



VIRGINIA

FFA ASSOCIATION

Middle School Agriscience CDE Handbook

The Virginia FFA Association is a resource and support organization that does not select, control or supervise local chapter or individual member activities. Educational materials and resources are developed by FFA as a service to local agricultural education agencies.

The Virginia FFA Association affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer. Virginia FFA does not discriminate against employees, students, or applicants on the basis of race, color, sex, sexual orientation, disability, age, veteran status, national origin, religion, or political affiliation.



Virginia Middle School Agriscience



FFA Career Development Events

Agriscience Technology Mechanics

FFA Quiz Bowl – Written Contest and Team Tournament

Food and Fiber

Plant Science

Small Animal Care

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Middle School Career Development Events General Middle School CDE Information

The events described in this section are held each year during the State FFA Convention. The following guidelines apply to all of the events in this appendix.

- Individuals competing in events must be FFA members enrolled in a middle school agricultural education course during the current school year.
- A chapter may enter a team in each event, however, a chapter may have no more than one team in each event.
- Teams may consist of three or four members. Team ranking is determined by combining the scores of the top three students from each team. All four members are eligible for awards.
- The state winning team will receive a plaque and recognition during the final session of the state FFA convention. Team members of the state winning team each receive a medallion. Members of the top three teams receive recognition during the middle school award ceremony. The top three individual scorers receive a gold, silver or bronze medallion. All participants in the event receive a ribbon. The top third receive blue ribbons, the middle third receive red ribbons, and the other participants receive yellow ribbons.
- Tiebreakers – In the event of a tie in the team scores, the totals of the top three scorers of the individual events in the order they are listed in this CDE guide will be used. For example, the top three written test scores will be added together to break the tie. If there is still a tie in the team score, the top three Identification scores will be used. This will continue through the events until a winner is named.
- Ties in the individual scores will be handled in the same manner. In the event of a tie in the individual scoring, the scorers of the individual events in the order they are listed in this CDE guide will be used. If there is a tie in the written test results, the next section will be used to determine the high scorer. This will continue through the events until a winner is named.
- Individuals serving on teams that win a state middle school event are not allowed to compete in that particular event again.
- Contestants are not allowed to use cellular phones or similar electronic devices at any time during the event.
- Absolutely no photographing of contest materials.
- The coach of each team should provide the team number and contestant number for each individual **and** review with the students how to complete the Scantron score sheet.

Agriscience Technology Mechanics CDE

Description

The Agriscience Technology Mechanics event challenges students to explain and demonstrate safety practices, read and interpret directions, identify and use basic woodworking hand tools, select and use measuring devices, perform measuring skills, and solve problems.

Information

Teams may consist of three *or* four members. Team ranking is determined by combining the scores of the top three students from each team. Four function (non-programmable) calculators are allowed.

Event Format

The contest consists of four individual events and 2 individual practicums.

Individual Events – 400 Points

- a. **Written Test** (100 points) - participants complete a test that includes 25 multiple-choice questions (worth four points each) covering safety, use of hand and portable power tools, and basic woodworking information. The information from the test questions will come from the references listed below. (25 minutes)
- b. **Identification** (100 points) - participants identify 25 items (see attached list). The contest may utilize pictures or the actual item. (25 minutes)
- c. **Measurement/Calculation/Problem Solving activity** (100 points) - participants complete 20 activities worth 5 points each. Measuring devices will be selected from the tool identification list. Participants could be expected to measure all U. S. standard measurements to the nearest 1/16", metric to the nearest .01, angular measurements to +/- one degree and perform linear, area, and volume calculations. The measurement activity may include multiple choice questions pertaining to measuring and selection of tools. (25 minutes)
- d. **Skill Demonstration** (100 points) - participants demonstrate laboratory woodworking skills using tools selected from the tool identification list. The skill may involve project layout, demonstration of laboratory skills, and/or project construction and completion. Each school will bring one set of tools for the team to use. A list of tools will be posted on the Virginia FFA website approximately 30 days prior to convention. (25 minutes)

Practicums – 100 Points

- e. **Practicums** (50 points each) - participants will have 12.5 minutes to complete each of the 2 practicums. Examples include but are not limited to: identifying tools necessary to construct a project, creating a bill of materials, determining board feet, evaluating/judging shop projects, plan reading, and determining total material and cost for construction of a specified project. The practicum activities will be posted on the Virginia FFA Website approximately 30 days prior to convention. (25 minutes)

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Special Instructions

- All participants must provide their own industrial quality safety glasses.
- Participants must use only the tools and measuring devices supplied by contest officials except for the skill event.
- Participants should bring a clipboard, #2 pencil, and a 4 function calculator.

