LESSON PLAN How does an animal adapt to its habitat?

GRADE
2 (SK)
3 (AB, SK)
4 (BC, MB, NB, NL, NS, NT, NU, ON, PE, YK)
Cycles 1, 2 and 3 (QC)

SUBJECT Science

TIME NEEDED 100 minutes (total)

- 30 minutes for the Introductory Activity (Schema Activation – Animal's Natural Defenses)
- 40 minutes for the Enhancing Activity (Hook – Butterfly Camouflage Game and Turtle Camouflage Activity)
- 30 minutes for the Culminating Activity (Camouflage Concentration Game)

VOCABULARY

- Adaptation
- Air
- Animal Defenses
- Camouflage
- Food
- Habitat
- Mimicry
- Shelter
- Space
- Warning colours
- Water
- Animal survival
- Defenseless
- Flycatcher bird
- Fragile
- Glasswing butterfly
- Indian Leaf butterfly
- Owl butterfly
- Prediction
- Protection strategy
- Sun
- Swallowtail butterfly

EcoKids® EARTH DAY® CANADA

LEARNING OBJECTIVES/OUTCOMES

Students will

- demonstrate an understanding of habitats as areas that provide plants and animals with the necessities of life (e.g., food, water, air, space, and light)
- describe structural adaptations that allow plants and animals to survive in specific habitats (e.g., the thick stem of a cactus stores water for the plant; a duck's webbed feet allow it to move quickly and efficiently in the water)

MATERIALS REQUIRED

Introductory Activity (Animal's Natural Defenses)

- **BLM 1.1.a** – Needs of Living Things Cards
- **BLM 1.1.b** – Animal Defense Cards
- **BLM 1.1.c** – Habitat Card
- Coloured card stock or construction paper
- Velcro or tape
- White board with markers or chart paper

Butterfly Camouflage Game

- **BLM 1.3.a –** Butterfly Template (1/student)

- **BLM 1.3.b** – Flycatcher Cards (4)
- **BLM 1.3.c** – Butterfly Camouflage Task Card (1/group)
- **BLM 1.3.d** – Butterfly Camouflage Pictures
- Crayons or markers
- Masking tape
- Scissors (1/student)
- Hole punch
- String

Turtle Camouflage Activity

- **BLM 1.2.a** – Turtle Camouflage Student Worksheet (1/student)
- **BLM 1.2.b** – Turtle Template (1/pair)
- **BLM 1.2.c** – Environment Pictures (ocean, forest, desert-1/ pair)
- **BLM 1.2.d** – Turtle Camouflage Task Card
- **BLM 1.5.g** – Checklist for Turtle Camouflage Activity
- **BLM 1.5.f** – Peer/Self Assessment Form
- Crayons or markers (red, blue, yellow, brown, green, and brown- 1/pair)
- Pencil

Camouflage Concentration Game

- **BLM 1.4.a** – Camouflage Concentration Game Cards (1/group)
- **BLM 1.4.b** – Camouflage Concentration Game Student Worksheet (1/student)
- **BLM 1.4.c** – Camouflage Concentration Game Task Card
- **BLM 1.5.d** – Rubric for Camouflage Concentration Game
- **BLM 1.5.e** – Student Rubric for Science Learning Log/Journal
- **BLM 1.5.f** – Peer/Self Assessment Form
- Pencils

DESCRIPTION OF ACTIVITY

While participating in hands-on/minds-on activities, students will work individually, with a partner, and in small cooperative learning groups to understand the meaning of camouflage. Students will learn to identify adaptations found in different organisms that illustrate specific natural survival strategies.

Introductory Activity: Schema Activation - Animal's Natural Defenses
Activate Prior Knowledge: Whole class discussion on the Carpet –

1. Ask students to name what all living things need to survive. Record responses on chart paper or on the white board. As students give their responses, have them locate the corresponding picture and tape it next to the appropriate text. Refer to **Needs of Living Things Cards (BLM 1.1.a)**.
2. Ask students where animals get the things they need. Students should indicate that they are found in an animal's habitat. Have students define habitat and give an example of different types of animals in their habitat.
3. Introduce the topic of animal defenses. Think-pair share. Have students brainstorm how animals defend themselves in their habitat, share with a partner.
4. Depending on responses, discuss different natural defenses that help animals survive. Introduce four different kinds: camouflage, mimicry (copying), warning colours and structural adaptations. Indicate to students that there are other types of animal defenses as well, but we are only going to be discussing these ones. Show the **Animal Defense Cards (BLM 1.1.b).** As well, have students try to guess the human equivalent to these different animal defenses. For example, the turtle has a hard shell to protect its body. The human example would be wearing a helmet when riding your bike to protect your brain.
5. Another option is to paste the Animal Defense Cards on Bristol board to make a poster. Each picture can be covered with a small piece of cardboard that can be removed when the children guess the correct answer. You can use Velcro or tape to keep the cardboard over each example.

Enhancing Activity: Butterfly Camouflage Game and Turtle Camouflage Activity

Butterfly Camouflage Game:

Whole class discussion on the carpet – Explain to students that butterflies are very fragile and very vulnerable to predators. They require different strategies to protect themselves in their habitat. Ask students the following questions:

a. How do butterflies protect themselves?
b. What strategies do they use?
c. Do all butterflies use camouflage as a protection strategy? Explain your answer.
d. What are the predators of butterflies?
e. Can you name some types of butterflies that use camouflage?

Show student the Butterfly Camouflage Pictures (BLM 1.3.d). Discuss each type of butterfly and where it lives.

1. Hand out a Butterfly Template (BLM 1.3.a) to each student.
2. Students write their name on the back side of the butterfly and then colour it.
3. Students then cut out their butterfly along the thick black line.
4. Give each child a piece of masking tape and have them ***"hide"*** their butterfly. Students should keep in mind that they want to hide (camouflage) it in plain sight, somewhere in the room. Remind students that they are not allowed to hide it underneath an object. Also, you might want to designate a small area in the classroom for students to put their butterflies. This might make the task of trying to find the butterflies a little easier for you.
5. Make sure that you (the teacher) cover your eyes so that you can't see where the children are hiding them.
6. When everyone has finished hiding their butterfly, have the children count to 30, while you try to find as many butterflies as possible. Explain to students that you are a hungry flycatcher bird and that you are trying to eat as many butterflies as you can in the allocated time.
7. Another option is for you to select two or three students to be the birds. Hand out the Flycatcher Cards (BLM 1.3.b) to those students pretending to be birds. Have them tape the cards to them or hang them, with string, around their necks.
8. Students move around the designated area trying to find as many butterflies as possible.
9. Discuss with students the outcome of the game and the effectiveness of the camouflage process.

Turtle Camouflage Activity

Whole class discussion on the carpet – Explain to students that they will do another activity to learn about camouflage. In this activity, students work with a partner. Each pair will be given a plastic bag, containing two Turtle Camouflage Student Worksheets (BLM 1.2.a), three Environment Pictures (BLM 1.2.c- ocean, forest, desert), five coloured turtles from the Turtle Template (BLM 1.2.b), and five crayons (red, blue, green, brown, and yellow)

1. Have students predict which coloured turtle will be better camouflaged in the ocean.
2. Students then place all of the different coloured turtles onto one of the environment pictures (ocean) at a time to see if each coloured turtle can blend (camouflage) into the ocean background. Students assess which turtle is better camouflaged, which turtle is not camouflaged, and which one is almost camouflaged.
3. For each turtle, the students choose a crayon of the same colour. Then on their worksheet, they find the column for the environment picture they are examining. Have them colour in the appropriate square in that column, according to how well camouflaged the turtle is. If the turtle is hard to see, they would fill in the top square of the column with the colour of that turtle. This means it is very well camouflaged. For example, the top square would be coloured blue if using the ocean picture.
4. They colour the bottom square on the chart if the turtle is easy to see. This means it is not camouflaged very well. For example, this section would be coloured red or yellow if using the ocean picture.
5. Finally, students colour the middle square in the column if they can see the turtle a little bit. For example, this section would be coloured green if using the ocean picture.
6. Students repeat this process for each environment picture until they have completed the entire worksheet.
7. Please note that students will only be camouflaging 3 out of the 5 turtles for this activity (turtle better camouflaged, turtle not camouflaged, and turtle almost camouflaged). However, if time permits allow

students to camouflage all 5 turtles. Modifications to worksheet will have to be made (additional rows) if 5 turtles are used.

8. Discuss with students their answers from the worksheet. Review what is easiest and what is hardest to see. The other answers are very subjective and it will depend on each pair of students.

Culminating Activity (Wrap Up Activity): Camouflage Concentration Game

1. Students work in a small group of 4 to 5 to play the Camouflage Concentration Game.
2. Each group is given a set of the **Camouflage Concentration Cards (BLM 1.4.a)**, containing pictures of various animals that use camouflage as a defense strategy and their habitats.
3. Students place each of the cards face down on the desk, so that the pictures are hidden.
4. Students take turns choosing two cards to turn over in an attempt to match a picture of an animal to its habitat. If students make a correct match, they keep that pair and continue turning pairs of cards until all of the cards have been matched properly or until they draw an incorrect set. If students draw two cards that are not a match they turn the cards back over, face downwards. The challenge is for the students to remember which cards are where on the desk for future turns.
5. When the concentration game is finished, students complete the **Camouflage Concentration Game Student Worksheet (BLM 1.4.b)** to record their answers from the game.

