



ACTIVITY 10

A Year in the Life of a Cow

RANCH LIFE SERIES / BOOK 1 / RANCHING AND LIVESTOCK

Chapter 7

Content Area:

Science

Topic:

Organism Survival Throughout the Seasons

Objective:

Students will understand how the changing of seasons can change conditions and affect survival of animals.

Texas Essential Knowledge and Skills (TEKS):

1.12A, 2.13AB, 3.12A, 4.12A, 5.12A



A Year in the Life of a Cow

GAME MATERIALS:

- Minimum of 10 student players
- SECURITY BRIEFING (page A10-7): 1 per student or student group
- A YEAR IN THE LIFE OF A COW - TOKENS #1-7 (pages A10-9 thru A10-13): See instructions below
- 1 bandana
- 3 bright, oversized t-shirts
- Flags, 1 for each student - flags can be made of strips of felt that will be tucked into students' clothing and removed/added during game play
- Cones or ribbon to designate playing area
- Envelopes, 1 for each student
- THE BOTTOM LINE (page A10-16): 1 per student or student group

READING STRATEGY:

Students will read Chapter 7 (pages 43-76) before they play the game.

GAME PREP:

1. You will need to make color-coded game tokens using YEAR IN THE LIFE OF A COW - TOKENS #1-7 according to the table provided below. Each token represents a different resource and its nutritional value:
 - a. W-1 TOKENS #1 (yellow) represent Winter Grass tokens, low nutritional value = game value of 1
 - b. H-2 TOKENS #2 (brown) represent Hay tokens, nutritional value of 10-12% = game value of 2
 - c. C-5 TOKENS #3 (orange) represent Cottonseed Cake tokens, nutritional value of 41% = game value of 5
 - d. G-10 TOKENS #4 (green) represent natural growing ranch grasses like Prairie Grass tokens, high nutritional value = game value of 10
 - e. S-5 TOKENS #5 (blue) represent the water source of a Stream tokens = game value of 5
 - f. C-10 TOKENS #6 (blue) represent the water source of a Creek tokens = game value of 10
 - g. P-15 TOKENS #7 (blue) represent the water source of a Pond tokens = game value of 15
2. You will not explain the A YEAR IN THE LIFE OF A COW - TOKENS to the students prior to the game. Students should only be told that the TOKENS represent food and water resources on the ranch.

Referencing the table on the following page, make the TOKENS for the game. The number of TOKENS you will use for each of the four seasonal rounds of the game will change, as different resources will be available different times of the year.

Use the tables provided for each season to prep the upcoming round while students are busy calculating their TOKEN totals.

Mark your pasture (game area) with cones or ribbon so students know where to find A YEAR IN THE LIFE OF A COW - TOKENS. Distribute the TOKENS in a way that simulates real conditions.

Continued on next page



TOKEN distribution examples:

- S-5 and C-10 TOKENS (Stream and Creek) should “flow” through the pasture/ranch
- P-15 TOKENS (Pond) should be arranged together in an organic circle shape
- W-1 and G-10 TOKENS (Winter Grass and Prairie Grass) should be distributed equally throughout the playing area, in the different areas where specific varieties would grow
- H-2 TOKENS (Hay) should follow a path, as if found throughout a pasture
- C-5 TOKENS (Cottonseed Cake) should be put in one spot

TOTAL NUMBER OF TOKENS REQUIRED FOR GAME						
COLOR	LABEL	REPRESENTS	NUMBER OF STUDENTS IN CLASS			
			10-15	16-20	21-25	26-30
Yellow	W-1	Winter Grass	45	40	50	60
Brown	H-2	Hay	25	30	40	50
Orange	C-5	Cottonseed Cake	40	50	60	70
Green	G-10	Prairie Grass	50	60	70	80
Blue	S-5	Stream	10	13	15	17
Blue	C-10	Creek	20	25	30	35
Blue	P-15	Pond	40	50	60	70

- Students should have an envelope that represents their stomach that will hold their consumed items. Cows are grazers and move slowly in a pasture unless there is a predator. Students should move in slow motion to represent grazing.