AGRISCIENCE MECHANICS CDE 2024

CUTTING	FASTENERS	LAYOUT	WOOD BORING	OTHER (Cont)
100 Box, Miter	200 Gun, Staple	300 Bevel, Sliding T	400 Bit, Combination	511 Glasses, Safety
101 Chisel, Wood	201 Bolt, Carriage	301 Divider	401 Bit, Countersink	512 Hammer, Curved Claw
102 Saw, Back	202 Bolt, Eye	302 Gauge, Marking	402 Bit, Plug Cutter	513 Hammer, Ripping Claw
103 Saw, Compass	203 Bolt, Lag	303 Level	403 Brace, Bit	514 Knife, Putty
104 Saw, Coping	204 Glue, Wood	304 Protractor	404 Bit, Power	515 Mallet, Wooden
105 Saw, Hand Crosscut	205 Nail, Common	305 Rule, Bench	405 Bit, Twist Drill	516 Mask, Particle
106 Saw, Hand Rip	206 Nail, Finishing	306 Rule, Folding Wood	406 Bit, Wood Auger	517 Roller, Paint
107 Saw, Keyhole	207 Nut, Hex	307 Square, Carpenter's	407 Drill, Power	518 Router
108 Saw, Sabre	208 Nut, Square	308 Square, Combination	408 Saw, Hole	519 Sander, Portable Belt
109 Saw, Scroll	209 Nut, Wing	309 Square, Try		520 Sander, Portable Finishing
110 Scraper	210 Screw, Flat Head Wood - Slotted	310 Tape, Steel		521 Screwdriver, Phillips
111 Surform	211 Screw, Flat Head Wood - Phillips		OTHER	522 Screwdriver, Standard
112 Blade, Coping Saw	212 Screw, Oval Head Wood		500 Bar, Pry	523 Vise, Bench
113 Blade, Sabre Saw	213 Screw, Pan Head Wood		501 Bar, Wrecking	524 Belt, Sanding
114 Blade, Scroll Saw	214 Screw, Round Head Wood		502 Bit, Phillips Screwdriver	525 Bit, Router
	215 Staple		503 Bit, Standard Screwdriver	526 Cloth, Drop
	216 Washer, Flat		504 Brush, Paint	527 Dowel, Wood
			505 Card, File	528 Dowel Pins
			506 Clamp, Bar	529 Lumber, Dressed
			507 Clamp, Block	530 Lumber, Rough Cut
			508 Clamp, C	531 Paint, Latex
			509 Clamp, Corner	532 Paint, Oil Based
			510 Clamp, Spring	533 Particle Board
				534 Plywood
				535 Putty, Wood
				536 Putty Stick
				537 Sandpaper
				538 Sanding Sponge

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References

This list of references is not intended to be inclusive. Other sources should be utilized and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.

Agriculture Mechanics: Fundamentals and Applications – 5th edition by Cooper and Herren, Sections 2, 3, 4 (unit 14), 5 and 9.

Modern Agriculture Mechanics by Stanley R. Burke and T. J. Wakeman



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**Agriscience Technology Mechanics CDE
Sample Written Test Questions**

All answers are to be placed on the answer sheet.

1. When should safety glasses be worn in the mechanics laboratory?
 - a. only when the instructor tells you to
 - b. only when the job is dangerous to your eyes
 - c. only while using woodworking tools
 - d. at all times

2. Which size Phillips screwdriver is the largest?
 - a. no. 1
 - b. no. 2
 - c. no. 3
 - d. no. 4

3. When cutting lumber, the saw kerf should be_____
 - a. on the line
 - b. to the waste side of the line
 - c. to usable side of the line
 - d. 1/4 inch from the line

4. Rip saw teeth are_____
 - a. used to cut with the grain
 - b. used to cut across the grain
 - c. used to sharpen saw blades
 - d. filed to a sharp, beveled point

5. _____ is a safe method of securing your work.
 - a. Holding with your hands
 - b. Having a partner hold the work
 - c. Placing work in a vise
 - d. All of the above

6. What tool would be used to measure the outside diameter of a cylinder?
 - a. Dividers
 - b. Outside calipers
 - c. Inside calipers
 - d. Micrometer

7. The hand plane best suited for smoothing long, straight surfaces is the_____
 - a. block
 - b. jack
 - c. jointer
 - d. smooth

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8. Store oily rags in a _____.
 - a. paper box
 - b. pile in the corner
 - c. closed metal can
 - d. locker

9. A clean, organized shop reduces the chance of _____.
 - a. damaging projects
 - b. losing tools
 - c. injuring people
 - d. all of these

10. What lowercase letter is used to indicate nail size?
 - a. d
 - b. z
 - c. b
 - d. p

11. A _____ nail has a small head that is hidden when nailed into finished wood.
 - a. common
 - b. finishing
 - c. drywall
 - d. sinker

12. What kind of saw would be used to cut wood with the grain?
 - a. hack
 - b. rip
 - c. crosscut
 - d. none of these

13. A _____ can be used to remove a nail.
 - a. ripping hammer
 - b. curved claw hammer
 - c. wrecking bar
 - d. all of these

14. The safety color _____ indicates caution.
 - a. white
 - b. yellow
 - c. orange
 - d. purple

15. The Z87.1 logo on safety glasses means that they are:
 - a. top quality
 - b. first quality
 - c. performance quality
 - d. industrial quality

FFA Quiz Bowl - Written Contest and Team Tournament CDEs

Description

The FFA Quiz Bowl is designed to guide students in developing knowledge of the activities, organization, and history of the National FFA Organization. The event design helps students develop oral communication skills, identify effective leadership traits, develop social skills, and identify opportunities for leadership development through participation in FFA activities.

Information

Two separate contests make up the FFA Quiz Bowl CDE. Individual recognition and a team award will be given for participation in the Written Contest. A team award will be provided for the winner of the Quiz Bowl Team Tournament. The winner of the Quiz Bowl Team Tournament will be considered the State Winning Team and will not be eligible to compete in the Quiz Bowl CDE in future years.

Teams may consist of three or four members.

Event Format

The CDE consists of an individual Written Contest and a Team Tournament.

- a. **Written Contest** (100 points) - Contestants individually take a 50 question multiple choice written test on FFA history and events. The time limit for the written test is 45 minutes. Team rankings for the Written Contest are determined by combining the scores of the top three students from each team.

- b. **Team Tournament** - Teams are paired based on Written Contest scores (higher-scoring teams compete against lower-scoring teams in oral rounds). The top ranked team/s may receive a first round ‘bye’ depending on the number of teams in the event.

Teams compete against each other in a single elimination, 25 question round of oral questions. Electronic buzzers will be provided.