ASSESSMENT

See rubrics:

- **BLM 1.5.f** – Peer/Self Assessment Form
- **BLM 1.5.d** – Rubric for Camouflage Concentration Game
- **BLM 1.5.e** – Student Rubric for Science Learning Log/Journal

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EXTENDED ACTIVITIES

Discovery Camouflage Game (An alternative to the Camouflage Concentration Game):

1. Tape a card showing either an animal that uses camouflage as a defense strategy or a habitat picture to the back of each student.
2. Have students walk around a designated area to determine their identities.
3. They ask each other questions that can be answered with only "yes" or "no".
4. Encourage students to create their own questions. However, prior to beginning the game, model examples of appropriate questions to ask and students can use these questions as well.
5. For example: Am I a large animal? , Am I white in colour? , Do I live on land? , Am I a place to live? etc.
6. Once students have found their identity, they then have to find the person who has their matching card (animal must match to its correct habitat and vice versa).
7. Have students return to the carpet and discuss what cards they had and how their animal uses camouflage as a defense mechanism in their habitat.
8. Select pairs of students to present their matched pairs to the whole class.

PRINT AND WEB SITE REFERENCES

- www.pbs.org/wgbh/nova/bees
- National Teacher Training Institute. *Hide in plain site*. (examples of katydid camouflage and hawk moth mimicry.) http://www.thirteen.org/edonline/ntti/resources/lessons/s_hide/index.html
- Nature Works. *Deceptive coloration*. (Interesting explanation of disruptive coloration camouflage-the zebra) www.nhptv.org/natureworks/nwep2a.htm
- Scholastic. *Critter camouflage*. www.teacher.scholastic.com/products/Instructor/Mar05_camouflage.htm

ADAPTATION

All accommodations must take into account the student's Individual Education Plan. All of the learning tasks and activities are created to accommodate the needs of students at different ability levels. The lesson plan includes pictures and/or examples of a step–by–step process, lists, and graphic organizers to enhance learning. The series of pictures are used to break tasks into more understandable steps. Many of the learning activities provide opportunities for peer or group interactions, encouraging the use of cooperative learning/social skills and risk taking. Adaptations can be made in the following manner:

- Alternatives to written tasks (culminating task and the Mind Map), such as drawing, pointing to the correct answers, and fill-in-the blanks could be useful. Keypads, word processors and writing software can also be used to support the writing tasks.
- Reduction in the length or number of written responses (e.g., for the turtle camouflage-have students only complete the "easy to see" and the "hardest to see" rows of the student work sheet)
- Students should be given extended timelines for task completion if required.
- All materials, equipment, and manipulative should be labelled with text and visual aids.
- Students can be given exemplars (e.g., sample of a completed camouflaged butterfly and part of the turtle camouflage worksheet to demonstrate the expectations of the task).

Habitats and Communities: How does an animal adapt to its habitat?

The Big Eco Idea: **Animals have distinct structural adaptations that allow them to survive in specific habitats.**

Lesson Title: How does an animal adapt to its habitat?
Unit: Science-Habitats and Communities
Grade: 4
Time: 100 minutes (total)

- 30 minutes for the Introductory Activity (Schema Activation – Animal's Natural Defences)
- 40 minutes for the Enhancing Activity (Hook – Butterfly Camouflage Game and Turtle Camouflage Activity)
- 30 minutes for the Culminating Activity (Camouflage Concentration Game)

Description Of the Task

While participating in hands-on/minds-on activities, students will work individually, with a partner, and in small cooperative learning groups to understand the meaning of camouflage. Students will learn to identify adaptations found in different organisms that illustrate specific natural survival strategies.

Curriculum Expectations:

SCIENCE & TECHNOLOGY-*Understanding Life Systems: Habitats and Communities*

3.1 demonstrate an understanding of habitats as areas that provide plants and animals with the necessities of life (e.g., food, water, air, space, and light)

3.7 describe structural adaptations that allow plants and animals to survive in specific habitats (e.g., the thick stem of a cactus stores water for the plant; a duck's webbed feet allow it to move quickly and efficiently in the water)

Groupings

- Students working with a partner
- Students working individually
- Students working as a whole class
- Students working in cooperative learning groups

Teaching/Learning Strategies

- Discussion
- Science learning log/journal
- Brainstorming

Assessment Strategies

- Science learning log/journal
- Questions and answers
- Observation
- Peer/self assessment

Assessment Recording Devices

- Rubric
- Anecdotal record sheet
- Checklist

Resources Required:

Materials

Introductory Activity (Animal's Natural Defences)

- **BLM 1.1.a** – Needs of Living Things Cards
- **BLM 1.1.b** – Animal Defence Cards
- **BLM 1.1.c** – Habitat Card
- **BLM 1.1.d** – Cluster Map/ Mind Map
- Coloured card stock or construction paper
- Velcro or tape
- White board with markers or chart paper

Turtle Camouflage Activity

- **BLM 1.2.a** – Turtle Camouflage Student Worksheet (1/student)
- **BLM 1.2.b** – Turtle Template (1/pair)
- **BLM 1.2.c** – Environment Pictures (ocean, forest, desert-1/ pair)
- **BLM 1.2.d** – Turtle Camouflage Task Card
- **BLM 1.5.g** – Checklist for Turtle Camouflage Activity
- **BLM 1.5.f** – Peer/Self Assessment Form
- Crayons or markers (red, blue, yellow, brown, green, and brown- 1/pair)
- Pencil

Butterfly Camouflage Game

- **BLM 1.3.a –** Butterfly Template (1/student)
- **BLM 1.3.b** – Flycatcher Cards (4)
- **BLM 1.3.c** – Butterfly Camouflage Task Card (1/group)
- **BLM 1.3.d** – Butterfly Camouflage Pictures
- **BLM 1.5.c** – Anecdotal Record Sheet
- Crayons or markers
- Masking tape
- Scissors (1/student)
- Hole punch
- String

Camouflage Concentration Game

- **BLM 1.4.a** – Camouflage Concentration Game Cards (1/group)
- **BLM 1.4.b** – Camouflage Concentration Game Student Worksheet (1/student)
- **BLM 1.4.c** – Camouflage Concentration Game Task Card
- **BLM 1.5.a** – Science Learning Log/Journal Student Criteria
- **BLM 1.5.b** – Student Science Learning Log/Journal Page
- **BLM 1.5.d** – Rubric for Camouflage Concentration Game
- **BLM 1.5.e** – Student Rubric for Science Learning Log/Journal
- **BLM 1.5.f** – Peer/Self Assessment Form
- Pencils

Black Line Masters (BLM)

- **BLM 1.1.a** – Needs of Living Things Cards
- **BLM 1.1.b** – Animal Defence Cards
- **BLM 1.1.c** – Habitat Card
- **BLM 1.1.d** – Cluster Map/Mind Map
- **BLM 1.2.a** – Turtle Camouflage Student

Print and Websites

- www.pbs.org/wgbh/nova/bees
- National Teacher Training Institute. *Hide in plain site*. (examples of katydid camouflage and hawk moth mimicry.) http://www.thirteen.org/edonline/ntti/resources/lessons/s_hide/index.html

Worksheet

- **BLM 1.2.b** – Turtle Template
- **BLM 1.2.c** – Environment Pictures (ocean, forest, desert)
- **BLM 1.2.d** – Turtle Camouflage Task Card
- **BLM 1.3.a** – Butterfly Template
- **BLM 1.3.b** – Flycatcher Cards
- **BLM 1.3.c** – Butterfly Camouflage Task Card
- **BLM 1.3.d** – Butterfly Camouflage Pictures
- **BLM 1.4.a** – Camouflage Concentration Game Cards
- **BLM 1.4.b** – Camouflage Concentration Game Student Worksheet
- **BLM 1.4.c** – Camouflage Concentration Game Task Card
- **BLM 1.5.a** – Science Learning Log/Journal Student Criteria
- **BLM 1.5.b** – Student Science Learning Log/Journal Page
- **BLM 1.5.c** – Anecdotal Record Sheet
- **BLM 1.5.d** – Rubric for Camouflage Concentration Game
- **BLM 1.5.e** – Student Rubric for Science Learning Log/Journal
- **BLM 1.5.f** – Peer/Self Assessment Form
- **BLM 1.5.g** – Checklist for Turtle Camouflage Activity

- Nature Works. *Deceptive coloration*. (Interesting explanation of disruptive coloration camouflage-the zebra) www.nhptv.org/natureworks/nwep2a.htm

- Scholastic. *Critter camouflage*. www.teacher.scholastic.com/products/Instructor/Mar05_camouflage.htm

Preparation:

