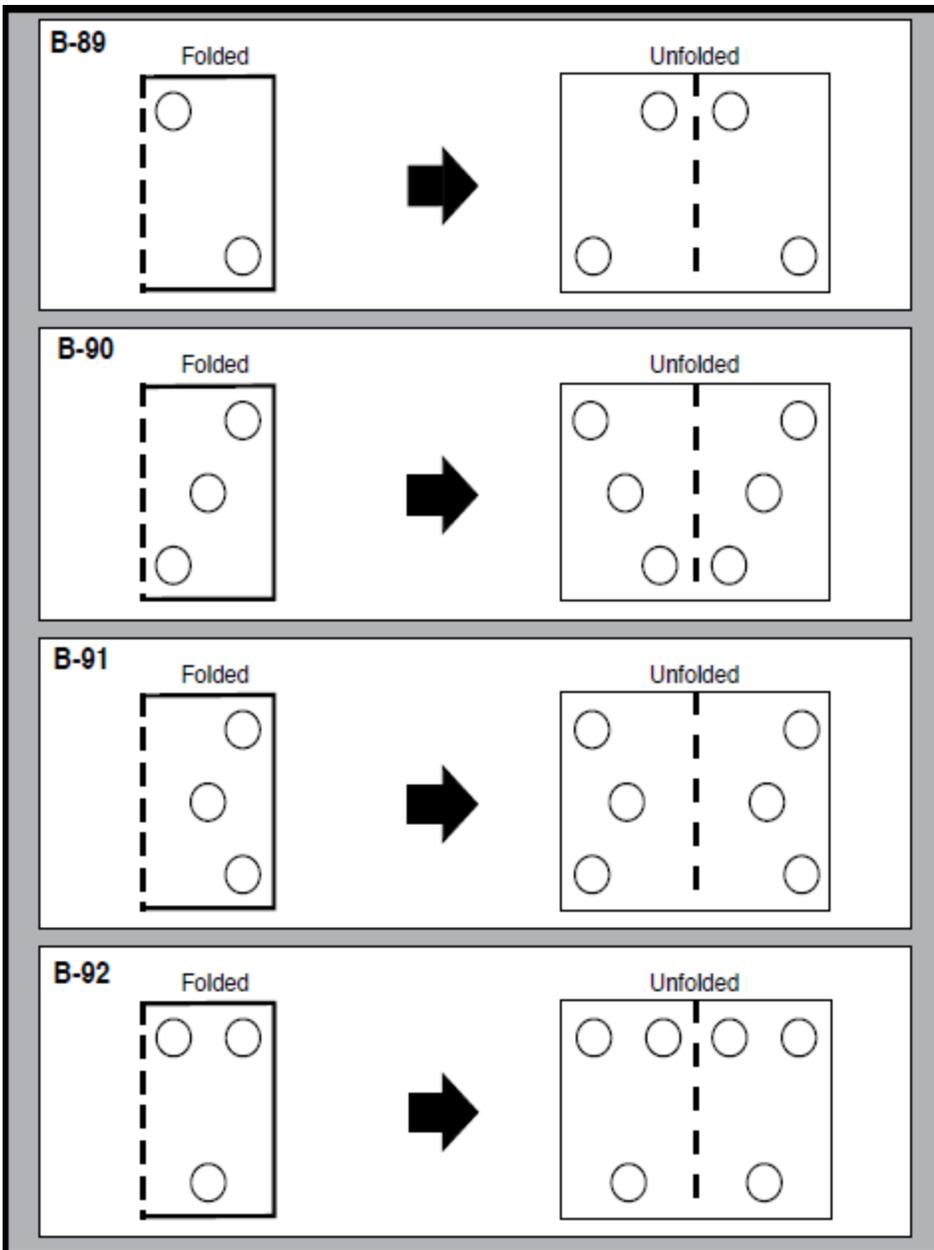
Opinion:

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## Annexure 11: Critical Thinking Worksheets

Here are four sheets of paper with holes punched in them. They are folded along the dotted line. Draw how each sheet will look when unfolded. The Answer Key is below.

<p><b>B-89</b></p> <p>Folded</p> 		<p>Unfolded</p> 
<p><b>B-90</b></p> <p>Folded</p> 		<p>Unfolded</p> 
<p><b>B-91</b></p> <p>Folded</p> 		<p>Unfolded</p> 
<p><b>B-92</b></p> <p>Folded</p> 		<p>Unfolded</p> 



## What Do We Have in Common?

For each number, explain what the words have in common.

1. North America, Asia, Africa

---

2. Bus, car, train

---

3. August, April, November

---

4. Foot, head, toe

---

5. Monday, Thursday, Sunday

---

6. Dogs, cats, birds

---

7. Shark, whale, dolphin

---

8. Coffee, tea, water

---

9. Pencil, pen, crayon

---

10. Mercury, Venus, Earth

---

11. Five, ten, fifteen

---

12. Bird, airplane, butterfly

---

### Fruit Logic Puzzle

Four kids are eating lunch on a hot day. Each has a big glass of water, a sandwich, and a piece of fruit.

Which fruit did each child have?

	Apple	Banana	Orange	Grapes
Raj				
Sukrit				
Kabir				
Priya				

1. Sukrit and Raj have to peel their fruit before eating it.
2. Kabir doesn't like grapes
3. Raj has a napkin to wipe the juice from his fingers.