- Correct answers are worth 10 points.
- The penalty for incorrect answers is 5 points.
- No student is permitted to answer more than five (5) questions
 - Each time a team member signals his/her intent to answer a question; he/she must place one of their question cards at the front of the table. When a team member has no question cards remaining, he/she may not signal to answer any further questions. However, team members without cards may participate in the team conferral for missed questions.
 - If a team member without question cards signals his/her intent to answer a question, the opposing team will be awarded 10 points immediately.
- Team members signal their intent to answer questions with buzzers. The first contestant to sound the buzzer must answer the question. When the buzzer sounds, the reader immediately stops reading the question. The participant then has 10 seconds to answer. Failure to do so results in a 5 point penalty.

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- When an answer is incorrect, the opposing team has the opportunity to hear the entire question again. Team members are allowed to confer and answer within 10 seconds. If the answer is correct, the team will gain 10 points. An incorrect answer will result in a 5 point penalty. The team may choose to ‘pass’ without answering and not receive a penalty.
- In the event of a tie, toss-up questions will be asked until one team wins.
- The score will be kept by two people. The scores will be announced after the 10th and 20th questions.
- Multiple choice and true/false questions are not allowed during the oral rounds.
- Contestants will need to provide both first and last names for answers that require the name of a person.
- The contest ex-officio will be available to make decisions/judgment calls if needed.

References

This list of references is not intended to be inclusive. Other sources should be utilized and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.

Official FFA Manual, National FFA Organization

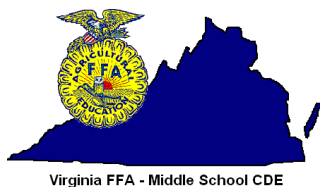
FFA Student Handbook, National FFA Organization

New Horizons magazine (Summer-Spring issues of most recent school year)

Virginia FFA Insert in the *New Horizons* Magazine

www.vaffa.org

www.ffa.org



Virginia FFA - Middle School CDE

Updated by
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FFA Quiz Bowl – Written Contest Sample Written Test Questions

1. What does NFA stand for?
 - a. New Farmers of America
 - b. Northern Farmers Association
 - c. New Farmers Association
 - d. North Field Associates

2. What is the 2nd line of the FFA motto?
 - a. Doing to Learn
 - b. Learning to Do
 - c. Living to Serve
 - d. Earning to Live

3. What are the 3 types of FFA membership?
 - a. Collegiate, High School and Honorary
 - b. High School, Middle School and Collegiate
 - c. Student, Adult, and Honorary
 - d. Middle School, High School and Teacher

4. How many times does the phrase “I believe” appear in the FFA creed?
 - a.4
 - b.5
 - c.6
 - d.7

5. How many gavel taps are required to signal members to be seated?
 - a.1
 - b.2
 - c.3
 - d.7

6. The back of the FFA jacket includes all of the following except:
 - a. Large emblem
 - b. State name
 - c. Student name
 - d. Area or chapter name

7. When did FFA receive its Federal Charter?
 - a. 1928
 - b. 1965
 - c. 1969
 - d. 1950

8. What symbol is associated with the FFA Sentinel?
 - a. Ear of corn
 - b. Handclasp of friendship
 - c. U.S. flag
 - d. FFA flag

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9. When was the National FFA Foundation founded?
 - a. 1944
 - b. 1950
 - c. 1930
 - d. 1989

10. The FFV was founded in 1924.
 - a. True
 - b. False

11. What 1917 act provided funds for high school agricultural programs?
 - a. Smith-Lever
 - b. Smith-Hughes
 - c. Land Grant Act
 - d. Hatch Act

12. Who designed the first FFA jacket?
 - a. Gus Linter
 - b. E. M. Tiffany
 - c. Henry Groseclose
 - d. Carlton Patton

13. In what year were the official colors adopted?
 - a. 1929
 - b. 1952
 - c. 1969
 - d. 1942

14. Who was the first Star Farmer of America?
 - a. Carlton Patton
 - b. Alpha Trivette
 - c. Larry Case
 - d. Leslie Applegate

15. Which of the following orders of business takes place first after the opening ceremony?
 - a. Secretary's minutes
 - b. Treasurer's report
 - c. Unfinished business
 - d. Special features

**FFA Quiz Bowl – Team Tournament
Sample Questions**

1. Who was the first National FFA President?
2. When were females allowed into the FFA?
3. Who was the first female National FFA President?
4. What FFA officer is stationed by the ear of corn?
5. What state was first to receive an FFA Association charter?
6. When was the FFA Creed adopted?
7. What is the official FFA salute?
8. How much were the original FFA dues?
9. Who is commonly known as the father of the FFA?
10. When did the FFA and NFA merge?
11. When was the first *National Future Farmer* magazine published?
12. What two words are at the beginning of every paragraph of the FFA Creed?
13. When did the National FFA Supply Service open for business?
14. What order of business takes place after the opening ceremonies?
15. Who was the first American president to attend a National FFA Convention?
16. Who was the first Star Agribusinessman of America?
17. Who wrote the original FFA Creed?
18. What series of awards are designed to recognize students who excel in their Supervised Agricultural Experience Programs?
19. What officer is stationed by the plow?
20. When did the U.S. Postal Service issue a commemorative FFA stamp?
21. Where was the National FFA Convention held from 1928 to 1998?
22. What is the third line of the FFA Motto?
23. How many gavel taps are required to call a meeting to order?
24. What book can be used to determine if a meeting is using proper parliamentary law?
25. What are the official colors of the FFA?

Tie Breaker Questions

What U.S. President spoke at the 1978 National FFA Convention?

What year was the FFA founded?

Food and Fiber CDE

Description

The Food and Fiber event is designed to provide students an opportunity to explore the agricultural industry with an emphasis on products created for consumer use and consumption. Students will be able to determine the use and commercial importance of agricultural products focusing on processing, distribution and marketing systems.

Information

Teams may consist of three or four members. Team ranking is determined by combining the scores of the top three individuals from each team.