1. Print off all Black Line Masters (**BLM 1.1.a**, **BLM 1.1.b, BLM 1.1.c, BLM 1.1.d, BLM 1.2.a, BLM 1.2.b, BLM 1.2.c, BLM 1.2.d, BLM 1.3.a, BLM 1.3.b, BLM 1.3.c, BLM 1.3.d, BLM 1.4.a, BLM 1.4.b, BLM 1.4.c, BLM 1.5.a, BLM 1.5.b, BLM 1.5.c, BLM 1.5.d, BLM 1.5.e, BLM 1.5.f,** and **BLM 1.5.g**) prior to the activity.
2. Photocopy the Black Line Masters (**BLM 1.1.d, BLM 1.2.a, BLM 1.2.b, BLM 1.2.c, BLM 1.2. d, BLM 1.3.a, BLM 1.3.b, BLM 1.4.a, BLM 1.4.b, BLM 1.5.a,** and **BLM 1.5.b**) prior to the activity.
3. Laminate the Needs of Living Cards (**BLM 1.1.a**), Animal Defence Cards (**BLM 1.1.b**), Habitat Card (**BLM 1.1.c**), Task Cards (**BLM 1.2.d**, **BLM 1.3.c,** and **BLM 1.4.c**), Turtle Template (**BLM 1.2.b)**, Environment Pictures - ocean, forest, desert (**BLM 1.2.c**)**,** Flycatcher Cards (**BLM 1.3.b**), Butterfly Camouflage Pictures (**BLM 1.3.d**) and Camouflage Concentration Game Cards (**BLM 1.4.a**).
4. Pre-cut the Turtle Template (**BLM 1.2.b**), Flycatcher Cards (**BLM 1.3.b**), and Camouflage Concentration Game Cards (**BLM 1.4.a**) before the learning task.
5. Make the animal defence poster, using the Animal Defence Cards (**BLM 1.1.b**), prior to the introductory activity.

Vocabulary:

- Animal Defences
- Mimicry
- Camouflage
- Warning colours
- Adaptation
- Habitat
- Defenceless
- Protection strategy
- Flycatcher bird
- Owl butterfly
- Glasswing butterfly
- Food
- Water
- Space
- Shelter
- Air
- Sun
- Fragile
- Prediction
- Indian Leaf butterfly
- Swallowtail butterfly
- Animal survival

Teaching / Learning:

Lesson Plan Progression

A) Introductory Activity: Schema Activation - Animal's Natural Defences	Time	Assessment Techniques	Key Questions
Activate Prior Knowledge: Whole class discussion on the Carpet – **1.** Ask students to name what all living things need to survive. Record responses on chart paper or on the white board. As students give their responses, have them locate the corresponding picture and tape it next to the appropriate text. Refer to **Needs of Living Things Cards (BLM 1.1.a)**. **2.** Ask students where animals get the things they need. Students should indicate that they are found in an animal's habitat. Have students define habitat and give an example of different types of animals in their habitat. **3.** Introduce the topic of animal defences. Think-pair share. Have students brainstorm how animals defend themselves in their habitat, share with a partner and record responses on a **Cluster Map/Mind Map (BLM 1.1.d)**. The cluster map can either be completed by each pair of students or as a whole class, once their responses have been discussed. **4.** Depending on responses, discuss different natural defences that help animals survive. Introduce four different kinds: camouflage, mimicry (copying), warning colours and structural adaptations. Indicate to students that there are other types of animal defences as well, but we are only going to be discussing these ones. Show the **Animal Defence Cards (BLM 1.1.b).** As well, have students try to guess the human equivalent to these different animal defences. For example, the turtle has a hard shell to protect its body. The human example would be wearing a helmet when riding your bike to protect your brain. **5.** Another option is to paste the Animal Defence Cards on Bristol board to make a poster. Each picture can be covered with a small piece of cardboard that can be removed when the children guess the correct answer. You can use Velcro or tape to keep the cardboard over each example.	**30 min**	**Observations:** Observation notes will be made during discussion. **Questions and Answers:** Questions led by the teacher or student. Ask students to recognize and recall specific facts and ideas. Ask students to retell and summarize information.	**a)** What do all living things need to survive? **b)** Where can an animal find these needs? **c)** What does the word habitat mean? **d)** Give an example of a kind of habitat. **e)** How do animals defend themselves in their habitat? **f)** What is a natural defence? **g)** What are the four natural defences that help animals survive? **h)** Give an example of an animal that uses camouflage, mimicry, warning colours, and other defences. **i)** Can you think of a human example for each of the natural defences?

B) Enhancing Activity: Hook **Butterfly Camouflage Game and Turtle Camouflage Activity**	**40 min**		
Butterfly Camouflage Game: **Whole class discussion on the carpet** – Explain to students that butterflies are very fragile and very vulnerable to predators. They require different strategies to protect themselves in their habitat. Ask students the following questions: a. How do butterflies protect themselves? b. What strategies do they use? c. Do all butterflies use camouflage as a protection strategy? Explain your answer. d. What are the predators of butterflies? e. Can you name some types of butterflies that use camouflage? Show student the Butterfly Camouflage Pictures (**BLM 1.3.d**). Discuss each type of butterfly and where it lives. **1.** Hand out a **Butterfly Template** (**BLM 1.3.a**) to each student. **2.** Students write their name on the back side of the butterfly and then colour it. **3.** Students then cut out their butterfly along the thick black line. **4.** Give each child a piece of masking tape and have them ***"hide"*** their butterfly. Students should keep in mind that they want to hide (camouflage) it in plain sight, somewhere in the room. Remind students that they are not allowed to hide it underneath an object. Also, you might want to designate a small area in the classroom for students to put their butterflies. This might make the task of trying to find the butterflies a little easier for you. **5.** Make sure that you (the teacher) cover your eyes so that you can't see where the children are hiding them. **6.** When everyone has finished hiding their butterfly, have the children count to 30, while you try to find as many butterflies as possible. Explain to students that you are a hungry flycatcher bird and that you are trying to eat as many butterflies as you can in the allocated time. **7.** Another option is for you to select two or three students to be the birds. Hand out the **Flycatcher Cards** (**BLM 1.3.b**) to those students pretending to be birds. Have them tape the cards to them or hang them, with string, around their necks. **8.** Students move around the designated area trying to find as many butterflies as possible. **9.** Discuss with students the outcome of the game and the effectiveness of the camouflage process.	**20 min**	**Anecdotal Record Sheet**	**a)** How do butterflies protect themselves? **b)** What strategies do they use? **c)** Do all butterflies use camouflage as a protection strategy? Explain your answer. **d)** What are the predators of butterflies? **e)** Can you name some types of butterflies that use camouflage?
Turtle Camouflage Activity **Whole class discussion on the carpet** – Explain to students that they will do another activity to learn about camouflage. In this activity, students work with a partner. Each pair will be given a plastic bag, containing two **Turtle Camouflage Student Worksheets** (**BLM 1.2.a**), three **Environment Pictures** (**BLM 1.2.c-** ocean, forest, desert), five coloured turtles from the **Turtle Template** (**BLM 1.2.b**), and five crayons (red, blue, green, brown, and yellow) **1.** Have students predict which coloured turtle will be better camouflaged in the ocean. **2.** Students then place all of the different coloured turtles onto one of the environment pictures (ocean) at a time to see if each coloured turtle can blend (camouflage) into the ocean background. Students assess which turtle is better camouflaged, which turtle is not camouflaged, and which one is almost camouflaged. **3.** For each turtle, the students choose a crayon of the same colour. Then on their worksheet, they find the column for the environment picture they are examining. Have them colour in the appropriate square in that column, according to how well camouflaged the turtle is. If the turtle is hard to see, they would fill in the top square of the column with the colour of that turtle. This means	**20 min**	**Checklist** **Peer / Self Assessment**	**a)** What is a prediction? **b)** Which coloured turtle was hardest to see for the ocean picture? **c)** Which coloured turtle was easiest to see for the ocean picture? **d)** Which coloured turtle could be seen a little? Repeat same questions for each

it is very well camouflaged. For example, the top square would be coloured blue if using the ocean picture. **4.** They colour the bottom square on the chart if the turtle is easy to see. This means it is not camouflaged very well. For example, this section would be coloured red or yellow if using the ocean picture. **5.** Finally, students colour the middle square in the column if they can see the turtle a little bit. For example, this section would be coloured green if using the ocean picture. **6.** Students repeat this process for each environment picture until they have completed the entire worksheet. **7.** Please note that students will only be camouflaging 3 out of the 5 turtles for this activity (turtle better camouflaged, turtle not camouflaged, and turtle almost camouflaged). However, if time permits allow students to camouflage all 5 turtles. Modifications to worksheet will have to be made (additional rows) if 5 turtles are used. **8.** Discuss with students their answers from the worksheet. Review what is easiest and what is hardest to see. The other answers are very subjective and it will depend on each pair of students.			environment picture (forest, desert)
Culminating Activity (Wrap Up Activity): Camouflage Concentration Game	**30 min**		
1. Students work in a small group of 4 to 5 to play the Camouflage Concentration Game. **2.** Each group is given a set of the **Camouflage Concentration Cards (BLM 1.4.a)**, containing pictures of various animals that use camouflage as a defence strategy and their habitats. **3.** Students place each of the cards face down on the desk, so that the pictures are hidden. **4.** Students take turns choosing two cards to turn over in an attempt to match a picture of an animal to its habitat. If students make a correct match, they keep that pair and continue turning pairs of cards until all of the cards have been matched properly or until they draw an incorrect set. If students draw two cards that are not a match they turn the cards back over, face downwards. The challenge is for the students to remember which cards are where on the desk for future turns. **5.** When the concentration game is finished, students complete the **Camouflage Concentration Game Student Worksheet (BLM 1.4.b**) to record their answers from the game. Students can glue this worksheet into their Science Journal.		**Rubric** **Peer/Self Assessment** **Science Learning Log/ Journal –** Completed worksheets glued into book and assessed	**a)** Which animals use camouflage as a defence tool? **b)** Where do these animals live? **c)** How do they use camouflage as a defence tool?