### Petting Zoo

Three little boys went to the petting zoo. Each boy was able to pet a different animal at a different time.

From the clues below can you tell which boy got to pet which animal at which time?

1. Rohan didn't pet the Zebra and was not the last child to pet an animal.
2. Parth got to pet the horse at either 13:30 or 14:00
3. The goat was the first animal to be petted.
4. Amit was the last one to pet an animal

	Goat	Horse	Zebra	13:00	13:30	14:00
Amit						
Parth						
Rohan						
13:00						
13:30						
14:00						

## ANSWER KEY

### Petting Zoo

Three little boys went to the petting zoo. Each boy was able to pet a different animal at a different time. From the clues below can you tell which boy got to pet which animal at which time?

1. Rohan didn't pet the Zebra and was not the last child to pet an animal. Place an X at the intersection of Rohan and Zebra, and at Rohan and 14:00
2. Parth got to pet the horse at either 13:30 or 14:00. Place an O at Parth and 13:30 and Parth and 14:00 and Parth and horse.
3. The goat was the first animal to be petted. Place an O at Goat and 13:00.
4. Amit was the last one to pet an animal. Place an O at Amit and 14:00
5. We know that Rohan pet an animal at 13:00 because the other times are already taken. Parth pet the horse at 13:30 because we already know that Amit pet an animal at 14:00
6. WE know that Rohan didn't pet the zebra, and since Parth pet the horse, the only animal left is goat.

	Goat	Horse	Zebra	13:00	13:30	14:00
Amit						O
Parth		O			O	OX
Rohan			X	O		X
13:00	O					
13:30						
14:00						

Parth pet the horse at 13:30

Rohan pet the goat at 13:00

Amit pet the zebra at 14:00

## ANSWER KEY

### Fruit Logic Puzzle

Four kids are eating lunch on a hot day. Each has a big glass of water, a sandwich, and a piece of fruit. Which fruit did each child have?

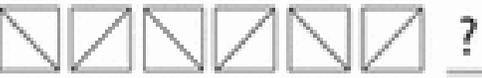
	Apple	Banana	Orange	Grapes
Raj	X	oX	o	X
Sukrit	X	o	oX	X
Kabir	o	X	X	X
Priya		X	X	

1. Sukrit and Raj have to peel their fruit before eating it so place an O at the intersection of Sukrit and banana and Orange and Raj and Banana and orange. Place an X at apple and grapes for Raj and Sukrit.
2. Kabir doesn't like grapes so place an X at Kabir and grapes.
3. Raj has a napkin to wipe the juice from his fingers. Oranges are juicy so Raj is eating an orange. Place an O at Raj and orange.
4. Sukrit must be eating a banana.
5. Kabir must be eating an apple because it's the only open space on his row.
6. That means Priya must be eating grapes.

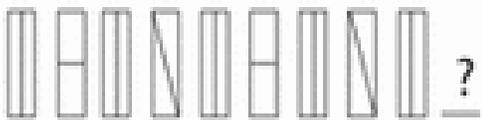
Raj is eating an orange, Sukrit is eating a banana, Kabir is eating an apple, Priya is eating grapes.

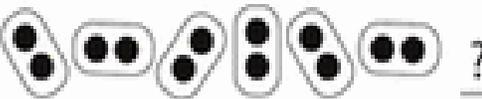
○ ○ ○ ○ ○ ○ ○ ○ **Patterns** ○ ○ ○ ○ ○ ○ ○ ○

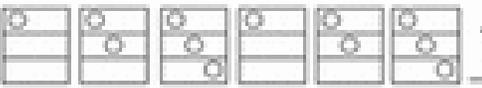
Circle the shape that comes next in the sequence.

1.  ?      a.  b.  c. 

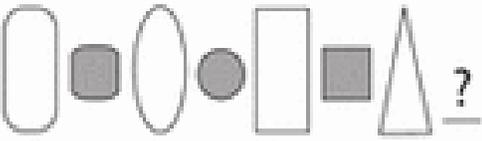
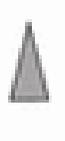
2.  ?      a.  b.  c. 

3.  ?      a.  b.  c. 

4.  ?      a.  b.  c. 

5.  ?      a.  b.  c. 

6.  ?      a.  b.  c. 

7.  ?      a.  b.  c. 

Date: \_\_\_\_\_ Name: \_\_\_\_\_

### Math Worksheet: Patterns Again

Circle the shape that comes next.



# Picture Patterns

Look at the first set of shapes. Think how the first shape changed to become the second one. Now look at the second set of shapes and see if you can find what the first shape should change into. Choose your answer from the shapes in the group on the right.

**10**



**Circle** the shape you think is the correct one.

1		
2		
3		
4		
5		
6		

# Picture Patterns

9

Look at the first set of shapes. Think how the first shape changed to become the second one. Now look at the second set of shapes and see if you can find what the first shape should change into. Choose your answer from the shapes in the group on the right.



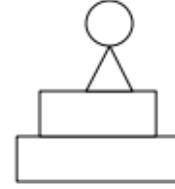
**Circle** the shape you think is the correct one.

1	=	=
2	=	=
3	=	=
4	=	=
5	=	=
6	=	=

## Shapes

Look at the shapes on the left in each row. All of the shapes, but one, were used to make the figure on the right. Circle the shape that was not used.

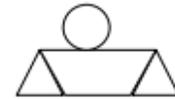
1.



2.



3.



4.