If a student runs or walks quickly they will use more energy than normal and the teacher should empty their ENVELOPE to simulate quick energy consumption.

- The game will be played in four seasonal rounds (spring, summer, fall, winter). Each round will last 2 minutes. After each round students should return to a common area and tabulate their TOKENS for the round using the A DAY IN THE LIFE OF A COW - CALCULATION FORM.
- Read the SECURITY BRIEFING aloud before students begin.

STUDENT SKILLS ASSESSMENT:

- Have students complete THE BOTTOM LINE worksheet at the end of the game.



A Year in the Life of a Cow

GAME INSTRUCTIONS:

Teacher will distribute TOKENS for first round. Once the round is completed, the teacher will redistribute for subsequent rounds until all seasons have been played - a total of four rounds.

* ROUND 1 - SPRING

SPRING TOKEN DISTRIBUTION						
COLOR	LABEL	REPRESENTS	NUMBER OF STUDENTS IN CLASS			
			10-15	16-20	21-25	26-30
Yellow	W-1	Winter Grass	30	40	50	60
Brown	H-2	Hay	0	0	0	0
Orange	C-5	Cottonseed Cake	0	0	0	0
Green	G-10	Prairie Grass	50	60	70	80
Blue	S-5	Stream	10	13	15	17
Blue	C-10	Creek	20	25	30	35
Blue	P-15	Pond	40	50	60	70

CONDITIONS:

This round will represent spring conditions. The spring typically has abundant rain fall and there is a lot of plant growth. H-2 TOKENS and C-5 TOKENS will not be used in this round.

LIMITATIONS:

This season is also when many cows will have calves. Select 2 or 3 students to have a calf during this round. The calf will not gather food TOKENS because it drinks milk from its mother. The calf must hold hands or link arms with the mother during the round.

After students gather TOKENS for 2 minutes they will return to the common area signaling the changing of seasons. At this time you will reveal what the TOKENS represent and the value of the TOKENS. Students should tabulate their TOKENS using the A DAY IN THE LIFE OF A COW - CALCULATION FORM provided. If a student consumes 25 pounds of food and 30 gallons of water they survived the spring. The mother cows are producing milk for their young and must consume 50 pounds of food for the baby to survive.

Students will learn that some types of food are more nutritious and seek out those TOKENS. This simulates the learned behaviors of the cows after the first year of life and the competition for resources. *(Cows are intelligent, they learn quickly, and most breeds are very adaptable.)*

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* ROUND 2 - SUMMER

SUMMER TOKEN DISTRIBUTION						
COLOR	LABEL	REPRESENTS	NUMBER OF STUDENTS IN CLASS			
			10-15	16-20	21-25	26-30
Yellow	W-1	Winter Grass	0	0	0	0
Brown	H-2	Hay	0	0	0	0
Orange	C-5	Cottonseed Cakes	0	0	0	0
Green	G-10	Prairie Grass	40	50	60	70
Blue	S-5	Stream	DO NOT RESTOCK WATER			
Blue	C-10	Creek				
Blue	P-15	Pond				

CONDITIONS:

This round will represent the summer. During this season the water begins to dry up so there will be less water available. The W-1 TOKENS are removed because the dormant winter grass has been replaced with ranch grass. H-2 TOKENS and C-5 TOKENS are not needed in the summer.

LIMITATIONS:

The summer season presents additional challenges for the cattle. During the summer months porcupines roam the pasture causing trouble for cattle who get too close and get quilled in the face. Select one student who will wear a BLINDFOLD during this round to represent a cow who was blinded by the quills of a porcupine.

Another hazard during the warm months are rattlesnakes. Unless a rattlesnake bites a cow in the face they can usually survive an attack because of their large size. Select a student to hop during the round to represent a rattlesnake bite to the leg.