Notes to Teacher:

Structural Adaptations: Physical structures that an animal uses to defend itself, such as quills or a shell.

Camouflage: Animals or plants that have coloration and patterns similar to those in the visual background. This allows them to escape predation by blending into their surroundings, or it helps them become more efficient hunters. For example, animals that live in cold climates where snow is present will be white in colour. Many animals in forested habitats will be various shades of green, such as the emerald tree boa, while desert animals, such as the Fennec fox, will often have a light sandy colouration. Other adaptations involve stripes and patterns that allow the animal to disappear amongst reeds, rocks and mottled surfaces. Some adaptations are so advanced that the animal's colouration and body shape looks exactly like a leaf, tree twig (such as walking sticks) or other element in their environment.

There are also many animals that do not naturally use camouflage as a defense mechanism, but are helped by other organisms to blend with its environment. For example, the sloth allows green algae to grow on its fur, which makes it easier to hide among the tree leaves.

Mimicry: An adaption in which one animal looks similar to an unpleasant species. There are two forms of mimicry: Batesian mimicry and Mullerian mimicry. Batesian mimicry refers to a harmless species that imitates the colouration and even the behaviour of another species that is dangerous, usually poisonous. Predators mistake them for the poisonous version and avoid hunting them. For example, the non-poisonous North American Viceroy butterfly has a similar shape, pattern, and colour to the poisonous Monarch butterfly. Predators who have had an unhappy encounter with a

Monarch will recognize the similar colour pattern of the harmless Viceroy as a warning to stay away. Mullerian mimicry occurs when both species are poisonous and they share a similar warning pattern of colours. They both benefit when a predator has a bad experience with one, and avoids all other species that have the same type of colouration.

Warning Colours: The purpose of warning colours is to deter predators from attacking prey that have an active means of defence. Often bright red, yellow or orange colours are a clear message to predators that a prey animal is dangerous to eat. One type of a warning colour is called flash colouration. This form of defence allows the species to remain hidden at first, but as it is approached or even touched by a predator it begins to flash brightly. Normally, this flash of bright colouring is only on a portion of the body, such as the underwings, which are well hidden when the animal is resting. Many grasshoppers have brightly coloured blue and red underwings that distract and fluster their predators.

Introductory Activity (Animal's Natural Defences) Information:

Animal Defence	Animal Example	Human Example
Camouflage	Picture of a rabbit and lizard, being the same colour as their surroundings.	A person in a camouflaged army uniform.
Mimicry	Viceroy vs. Monarch. The monarch is poisonous to its predators because it eats the bitter tasting milkweed plant as a caterpillar. The Viceroy is not poisonous, but it looks almost identical to the monarch.	A person wearing a rabbit costume is mimicking what a rabbit looks like in the wild.
Warning colours	Certain frogs are brightly coloured to show that they are poisonous (poison arrow dart frogs in South America.)	Construction worker wears a brightly coloured vest and has a stop sign.
Structural Adaptations	Many animals are covered by shells, spines, or quills to protect themselves. For example, the turtle has a shell.	A football helmet will protect your head.

Turtle Camouflage Activity:
Students should complete the worksheet in a similar manner to the table below. The "Easiest to See" and "Hardest to See" columns should contain the same colours as the table, but the "Can See a Little" column will vary depending on the age of your students and their prior knowledge of camouflage. As well, answers may vary depending on the type of paper that is being used to make the animals.

Environment	Easiest to See	Can See a Little	Hardest to See
Desert	Green or Blue	Red or Yellow	Brown
Ocean	Red or Yellow	Green or Brown	Blue
Forest	Red or Yellow	Brown or Blue	Green

Additional Activities:

Discovery Camouflage Game (An alternative to the Camouflage Concentration Game):

1. Tape a card showing either an animal that uses camouflage as a defence strategy or a habitat picture to the back of each student.
2. Have students walk around a designated area to determine their identities.
3. They ask each other questions that can be answered with only "yes" or "no".
4. Encourage students to create their own questions. However, prior to beginning the game, model examples of appropriate questions to ask and students can use these questions as well.
5. For example: Am I a large animal? , Am I white in colour? , Do I live on land? , Am I a place to live? etc.
6. Once students have found their identity, they then have to find the person who has their matching card (animal must match to its correct habitat and vice versa).

7. Have students return to the carpet and discuss what cards they had and how their animal uses camouflage as a defence mechanism in their habitat.
8. Select pairs of students to present their matched pairs to the whole class.

Adaptations:

All accommodations must take into account the student's Individual Education Plan. All of the learning tasks and activities are created to accommodate the needs of students at different ability levels. The lesson plan includes pictures and/or examples of a step–by–step process, lists, and graphic organizers to enhance learning. The series of pictures are used to break tasks into more understandable steps. Many of the learning activities provide opportunities for peer or group interactions, encouraging the use of cooperative learning/social skills and risk taking. Adaptations can be made in the following manner:

- Alternatives to written tasks (culminating task and the Mind Map), such as drawing, pointing to the correct answers, and fill-in-the blanks could be useful. Keypads, word processors and writing software can also be used to support the writing tasks.
- Reduction in the length or number of written responses (e.g., for the turtle camouflage-have students only complete the "easy to see" and the "hardest to see" rows of the student work sheet)
- Students should be given extended timelines for task completion if required.
- All materials, equipment, and manipulatives should be labelled with text and visual aids.
- Students can be given exemplars (e.g., sample of a completed camouflaged butterfly and part of the turtle camouflage worksheet to demonstrate the expectations of the task).

Teacher Reflections:

Name: _____ **Date:** _____

Learning about Camouflage Worksheet

1. Work with your partner.

2. Use the red, blue, brown, green, and yellow turtles to see if you can camouflage them on the ocean picture, then on the forest picture and then on the desert picture.

3. Colour the top row of the chart if the turtle is hard to see. This means it is very well camouflaged.

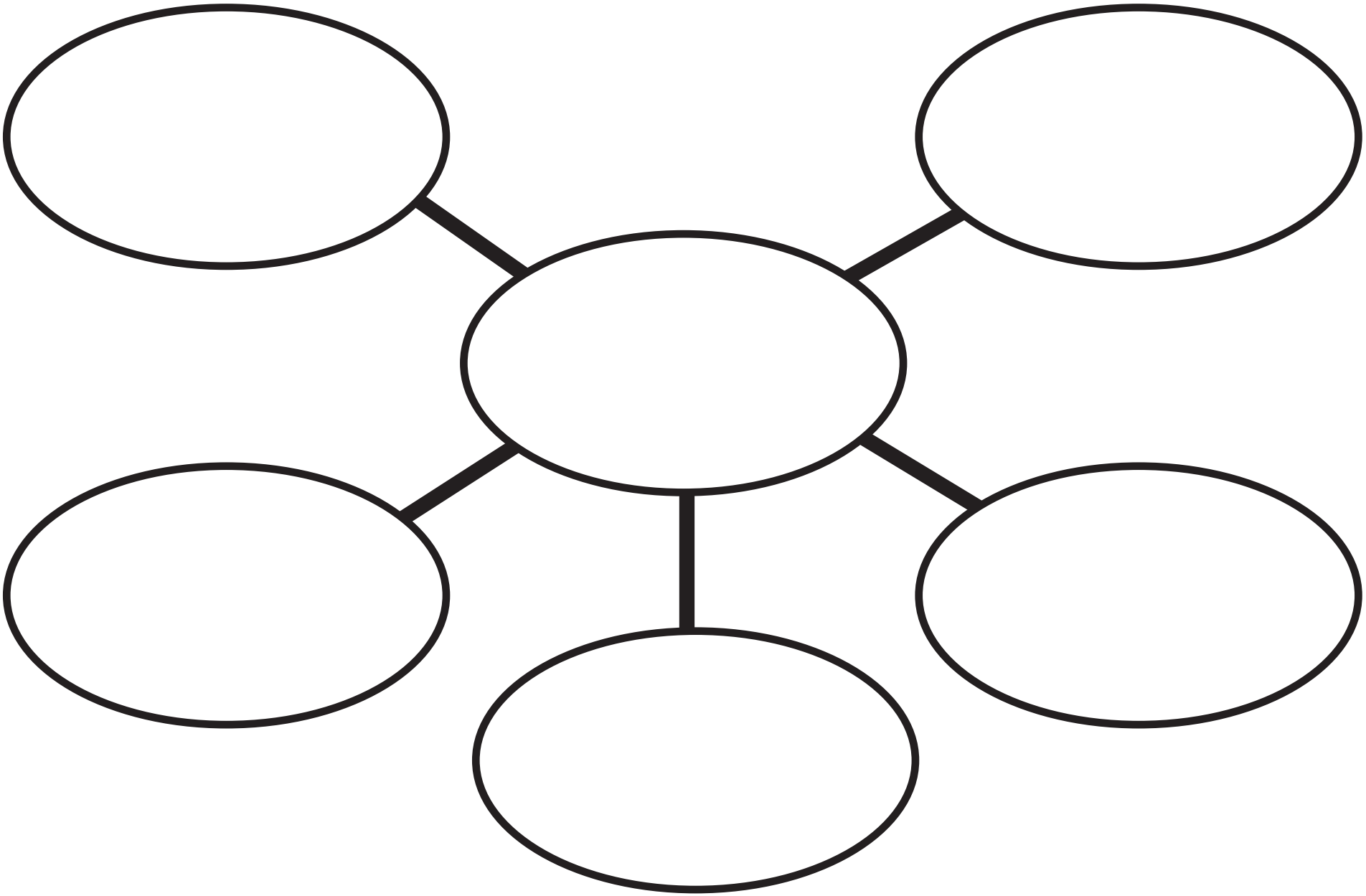
4. Colour the bottom row of the chart if the turtle is easy to see. This means it is not camouflaged very well.