Event Format

The contest consists of four individual events and 2 individual practicums.

Individual Events – 400 Points

- a. Written test** (100 points) -All participants will take a 25 question multiple choice written test. All questions will be taken from the reference section for the CDE (25 minutes)
- b. Product Identification** (100 points) – All participants will identify 25 items from the categories below. Students will have a list of all possible choices.
 - Dairy Product Identification – Product sampling is permitted.
 - Retail Meat Identification – Beef, Lamb and Pork
 - Wood Product Identification –Samples will be of dressed, unfinished wood.
 - Poultry Part Identification – Actual product parts will be used.
 - Aquaculture – Both commercial fresh water and salt water products are listed. (25 minutes)
- c. Food and Fiber Product Source Identification** (100 points) – All participants will identify the source of 20 items from 4 possible choices. Participants may need to identify the products before the source is selected. (25 minutes)
- d. Individual Skills** (100 points) – All participants will rotate through 20 problem/skill activities each worth 5 points. Examples include but are not limited to: triangle test method, animal by products, meat science, Virginia agricultural products, and reading nutritional labels. (25 minutes).

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Practicums -- 100 points

- e. Practicums** (50 points each) –participants will have 12.5 minutes to complete each of 2 practicums related to the processing, distribution, or marketing of agricultural products. These practicums may include but are not limited to grading, classifying, quality testing or judging of agriculture products. The practicum activities will be posted on the Virginia FFA Website approximately 30 days prior to convention. (25 minutes)

Special Instructions:

Participants should bring a clipboard, pencil, and a 4 function calculator.

FOOD AND FIBER CDE 2024

DAIRY IDENTIFICATION	WOOD IDENTIFICATION	MEAT IDENTIFICATION	POULTRY PART IDENTIFICATION	AQUACULTURE IDENTIFICATION
100 – Bleu Cheese	200 – Ash, White	300 – Beef-Blade Steak	400 – Breast Quarter	500 – Bass, Striped
101 – Brie	201 – Beech	301 – Beef-Eye of Round Steak	401 – Breast, Split	501 – Catfish
102 – Butter	202 – Birch	302 – Beef-Flank Steak	402 – Breast, Whole	502 – Clam
103 – Buttermilk	203 – Cedar	303 – Beef-Porterhouse Steak	403 – Drumette	503 – Cobia
104 – Cheddar Cheese	204 – Cherry	304 – Beef-Rib Eye Steak	404 – Drumstick	504 – Cod
105 – Condensed Milk	205 – Hickory	305 – Beef-Seven Bone Steak	405 – Gizzard	505 – Crab, Blue
106 – Cottage Cheese	206 – Locust	306 – Beef-Short Ribs	406 – Half	506 – Flounder
107 – Cream Cheese	207 – Maple	307 – Beef-Sirloin Steak	407 – Leg	507 – Oysters
108 – Edam	208 – Pine	308 – Beef-T-Bone Steak	408 – Leg Quarter	508 – Salmon
109 – Evaporated Milk	209 – Red Oak	309 – Beef-Top Loin Steak, Boneless	409 – Liver	509 – Scallops
110 – Monterey Jack	210 – Walnut	310 – Beef-Top Round Steak	410 – Neck	510 – Shrimp
111 – Mozzarella	211 – White Oak	311 – Lamb-American Style Roast	411 – Thigh	511 – Tilapia
112 – Processed American	212 – Yellow Poplar	312 – Lamb-Blade Chop	412 – Wing	512 – Trout
113 – Provolone		313 – Lamb-French Style Roast		
114 – Skim Milk		314 – Lamb-Loin Chop		
115 – Sour Cream		315 – Lamb-Rib Chop		
116 – Swiss Cheese		316 – Lamb-Sirloin Chop		
117 – Whipping Cream		317 – Pork-Blade Chop		
118 – Whole Milk		318 – Pork-Butterfly Chop		
119 – Yogurt (Plain)		319 – Pork-Center Slice		
		320 – Pork-Loin Chop		
		321 – Pork-Rib Chop		
		322 – Pork-Sirloin Chop		
		323 – Pork-Spareribs		
		324 – Pork-Tenderloin Roast		

References

Agriscience Fundamentals and Applications, 5th Edition. Units 12, 32, 33.

Exploring Agriscience. Chapters 1, 2, 14, 15, 16, 17, and 19.

Virginia Agriculture in the Classroom Resources, Virginia Farm Bureau Federation,
<http://www.agintheclass.com/>

National 4-H Poultry Judging Manual.



**Food and Fiber CDE
Sample Written Test Questions**

1. Chickens that produce meat are called_____.
 - a. Capon
 - b. Layer
 - c. Broiler
 - d. Breeder
2. The term used to define animals growing in water is _____.
 - a. Waterculture
 - b. Aquaculture
 - c. Hydroponics
 - d. Biology
3. Whole milk contains about 4% _____.
 - a. Milkfat
 - b. Water
 - c. Cheese
 - d. Oil
4. The process of examining the inside of eggs from outside is called:
 - a. Candling
 - b. Breaking
 - c. Incubation
 - d. Filming
5. What type of animal is of a certain breed and has only that breed in its ancestry?
 - a. Crossbred
 - b. Linebred
 - c. Purebred
 - d. Inbred
6. Mutton is which type of meat?
 - a. Sheep
 - b. Cattle
 - c. Swine
 - d. Fish
7. The name that refers to the shoulder of a beef carcass is called _____.
 - a. Boston Butt
 - b. Picnic Basket
 - c. Chuck
 - d. Forearm
8. What are the two most widely produced oil crops?
 - a. Soybeans and peanuts
 - b. Wheat and corn
 - c. Millet and canola
 - d. Olives and squash