After 2 minutes have students come to the common gathering place and tabulate their food and water TOKEN totals. Students should tabulate their TOKENS using the A DAY IN THE LIFE OF A COW - CALCULATION FORM provided. If a student consumes 25 pounds of food and 30 gallons of water they survived the summer.

This round will teach students that cows must not only consume enough food and water to survive they must also be careful of wildlife in the pasture.



* ROUND 3 - FALL

FALL TOKEN DISTRIBUTION						
COLOR	LABEL	REPRESENTS	NUMBER OF STUDENTS IN CLASS			
			10-15	16-20	21-25	26-30
Yellow	W-1	Winter Grass	25	30	40	45
Brown	H-2	Hay	25	30	40	45
Orange	C-5	Cottonseed Cake	20	30	40	45
Green	G-10	Prairie Grass	20	30	40	45
Blue	S-5	Stream	10	13	15	17
Blue	C-10	Creek	20	25	30	35
Blue	P-15	Pond	40	50	60	70

CONDITIONS:

This round will represent the fall. During this season we see the return of rain and water is more abundant on the ranch. As the length of days and temperature decrease the producers become dormant. Feed runs will begin to supplement the nutrients needed by the cows. The playing area will now include H-2 TOKENS and C-5 TOKENS.

LIMITATIONS:

During the fall there is an increase of predator behavior because food supplies begin to diminish. Select one student to be a coyote during the round. The student must walk in the pasture and seek out a cow that is separated from the herd. Isolated cows can be tagged by removing their FLAGS.

After 2 minutes have students come to the common gathering place and tabulate their food and water totals. Students should tabulate their TOKENS using the A DAY IN THE LIFE OF A COW - CALCULATION FORM provided. If a student consumes 25 pounds of food and 30 gallons of water they survived the fall.

This round will teach students that predators in a pasture are very dangerous for cattle that do not stay with the herd.

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* ROUND 4 - WINTER

WINTER TOKEN DISTRIBUTION						
COLOR	LABEL	REPRESENTS	NUMBER OF STUDENTS IN CLASS			
			10-15	16-20	21-25	26-30
Yellow	W-1	Winter Grass	45	30	40	45
Brown	H-2	Hay	20	30	40	50
Orange	C-5	Cottonseed Cake	40	50	60	70
Green	G-10	Prairie Grass	0	0	0	0
Blue	S-5	Stream	5	7	9	10
Blue	C-10	Creek	10	25	13	20
Blue	P-15	Pond	30	35	40	45

CONDITIONS:

This round will represent winter. This season is the most difficult for cattle to survive. The cattle rely on the rancher for food supplements because winter grass is not nutritious enough for a cow to survive through the winter. If the weather prevents the rancher from moving around the pastures to feed the cattle they must go without food. Water supplies must also be kept available for the cattle in severe cold temperatures. G-10 TOKENS will not be used in this round.

LIMITATIONS:

During the winter there is an increase of predator behavior because food supplies begin to diminish. Select three students to be coyotes during the round. The students must walk in the pasture and seek out a cow that is separated from the herd. Isolated cows can be tagged by removing their FLAGS.

After 2 minutes have students come to the common gathering place and tabulate their food and water TOKEN totals. Students should tabulate their TOKENS using the A DAY IN THE LIFE OF A COW - CALCULATION FORM provided. If a student consumes 25 pounds of food and 30 gallons of water they survived the winter.

This round will teach students that as food decreases predators become most dangerous during the winter. Cattle that have white coloring are able to use camouflage to help protect them from predators during the snowy winter months.

A Year in the Life of a Cow



SECURITY BRIEFING –

WORDS OF WISDOM FROM HANK THE COWDOG:

Being the Head of Security is the most important job on the ranch, but Loper has to make sure all the **animals** on the ranch have their **basic needs** met (**food** to eat and water to **drink**). I guess that makes his job the second most important...