5. Colour the middle row of the chart if you can see the turtle a little bit.

Is it Camouflaged?	**Ocean** 	**Forest** 	**Desert** 
Hard to see 			
Can see a little 			
Easy to see 			

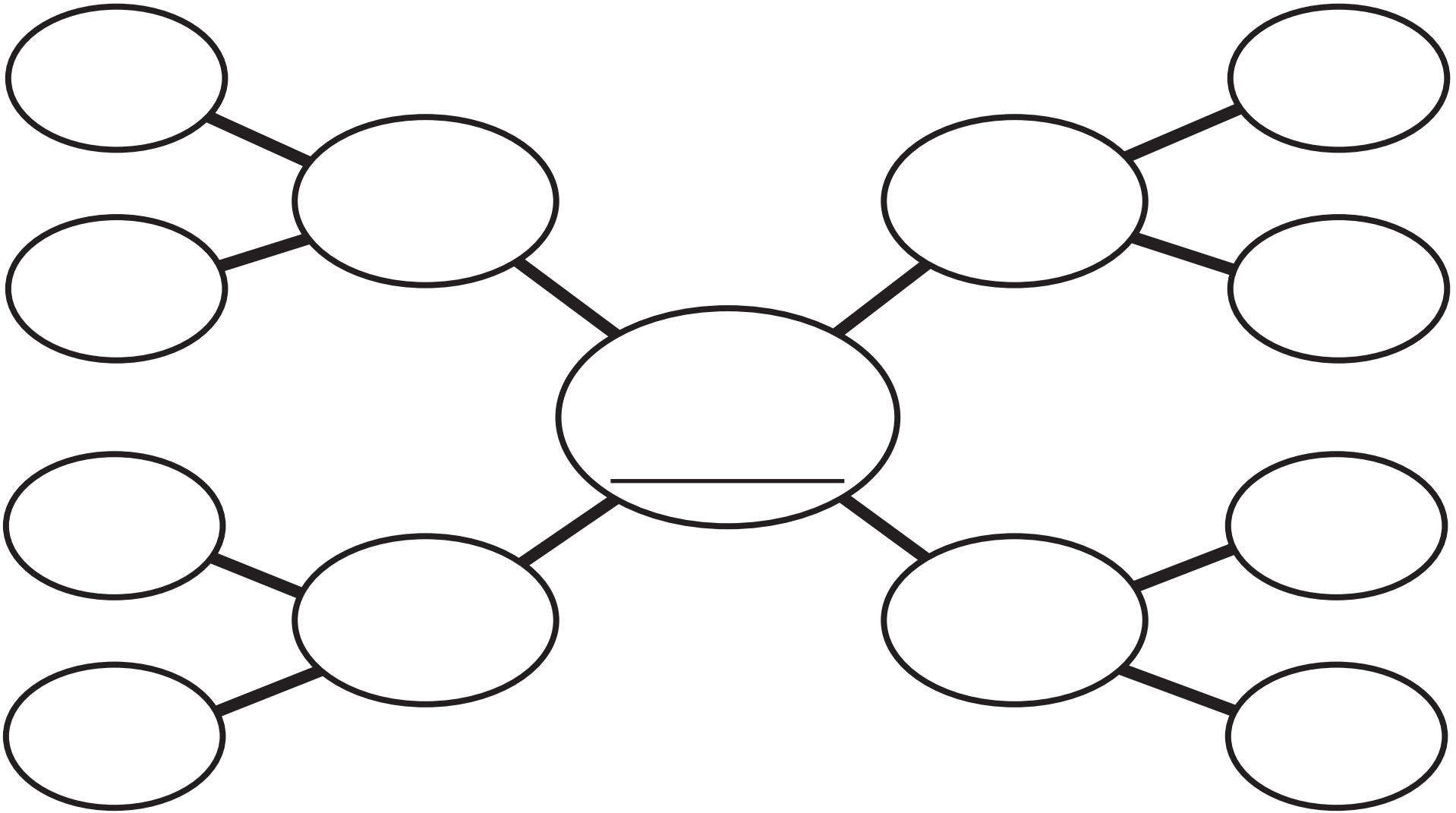
Cluster Map

Name: _____ **Date:** _____



Mind Web

Name: _____ Date: _____



Air

BLM 1.1.a

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Shelter

BLM 1.1.a

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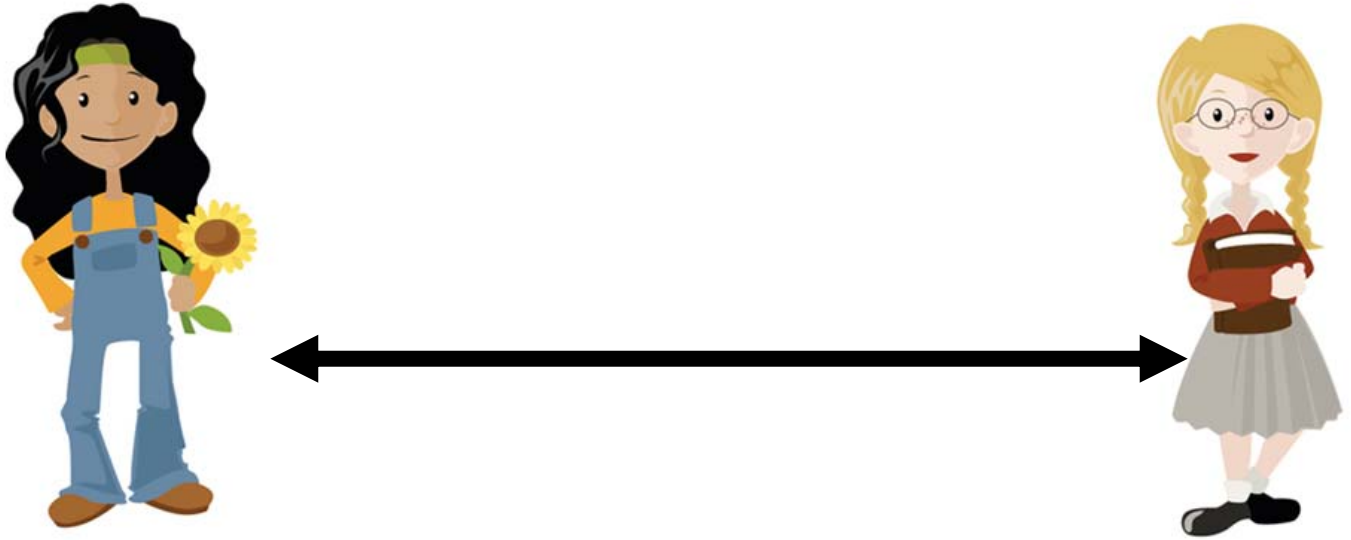
Space