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9. The U.S. dairy breed that produces the most butterfat is_____.
 - a. Guernsey
 - b. Holstein
 - c. Brown Swiss
 - d. Jersey

10. Virginia farmers produce which of the following crops?
 - a. Cotton
 - b. Tobacco
 - c. Peanuts
 - d. All of the above

11. Which of these animal pairs could produce the most offspring in a year?
 - a. Cow and bull
 - b. Mare and stallion
 - c. Sow and boar
 - d. Ewe and ram

12. To which milk product is sugar added during processing?
 - a. Evaporated milk
 - b. Powdered milk
 - c. Condensed milk
 - d. Skim milk

13. The leading state in swine production is:
 - a. Iowa
 - b. Texas
 - c. Pennsylvania
 - d. Virginia

14. Food spoilage is usually caused by_____.
 - a. Microorganisms
 - b. Pesticides
 - c. Insects
 - d. Overcooking

15. The most common food additives are:
 - a. Vitamins A and D
 - b. Sugar and Salt
 - c. Red Dye #2 and #3
 - d. Salt and Pepper

Plant Science CDE

Description

The Plant Science event is designed to introduce students to the growth process and development of a variety of plants used in the agricultural and horticultural industries. The event includes activities related to identification, planting, general plant care and science of plant growth and development.

Information

Teams may consist of three or four members. Team ranking is determined by combining the scores of the top three students from each team. Four function (non-programmable) calculators are allowed.

Event Format

The contest consists of three individual events and two individual practicums.

Individual Events – 300 Points

- a. Written test** (100 points) – participants will answer 25 questions on the topics of plant reproduction and development, gardening, planting and maintenance procedures, new technologies in plant science, and careers in horticulture. (25 minutes)

- b. Identification** (100 points) - participants are given a total of 25 items from the categories below to identify (see attached list). Each item is worth 4 points. (25 minutes)
 - Garden Plants - Given a garden plant (or picture), participants select the correct common name from a list.
 - Landscape Plants - Given a landscape plant, plant part, or picture, participants select the correct common name from a list.
 - Interior Plants - Given a houseplant, plant part, or picture, participants select the correct common name from a list.
 - Seeds - Given a plant seed sample (or picture), participants select the correct common name from a list.
 - Fruits and Vegetables - Given a fruit/vegetable (or picture), participants select the correct common name from a list.
 - Equipment - Given plant-related tools/equipment or pictures, participants select the correct name from a list.

- c. Individual Skills** (100 points) - Participants will individually rotate through 20 problem/skill areas, each worth 5 points. Participants will perform tasks and answer questions on subjects such as but not limited to: Reading a fertilizer analysis, measuring, plant use, equipment use, reading pesticide labels, plant care and problem diagnosis, and horticultural safety issues. (25 minutes)

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d. Practicums – 100 Points

Practicums (50 points each) -- participants will have 12.5 minutes to complete each of the 2 practicums. Example subjects include but are not limited to: garden layout, plant nutrition, planting and harvesting dates, and pesticide application rates. The practicum activities will be posted on the Virginia FFA Website approximately 30 days prior to convention. (25 minutes)

Special Instructions:

Participants should bring a clipboard, pencil, and a 4 function calculator.

PLANT SCIENCE CDE 2024

Garden Plants	Landscape Plants	Interior Plants	Seeds
100 Broccoli	200 American Holly	300 African Violet	400 Barley
101 Cabbage	201 Azalea	301 Aloe Plant	401 Black Walnut
102 Carrot	202 Boxwood	302 Amaryllis	402 Cabbage
103 Corn	203 Chrysanthemum	303 Asparagus Fern	403 Carrot
104 Lettuce	204 Coleus	304 Barrel Cactus	404 Cherry
105 Onion	205 Colorado Blue Spruce	305 Boston Fern	405 Corn
106 Pepper	206 Daffodil	306 Caladium	406 Cucumber
107 Potato	207 English Ivy	307 Christmas Cactus	407 Fescue
108 Radish	208 Flowering Dogwood	308 Corn Plant Dracaena	408 Green Bean
109 Tomato	209 Geranium	309 Cyclamen	409 Lettuce
	210 Hyacinth	310 Heartleaf Philodendron	410 Lima Bean
	211 Hybrid Tea Rose	311 Jade Plant	411 Marigold
	212 Hydrangea	312 Norfolk Island Pine	412 Oats
	213 Impatiens	313 Peperomia	413 Pea
	214 Marigold	314 Poinsettia	414 Peach
	215 Petunia	315 Red Edged Dracaena	415 Pepper
	216 Red Maple	316 Schefflera	416 Pumpkin
	217 Redbud	317 Snake Plant	417 Rye
	218 Rhododendron	318 Spider Plant	418 Sunflower
	219 Shasta Daisy	319 Swedish Ivy	419 Tomato
	220 Snapdragon	320 Wandering Jew	420 Watermelon
	221 Thornless Honey Locust		421 Wheat
	222 Yellow Poplar		
	223 Wax Begonia		
	224 White Pine		
	225 Yew		

PLANT SCIENCE CDE 2024 (continued)

Fruits / Vegetables	Supplies & Equipment
500 Blackberry	600 Anvil Pruner
501 Blueberry	601 Bulb Planter
502 Broccoli	602 Bypass Pruner
503 Cabbage	603 Cell Pack
504 Cantaloupe	604 Dust Mask
505 Carrot	605 Garden Rake
506 Celery	606 Garden Spade
507 Cherry	607 Grafting Knife
508 Cucumber	608 Grass Shears
509 Golden Delicious Apple	609 Hedge Shears
510 Grape	610 Leaf Rake
511 Green Pepper	611 Mulch Fork
512 Lettuce	612 Peat Moss
513 Onion	613 Perlite
514 Peach	614 Plant Label
515 Pear	615 Pruning Saw
516 Plum	616 Rain Gauge
517 Potato	617 Respirator
518 Pumpkin	618 Sand
519 Radish	619 Shovel
520 Raspberry	620 Slow Release Fertilizer
521 Red Delicious Apple	621 Soaker Hose
522 Strawberry	622 Sphagnum Moss
523 Sweet Potato	623 Thermometer
524 Tomato	624 Trowel
525 Watermelon	625 Vermiculite
526 Yellow Squash	626 Water Breaker
527 Zucchini Squash	627 Water Soluble Fertilizer
	628 Watering Can
	629 Watering Wand

References

This list of references is not intended to be inclusive. Other sources should be utilized and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.