Anyways, you may not know, but a cow eats a lot of food every day! One cow will eat about 25 pounds of food and drink 30 gallons of water every day! That is 175 pounds of food and 210 gallons of water a week. Those numbers make me a little nervous because I never know if Loper will have enough money to get around to buying my dog food. I eat one bowl of dog food and have one bowl of water a day making my **consumption** a low priority on Loper and Sally May's to-do list.

Now where was I? Oh yes, cows need a lot of **natural resources** to **survive** the different **seasons**.

This game is going to let you experience a year in the life of a cow!

GAME INSTRUCTIONS:

Your teacher will read your instructions to you.

During the game, you will use your **A DAY IN THE LIFE OF A COW - CALCULATION FORM** to calculate your **TOKEN** totals for each round.

WRAP UP:

Fill out **THE BOTTOM LINE** worksheet after you have completed the game.



A Year in the Life of a Cow

CALCULATION FORM

Use the space below and the back of the page for your calculations, then chart your results in the table below.

SEASONS	TOKEN TOTALS	SURVIVAL			
		Food 25 lb	Water 30 G		
Round 1 - SPRING					
Food TOKENS		Circle	Yes	OR	No
Water TOKENS		Circle	Yes	OR	No
Round 2 - SUMMER					
Food TOKENS		Circle	Yes	OR	No
Water TOKENS		Circle	Yes	OR	No
Round 3 - FALL					
Food TOKENS		Circle	Yes	OR	No
Water TOKENS		Circle	Yes	OR	No
Round 4 - WINTER					
Food TOKENS		Circle	Yes	OR	No
Water TOKENS		Circle	Yes	OR	No

W-1 W-1 W-1 W-1 W-1

W-1 W-1 W-1 W-1 W-1

W-1 W-1 W-1 W-1 W-1

W-1 W-1 W-1 W-1 W-1

W-1 W-1 W-1 W-1 W-1

W-1 W-1 W-1 W-1 W-1

W-1 W-1 W-1 W-1 W-1

W-1 W-1 W-1 W-1 W-1

H-2	H-2	H-2	H-2	H-2
H-2	H-2	H-2	H-2	H-2
H-2	H-2	H-2	H-2	H-2
H-2	H-2	H-2	H-2	H-2
H-2	H-2	H-2	H-2	H-2
H-2	H-2	H-2	H-2	H-2
H-2	H-2	H-2	H-2	H-2
H-2	H-2	H-2	H-2	H-2

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G-10	G-10	G-10	G-10	G-10
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G-10	G-10	G-10	G-10	G-10
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G-10	G-10	G-10	G-10	G-10
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G-10	G-10	G-10	G-10	G-10
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G-10	G-10	G-10	G-10	G-10
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G-10	G-10	G-10	G-10	G-10
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G-10	G-10	G-10	G-10	G-10
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G-10	G-10	G-10	G-10	G-10
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C-10	C-10	C-10	C-10	C-10
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C-10	C-10	C-10	C-10	C-10
C-10	C-10	C-10	C-10	C-10
C-10	C-10	C-10	C-10	C-10

P-15	P-15	P-15	P-15	P-15
P-15	P-15	P-15	P-15	P-15
P-15	P-15	P-15	P-15	P-15
P-15	P-15	P-15	P-15	P-15
P-15	P-15	P-15	P-15	P-15
P-15	P-15	P-15	P-15	P-15
P-15	P-15	P-15	P-15	P-15
P-15	P-15	P-15	P-15	P-15

A Year in the Life of a Cow



NAME: _____ DATE: _____

THE BOTTOM LINE

A cow's life is a hard and dangerous one. A rancher must make sure the cattle's *needs* are met every day of the year, with each *season* bringing different challenges.

Answer the questions below:

1. Based on your experience as a cow, which season did you find the hardest to survive and why?
2. Based on this game, what problems could have been solved by having a cowdog? How would the cowdog have solved those problems?
3. If a rancher experienced a drought, how would that affect all the wildlife on the ranch (cows and its predators)? Would a drought affect the role of a rancher?
4. If you were a rancher, how would you solve the problem of predators and wildlife in your pasture?