BLM 1.1.a

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Sunlight

BLM 1.1.a

EcoKids
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Water

BLM 1.1.a

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Camouflage

Human Example

Person in the Army

BLM 1.1.b

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Camouflage

Animal Example

Rabbit

BLM 1.1.b

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Camouflage

Animal Example

Lizard

BLM 1.1.b

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Mimicry

Human Example

Rabbit Costume

BLM 1.1.b

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Mimicry

Animal Example

Monarch Butterfly

Viceroy Butterfly

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Warning Colours

Human Example

Crossing Guard

BLM 1.1.b

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Warning Colours

Animal Example

Arrow Poison Frog

BLM 1.1.b

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Animal Defences

Human Example

Football Helmet

BLM 1.1.b

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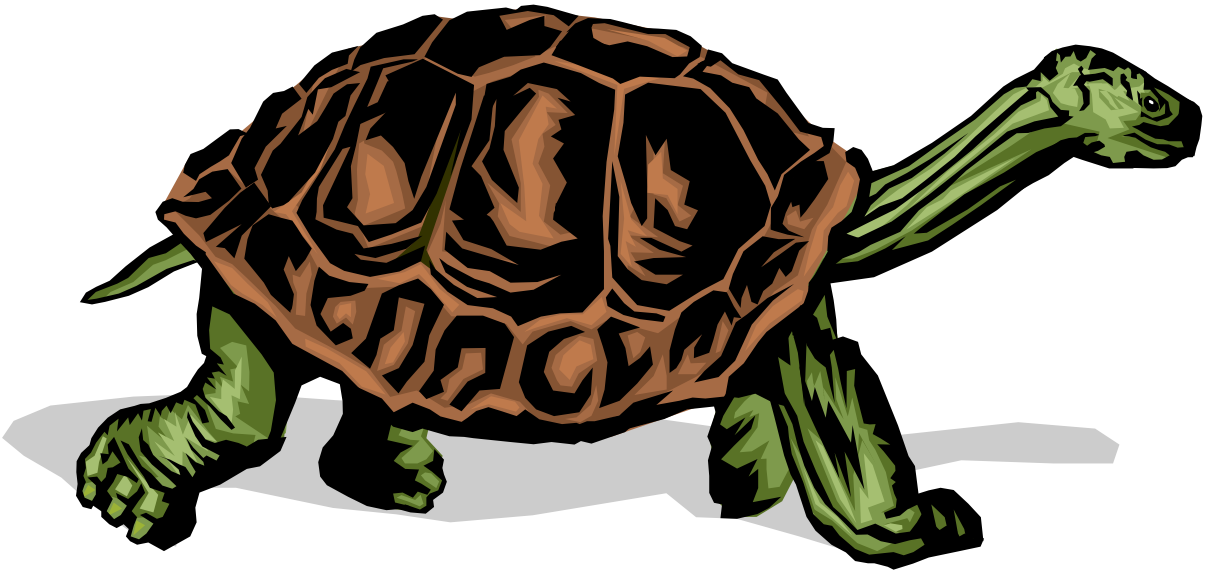
Animal Defences

Animal Example



Shell of a Turtle

BLM 1.1.b

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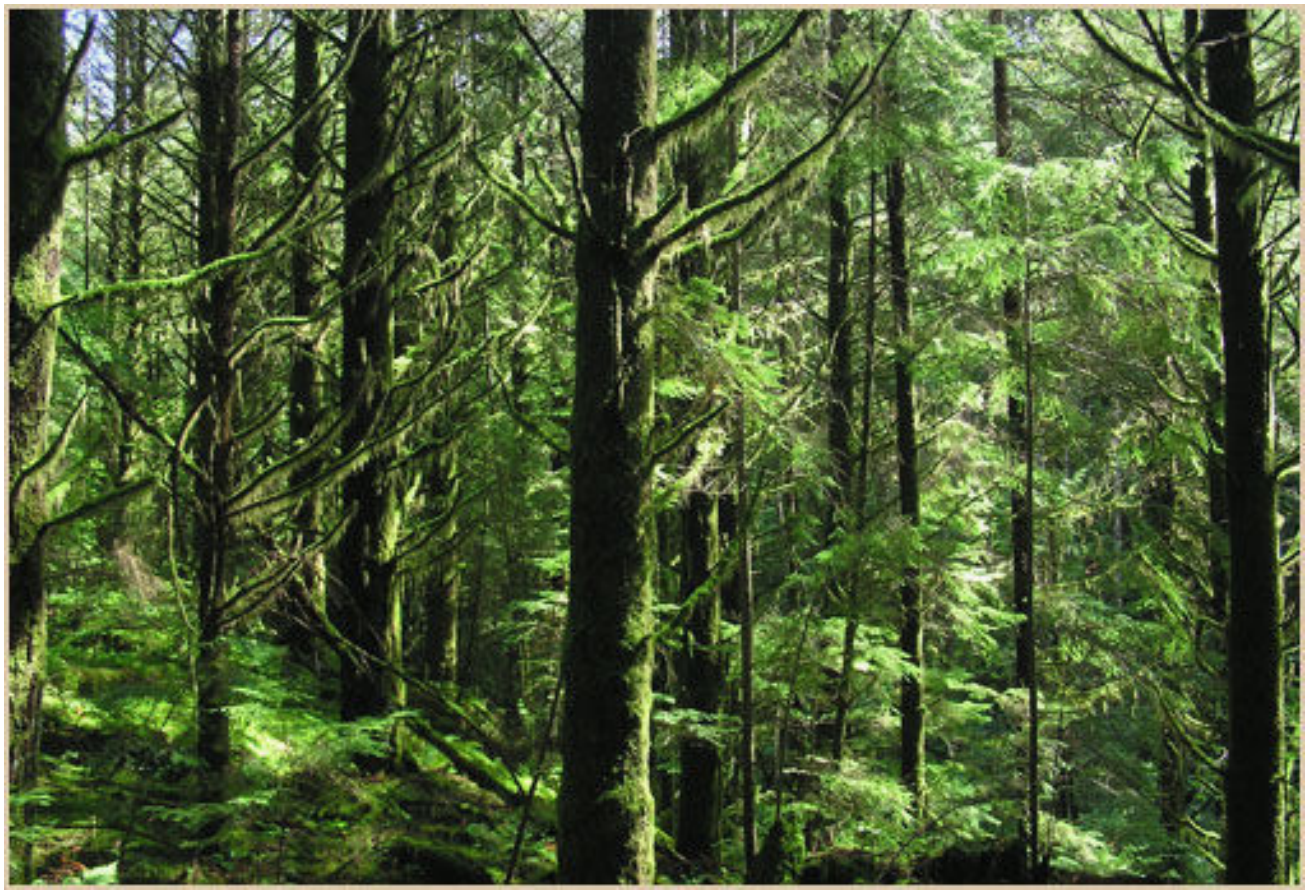
Habitat



Forest

BLM 1.1.c

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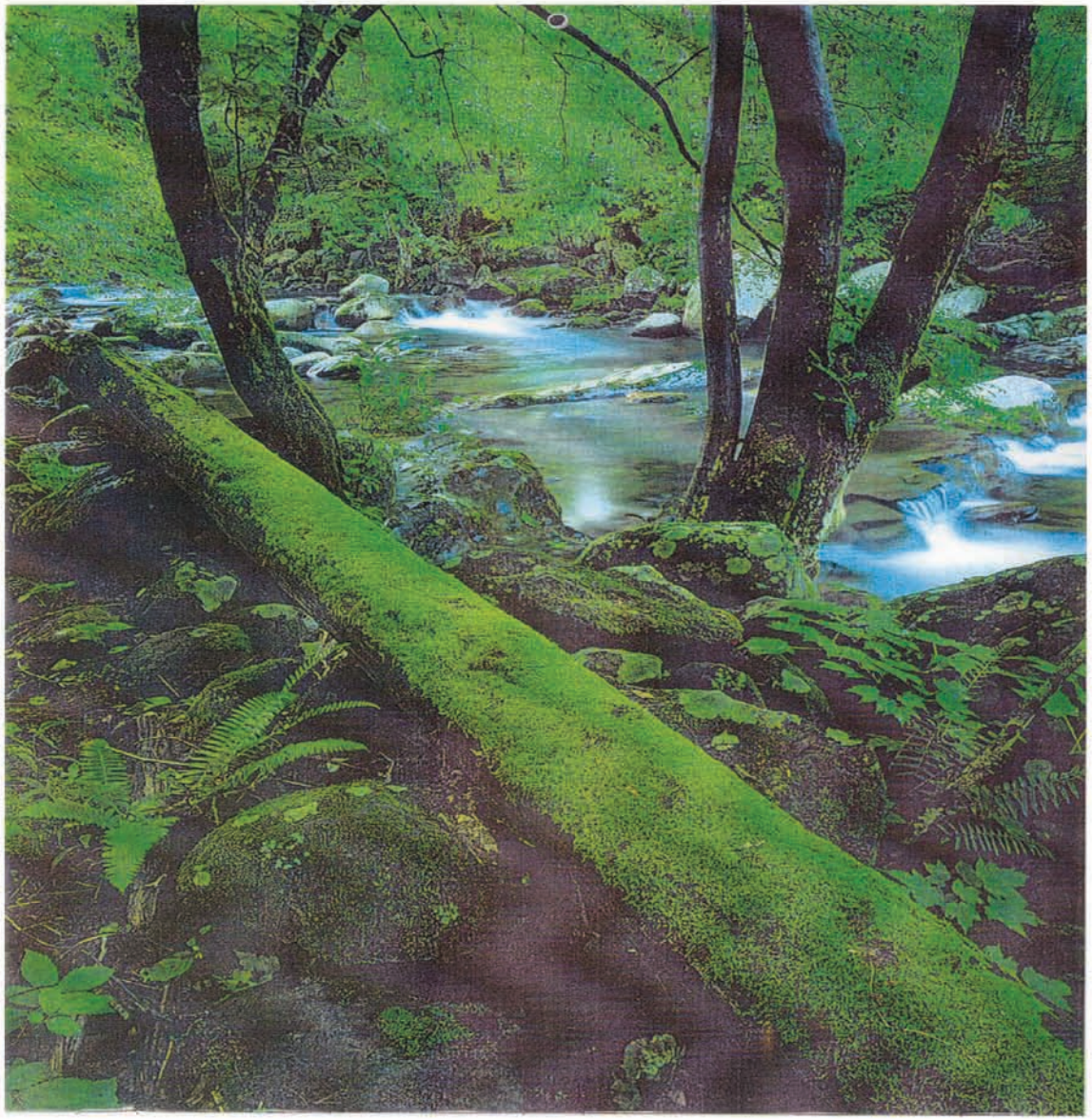