Introductory Horticulture, 5th Edition, by Reiley and Shry, Sections 1, 2, 3, 6, 7, 9, and 10.

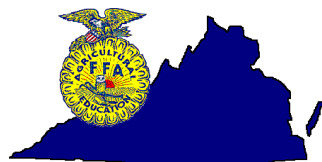
Agriscience Fundamentals and Applications, 3rd Edition, by Elmer Cooper, Sections 5, 6, and 7.

Supplemental references include:

Common Trees of Virginia, Virginia Department of Forestry

Reader's Digest Houseplants

Reader's Digest Guide to Gardening



FFA Plant Science CDE

Sample Written Test Questions

Directions: Read all questions carefully. Record your answers on the answer sheet provided.

1. An example of a modified plant stem is a:
 - a. Tuber
 - b. Bulb
 - c. Corm
 - d. All of the above

2. What part of the flower receives the pollen?
 - a. Sepal
 - b. Filament
 - c. Stigma
 - d. Stem

3. Calcium, magnesium, and sulfur are examples of:
 - a. Macronutrients
 - b. Micronutrients
 - c. Supernutrients
 - d. None of the above

4. When a soil is acidic, it is assigned a pH value:
 - a. Lower than 7.0
 - b. Higher than 7.0
 - c. Right at 7.0
 - d. None of the above

5. Water is important for healthy plants to exist because:
 - a. Makes nutrients available to plants by dissolving them in the soil
 - b. Carries nutrients through a plant to areas where they are needed
 - c. Helps regulate the temperature in and around plants through transpiration
 - d. All of the above

6. All of the following are examples of vegetative propagation except:
 - a. Stem cuttings
 - b. Layering
 - c. Sexual reproduction
 - d. Tissue culture

7. A plant with a two-year life cycle is known as a/an:
 - a. Annual
 - b. Perennial
 - c. Biennial
 - d. Vegetable

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8. _____ is a technique that can be used to overcome a seed's embryo dormancy and allow it to germinate.
 - a. Direct seeding
 - b. Scarification
 - c. Broadcasting
 - d. Stratification

9. The four main components of soil are:
 - a. Clay, sand, silt, and mud
 - b. Living, dead, wet, and dry materials
 - c. Water, air, minerals, and organic matter
 - d. None of the above

10. The science and practice of growing, harvesting, storing, processing, and marketing vegetables is known as:
 - a. Pomology
 - b. Floriculture
 - c. Clericulture
 - d. Landscaping

11. The binomial system for naming plants contains two Latin names that are known as the:
 - a. Genus and species
 - b. Kingdom and group
 - c. Family and genus
 - d. Species and family

12. The male reproductive part of the flower is known as the:
 - a. Sepal
 - b. Stamen
 - c. Pistil
 - d. Ovary

13. The basic parts of a seed are:
 - a. Seed coat, endosperm, and the embryo
 - b. Seed coat, embryo, and the ovary
 - c. Endosperm, roots, and flower
 - d. Endosperm, food, and leaves

14. Rhizomes are:
 - a. Roots
 - b. Underground stems
 - c. Leaf tips
 - d. Flowers

15. When considering how often to water container grown plants, which of the following is not an important factor?
 - a. Weather
 - b. Kind of plant
 - c. Flower color
 - d. Size of container

Small Animal Care CDE

Description

The Small Animal Care event concentrates on the identification, health, and nutrition of household pets. Participants also demonstrate their knowledge of scientific terms used in the animal care industry, new technologies in animal care, ethical concerns related to animal welfare, and career opportunities related to small/companion animals. Small animals include cats, dogs, rabbits, aquarium fish, guinea pigs, birds, and other small household animals.

Information

Teams may consist of three or four members. Team ranking is determined by combining the scores of the top three students from each team. Four function (non-programmable) calculators are allowed.

Event Format

The contest consists of four individual and two individual practicums.

Individual Events – 400 Points

- a. Written Test** (100 points) - participants answer 25 multiple choice/true-false questions (4 points each) on care, nutrition, welfare, new technologies, careers, and terminology related to small animal care. Test questions will come from the references listed below. (30 minutes)
- b. Breed and Product Identification** (200 points) - participants identify a total of 20 small animal breeds from photos **and** 20 items list on the small animal care feed and equipment list (see attached list). (30 minutes)
- c. Individual Skills** (50 points) - Participants will individually rotate through ten problem/skill areas, each worth 10 points. Participants will perform tasks and answer questions on subjects such as but not limited to: reading nutrition labels, selecting a pet, use of equipment, and pet training. (30 minutes)

Practicums – 100 Points

- d. Practicums** (50 points each)—participants will have 15 minutes to complete each of 2 practicums. Example topics include, but are not limited to: caring for a pet, pet health care, determining aquarium costs, fish capability, determining information from product labels, determining course of action for pet health, etc. The practicum activities will be posted on the Virginia FFA Website approximately 30 days prior to convention. (30 minutes)

Special Instructions:

Participants should bring a clipboard, pencil, and a 4 function calculator.

SMALL ANIMAL CARE CDE – DOGS 2024

HERDING	HOUND	NON-SPORTING	SPORTING	TERRIER
100 Australian Cattle Dog	109 Afghan Hound	121 Bichon Frise	131 Brittany	142 Airedale
101 Australian Shepard	110 American Foxhound	122 Boston Terrier	132 Chesapeake Bay Retriever	143 American Staffordshire
102 Belgian Sheepdog	111 Basset Hound	123 Bulldog	133 Cocker Spaniel	144 Bull
103 Bearded Collie	112 Beagle	124 Chinese Shar-Pei	134 English Setter	145 Dandie Dinmont
104 Border Collie	113 Bloodhound	125 Chow Chow	135 German Shorthair Pointer	146 Kerry Blue
105 Collie	114 Dachshund	126 Dalmatian	136 Golden Retriever	147 Manchester
106 German Shepherd	115 Greyhound	127 French Bulldog	137 Gordon Setter	148 Norfolk
107 Old English Sheepdog	116 Irish Wolfhound	128 Keeshond	138 Irish Setter	149 Parson Russell
108 Pembroke Welsh Corgi	117 Norwegian Elkhound	129 Lhasa Apso	139 Labrador Retriever	150 Scottish
	118 Rhodesian Ridgeback	130 Poodle	140 Pointer	151 Welsh
	119 Saluki		141 Weimaraner	152 West Highland White
	120 Whippet			
TOY	WORKING			
153 Chihuahua	159 Akita			
154 Pekingese	160 Alaskan Malamute			
155 Pomeranian	161 Bernese Mountain Dog			
156 Pug	162 Boxer			
157 Shih Tzu	163 Doberman Pinscher			
158 Yorkshire Terrier	164 Great Dane			
	165 Mastiff			
	166 Newfoundland			
	167 Rottweiler			
	168 Saint Bernard			
	169 Samoyed			
	170 Siberian Husky			
	171 Standard Schnauzer			

SMALL ANIMAL CARE – OTHER ANIMALS 2024

CATS	FISH	RABBITS	GUINEA PIGS	BIRDS
200 American Shorthair	220 Angelfish	240 Belgian Hare	260 Abyssinian	270 African Grey Parrot
201 Balinese	221 Black Molly	241 Californian	261 American	271 Amazon Parrot
202 Burmese	222 Damsel fish	242 Dutch	262 American Satin	272 Canary
203 Colorpoint Shorthair	223 Glass Catfish	243 Flemish Giant	263 Coronet	273 Cockatiel
204 Devon Rex	224 Goldfish	244 French Angora	264 Peruvian	274 Cockatoo
205 Japanese Bobtail	225 Gourami	245 Harlequin	265 Silkie	274 Finch
206 Maine Coon	226 Guppy	246 Himalayan	266 Teddy	275 Lovebird
207 Manx	227 Lionfish	247 Holland Lop	267 Texel	276 Macaw
208 Persian	228 Teardrop Butterfly Fish	248 Jersey Wooly	268 White Crested	277 Parakeet
209 Russian Blue	229 Tetra	249 New Zealand		
210 Scottish Fold	230 Tiger Barb	250 Palomino		
211 Siamese		251 Rex		
212 Somali				
213 Sphynx				

SMALL ANIMAL CARE CDE 2024

	MAMMAL EQUIPMENT	FISH EQUIPMENT	BIRD EQUIPMENT	
	300 Brush 301 Collar 302 Comb 303 Ear Tag 304 Harness 305 Leash 306 Litter Box 307 Muzzle 308 Pet Carrier 309 Pet Nail Clipper 310 Rawhide Bone 311 Retractable Leash 312 Shedding Blade 313 Slicker Brush	320 Air Line Tubing 321 Airstone 322 Aquarium 323 Charcoal 324 Gravel 325 Heater 326 Hose Clamp 327 Lighting Unit 328 pH Kit 329 Pump 330 Thermometer 331 Thermostat 332 Water Filter 333 Filter Cartridge	350 Bird Cage 351 Cuttle Bone 352 Feeder 353 Leg Band 354 Nesting Box 355 Perch 356 Swing 357 Water	
DOG FEED	CAT FEED	FISH FEED	GUINEA PIG & RABBIT FEED	BIRD FEED
400 Dry Dog Food 401 Semi-moist Dog Food 402 Moist Dog Food	500 Dry Cat Food 501 Semi-moist Cat Food 502 Moist Cat Food	600 Fish Flakes 601 Fish Pellets 602 Freeze-dried	700 Alfalfa Bale 701 Alfalfa Cubes 702 Mineral Wheel 703 Popcorn Stick 704 Pellets	800 Bird Blend 801 Bird Pellets 802 Bird Seed 803 Seed Stick

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References

This list of references is not intended to be inclusive. Other sources should be utilized and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.

Agriscience Fundamentals and Applications, 3rd Edition, by Elmer Cooper, Section 8

Exploring Agriscience by Ray Herren, Chapters 17 and 18.

Small Animal Care and Management by Warren, Delmar Publishing

Supplemental references include:

Cat Fanciers' Association - <http://www.cfainc.org/>

American Cat Fanciers Association – <http://www.acfacat.com>

American Cavy Breeders Association – <http://www.acbaonline.com>

American Rabbit Breeders Association – <http://www.arba.net>

American Kennel Club - <http://www.akc.org>

Net Vet - <http://netvet.wustl.edu>

Terrific Pets – <http://www.terrificpets.com>

The Pet Professor – <http://www.thepetprofessor.com>



Updated by
Jimmy Hisghman & Mike Brown
5/21/2024

**Small Animal Care
Sample Written Test Questions**

1. Barbels are:
 - a. Finger-like projections of the intestine
 - b. The hair-like structure in a cat's ear
 - c. The whisker-like projection on the mouth of fish
 - d. The matted fur behind an animal's ear