FOREST

BLM 1.2.c

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OCEAN

BLM 1.2.c

EcoKids
EARTH DAY CANADA

DESERT

BLM 1.2.c

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Turtle Camouflage Task Card

1. Work with your partner.

2. Use the red, blue, brown, green, and yellow turtles to see if you can camouflage them on the ocean picture.

3. Colour the top square of the chart if the turtle is hard to see. This means it is very well camouflaged.

4. Colour the bottom square of the chart if the turtle is easy to see. This means it is not camouflaged very well.

5. Colour the middle square of the chart if you can see the turtle a little bit.

6. Repeat this process for the forest picture.

7. Repeat this process for the desert picture.

BLM 1.2.d

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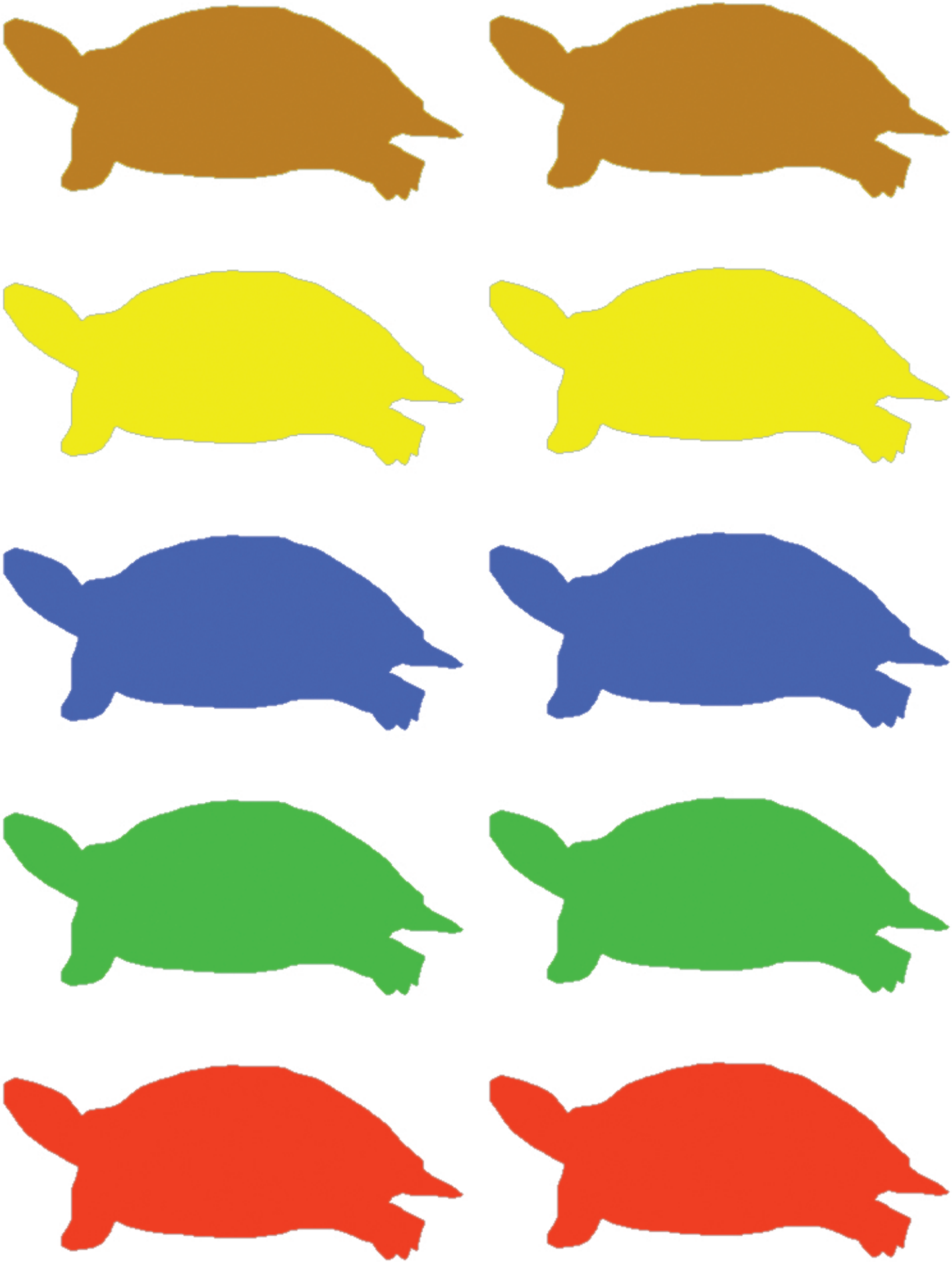
EARTH DAY CANADA



Checklist for Turtle Camouflage

Name: _____ **Date:** _____

1. **Identifies and differentiates between the camouflaged, semi camouflaged, and uncamouflaged turtles for each of the three environment pictures:**

- ☐ **With limited detail and accuracy.**
- ☐ **With some detail and accuracy.**
- ☐ **With considerable detail and accuracy.**
- ☐ **Accurately with extensive detail.**

2. **Collaborates with partner or small group to complete the required task:**

- ☐ **Sometimes contributes to the group task.**
- ☐ **Works with group but requires some cues to stay on task.**
- ☐ **Supports the work of the group, seeking support only when needed.**
- ☐ **Demonstrates leadership and provides direction to facilitate group work, requiring limited or no support.**

3. **Class Participation:**

- ☐ **Rarely talks during the discussion or is off the topic. Offers a few ideas to the discussion.**
- ☐ **Sometimes participates in class discussions with encouragement. Ideas are on topic.**
- ☐ **Shares freely and explains with details. Makes connections to what others say.**
- ☐ **Talk inspires others. Supports and leads others in discussion.**

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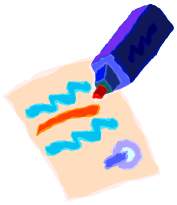
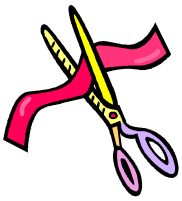
Make a Butterfly

1. Write your name on the back of your butterfly.



2. Colour your butterfly.

3. Cut out your butterfly along the black line.



4. Put a piece of tape on the back of your butterfly.

5. Put your butterfly on something that is the same colour as your butterfly. Remember to camouflage your butterfly.

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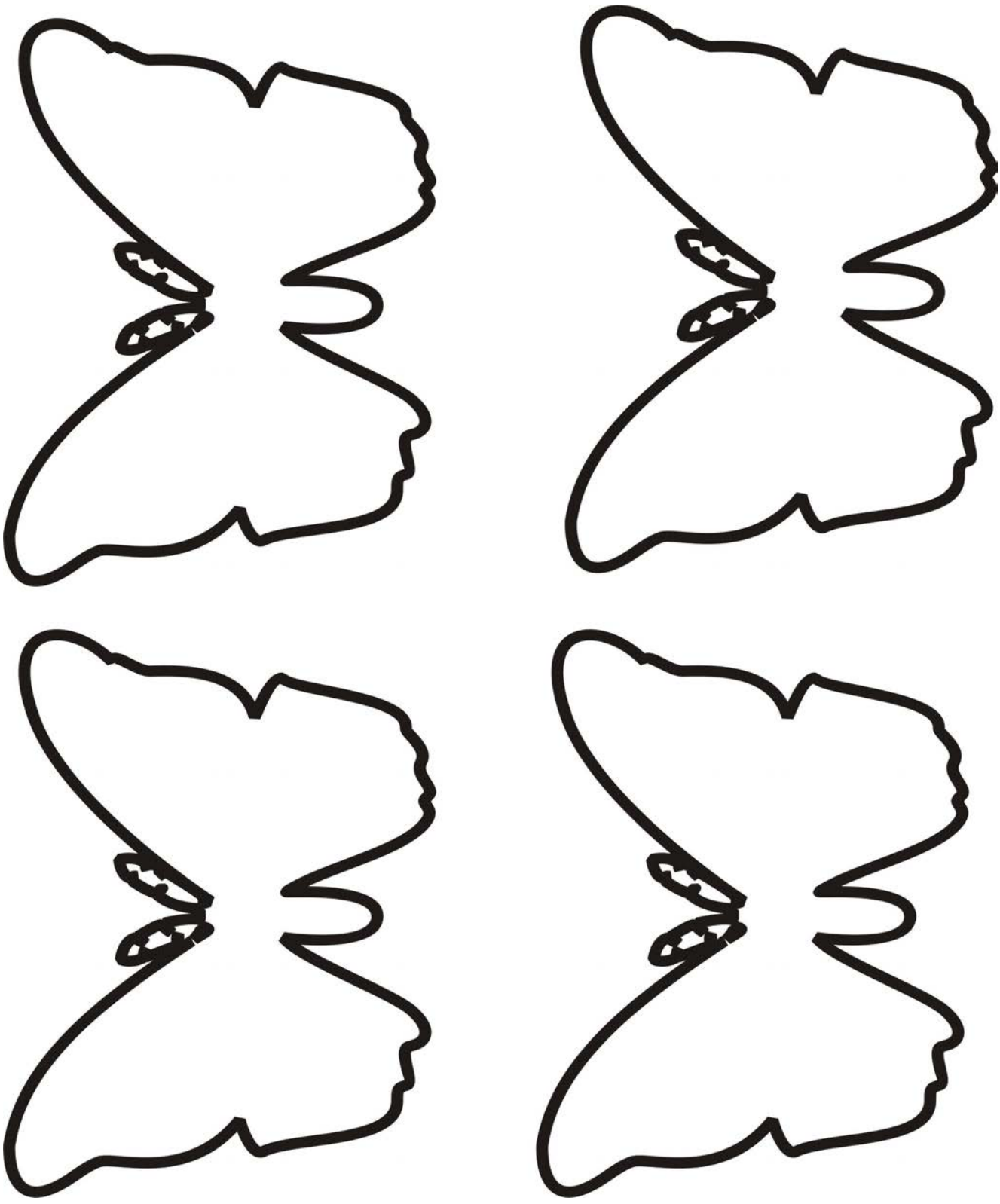
Butterfly Template for Butterfly Camouflage Game



BLM 1.3.a

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Flycatcher Cards

Flycatcher Bird

Flycatcher Bird

Flycatcher Bird

Flycatcher Bird

BLM 1.3.b

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Butterfly Camouflage

Indian Leaf Butterfly

BLM 1.3.d

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Butterfly Camouflage

BLM 1.3.d

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Butterfly Camouflage

Swallowtail Butterfly

BLM 1.3.d

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Butterfly Camouflage

Owl Butterfly

BLM 1.3.d

EcoKids
EARTH DAY CANADA

Butterfly Camouflage

Glasswing Butterfly

BLM 1.3.d

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Camouflage Concentration

1. Turn over 1 card from the pile of cards.

2. Look at the card carefully.

3. Is it a picture of an animal?
   Then turn over another card to find its habitat card.

   OR

Photo by Christopher
flickr.com

4. Is it a picture of a habitat?
   Then turn over another card to find the animal that lives there.

5. Remember to only draw 2 cards at a time.

Photo by Christopher
flickr.com

6. If you have a match of an animal and its habitat, keep the pair and go again.

7. No match. Flip the cards over and the next person goes.

8. Play until all of the cards have been matched.

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Camouflage Concentration Game Worksheet

Name: _____ Date: _____

Draw the animals that you found.	Draw the habitat of each animal.	Explain how the animal uses camouflage. Does it have stripes?  Is it a certain colour? 
		

BLM 1.4.b

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Rubric for *Camouflage Concentration* Game

Skills	Level 1	Level 2	Level 3	Level 4
Knowledge and Understanding: • understanding of basic concepts for animal camouflage • students can identify various animals that use camouflage as a defence strategy and match them to their habitats	• demonstrates limited knowledge and understanding of content • demonstrates limited ability to make written and pictorial explanations that are complete, accurate and detailed	• demonstrates some knowledge and understanding of content • demonstrates some ability to make written and pictorial explanations that are complete, accurate and detailed	• demonstrates considerable knowledge and understanding of content • written and pictorial explanations are complete, accurate and detailed	• demonstrates thorough knowledge and understanding of relevant content • written and pictorial explanations are complete, accurate and extensively detailed
Communication: • expresses and organizes ideas and information in oral, visual and written forms • examples given • vocabulary	• expresses and organizes ideas and information in oral, visual and written forms with assistance (needs much prompting) • provides a few examples through words and/or pictures • uses scientific vocabulary with limited effectiveness	• expresses and organizes ideas and information in oral, visual, and written forms with limited assistance (needs some prompting) • provides some examples using words and/or pictures • uses scientific vocabulary with some effectiveness	• expresses and organizes ideas and information in oral, visual and written forms independently (no prompting needed) • provides several examples using words and pictures • uses scientific vocabulary with considerable effectiveness	• expresses and organizes ideas and information in oral, visual and written forms independently and confidently • provides many detailed examples using words and pictures • uses scientific vocabulary with a high degree of effectiveness
Thinking and Investigation: • critical thinking processes and inquiry skills demonstrated during the camouflage concentration game	• uses the required skills and strategies with limited effectiveness	• uses the required skills and strategies with some effectiveness	• uses the required skills and strategies with considerable effectiveness	• uses the required skills and strategies with a high degree of effectiveness

Camouflage Concentration Game Cards

OWL BUTTERFLY

TREE BOA

COPPERHEAD SNAKE

POLAR BEAR

STICK INSECT

ALLIGATOR

BLM 1.4.a

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Camouflage Concentration Game Cards

ARCTIC FOX

DEER

FROG

LIZARD

STINGRAY

FISH

BLM 1.4.a

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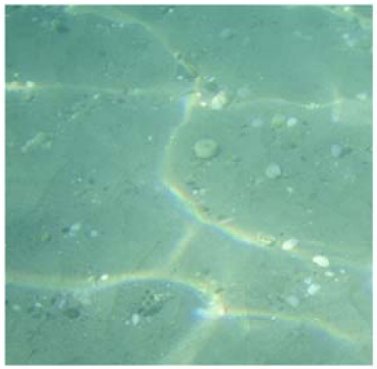
Camouflage Concentration Game Cards

ARCTIC 	**FOREST IN WINTER** 	**TREE** 
ROCK 	**BOTTOM OF THE OCEAN** 	**CORAL** 

BLM 1.4.a

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EARTH DAY CANADA

Camouflage Concentration Game Cards

TREE 	**TREE** 	**FOREST FLOOR** 
ICE 	**LEAVES** 	**SWAMP** 

BLM 1.4.a

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EARTH DAY CANADA

Student Criteria For Science and Technology Journal

In my Science and Technology Journal,

I will try to:

1. **use science and technology words**

2. **give examples of things using words and pictures**

3. **tell all I know about what I did**

4. **give information to the reader**

5. **use capitals and periods in my sentences**

BLM 1.5.a

EcoKids
EARTH DAY CANADA

SCIENCE AND TECHNOLOGY JOURNAL PAGE

Rubric for Science Learning Log/Journal

Skills	Level 1	Level 2	Level 3	Level 4
Knowledge and Understanding: • understanding of basic concepts • explaining concepts	• demonstrates limited knowledge and understanding of content • demonstrates limited ability to make written and pictorial explanations that are complete, accurate and detailed	• demonstrates some knowledge and understanding of content • demonstrates some ability to make written and pictorial explanations that are complete, accurate and detailed	• demonstrates considerable knowledge and understanding of content • written and pictorial explanations are complete, accurate and detailed	• demonstrates thorough knowledge and understanding of relevant content • written and pictorial explanations are complete, accurate, and extensively detailed
Communication: • independence • writing of observations • examples given • vocabulary	• writes ideas with assistance (needs much prompting) • provides a few examples through words and/or pictures • uses scientific vocabulary with limited effectiveness	• writes ideas with limited assistance (needs some prompting) • provides some examples using words and/or pictures • uses scientific vocabulary with some effectiveness	• independently writes ideas (no prompting needed) • provides several examples using words and pictures • uses scientific vocabulary with considerable effectiveness	• independently and confidently writes ideas • provides many detailed examples using words and pictures • uses scientific vocabulary with a high degree of effectiveness
Thinking and Investigation: • inquiry and design skills demonstrated during hands-on inquiry into habitats and communities	• uses the required skills and strategies with limited effectiveness	• uses the required skills and strategies with some effectiveness	• uses the required skills and strategies with considerable effectiveness	• uses the required skills and strategies with a high degree of effectiveness
Application: • making connections between science, technology, society and the environment	• makes connections between science, technology, society and the environment with limited effectiveness	• makes connections between science, technology, society and the environment with some effectiveness	• makes connections between science, technology, society and the environment with considerable effectiveness	• makes connections between science, technology, society and the environment with a high degree of effectiveness

Student Feedback and Reflection

Name: _____ Date: _____

Place a ✓ in the 2 boxes that best describe you in your group work today.

Circle 1 behaviour that you want to make sure you use tomorrow.

☐ I stayed with my group.

☐ I made sure my voice did not get TOO LOUD!

☐ I participated cooperatively.

☐ I helped others if they needed help.

☐ I helped clean up and made sure that the materials were put back in "good shape".

☐ I listened to everyone's ideas.

☐ I shared my ideas with the group.

☐ I was kind and respectful to everyone in my group.

Anecdotal Record Sheet

BLM 1.5.c

Mini Landfill

Objectives:
Help students understand what happens to garbage that goes into a landfill.

What you need:

- Small individual-sized empty water bottles (one per student or per group)
- Soil
- Paper, foil or any other non-food items
- Scrap food (popcorn, bread, fruit peel, etc.)
- Water
- Plastic wrap
- Bird seeds
- Rubber band

What you do

1. Give a water bottle to each student or group. Have them cut the top quarter off the bottle. (You can also have them pre-cut before giving them to students). The bottle tops can be used as scoop for the soil.
2. There are seven layers to the "landfill." The students place a little soil to the bottom of the bottle, add water then non-food items (paper and foil, etc.), layer soil, add water then food items (popcorn, fruit peel, bread), layer more soil, add water then some birdseed and top with a thin layer of soil.
3. Students place a piece of plastic wrap and secure it around the top of the bottle with a rubber band. Lead the students in a discussion what might happen to the items over a period of time.
4. Allow the "landfills" to sit for about three weeks or more. After the wait, students take off the plastic wrap and pour out their contents to see what happened. They log what happened to each item and compare it to their predictions. Each year they are surprised at the results (and so are some of the teachers!)