2. Guinea pigs, unlike other animals:
 - a. Cannot synthesize vitamin C in their body
 - b. Cannot digest Vitamin D-3
 - c. Can produce antibodies to rabies
 - d. Cannot digest pellet food easily

3. An example of a long haired breed of cat would be a:
 - a. Devon Rex
 - b. Russian Blue
 - c. Persian
 - d. Scottish Fold

4. Fish excrete _____ with their urine and feces.
 - a. Nitrates
 - b. Chlorine
 - c. Ammonia
 - d. Hydrogen

5. A vivarium is a cage used for housing land and terrestrial animals.
 - a. True
 - b. False

6. Fish have a _____ chambered heart.
 - a. 3
 - b. 4
 - c. 2
 - d. None of the above

7. A _____ is a group of eggs that a bird lays at one time.
 - a. Litter
 - b. Gaggle
 - c. Dozen
 - d. Clutch

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8. The Class of aquatic organisms with bony skeletons is:
 - a. Crustaceans
 - b. Osteichthyes
 - c. Sharks
 - d. Catfish

9. In order to check the acidity or alkalinity of water, a _____ test must be performed.
 - a. pH
 - b. TAN
 - c. Salinity
 - d. Buffer

10. A tabby pattern could best be represented by the _____ breed.
 - a. Russian Blue
 - b. Abyssinian
 - c. American Shorthair
 - d. Siamese

11. Ringworm is actually a:
 - a. Worm that lives on the surface of the skin
 - b. Fungus
 - c. Bacterial infection
 - d. None of the above

12. Tapeworms generally have a(n) _____ host before entering a dog or cat.
 - a. Intermediate
 - b. Willing
 - c. No other
 - d. None of the above

13. The Abyssinian guinea pig has swirls or cowlicks in its hair called:
 - a. Knots
 - b. Ringworm
 - c. Rosettes
 - d. Pigtails

14. Cats were first domesticated in:
 - a. Egypt
 - b. Spain
 - c. England
 - d. United States

15. Rabbits are:
 - a. carnivores
 - b. herbivores
 - c. omnivores
 - d. none of these

**Virginia Agricultural Education Competencies
Relating to Middle School FFA CDEs**

Agriscience Technology Mechanics

Introducing Agricultural Mechanics Technology

- ANR8002.019 Explain the importance of agricultural mechanics technology.
- ANR8002.020 Identify basic laboratory safety procedures.
- ANR8002.021 Describe new agricultural engineering technologies.
- ANR8002.022 Identify and use basic hand tools for woodworking.

Developing Agricultural Mechanical Skills

- ANR8003.042 Identify laboratory procedures and policies.
- ANR8003.043 Identify safety practices and procedures.
- ANR8003.044 Identify types of metal.
- ANR8003.045 Perform metal fabrication practices.
- ANR8003.046 Read and interpret simple plans.
- ANR8003.047 Identify and use basic hand tools for woodworking.
- ANR8003.048 Perform woodworking skills.
- ANR8003.049 Maintain hand tools.
- ANR8003.050 Select and use measuring devices.
- ANR8003.051 Select and use wood fasteners.
- ANR8003.052 Finish and preserve wood.

Using Hand Tools and Agricultural Power Equipment

- ANR8004.031 Explain, demonstrate, and practice safety practices.
- ANR8004.032 Identify portable power equipment, hand tools, and accessories.
- ANR8004.033 Demonstrate the proper use of portable power equipment, hand tools, and accessories.
- ANR8004.034 Perform woodworking skills.
- ANR8004.040 Perform measuring skills.
- ANR8004.041 Read, interpret, and construct plans for a mechanics project.

FFA Quiz Bowl – Written Contest and Team Tournament

Encouraging Personal Development

- ANR8003.053 Identify effective leadership traits.
- ANR8003.054 Identify personal development needs.
- ANR8003.055 Develop personal goals.
- ANR8003.056 Develop oral communication skills.
- ANR8003.057 Develop written communication skills.
- ANR8003.058 Develop an understanding of FFA.
- ANR8003.059 Develop opportunities for leadership.
- ANR8003.060 Develop social skills.

Introducing Supervised Agricultural Experiences

- ANR8004.026 Define supervised agricultural experience program.
- ANR8004.027 Identify the various types of supervised agricultural experience programs.
- ANR8004.028 Describe characteristics of a successful supervised agricultural experience program.
- ANR8004.029 Select and plan an individual supervised agricultural experience program.
- ANR8004.030 Relate supervised agricultural experience programs to FFA awards programs.

Developing Leadership Skills

- ANR8004.043 Complete a personal development inventory.
- ANR8004.044 Explain opportunities for leadership development through the FFA.
- ANR8004.045 Use democratic principles in conducting an effective meeting.
- ANR8004.046 Develop an understanding of the FFA.

Food and Fiber

Becoming Oriented to Agriscience

ANR8002.001 Explore ideas associated with agriculture.

Describing Agriscience

ANR8002.003 Define agriculture/agriscience.

ANR8002.004 Discuss the impact of agriculture on the world economy.

ANR8002.005 Identify the key factors that have shaped the agricultural industry in the United States.

ANR8002.006 Describe the interdependency of agriculture and other segments of society.

ANR8002.007 Identify current research and development activities in agriculture.

Introducing Plant and Animal Life Cycles

ANR8002.010 Identify plants of economic importance to the community.

ANR8002.011 Identify basic requirements for animal growth and development.

Communicating with Others

ANR8002.015 Participate in a group discussion.

ANR8002.017 Communicate through letters.

ANR8002.018 Communicate through newspaper, radio, and television releases.

Identifying Career Opportunities in Agriculture

ANR8002.031 Identify full-time career opportunities in agriculture in Virginia.

ANR8002.032 Identify part-time career opportunities in agriculture in Virginia.

ANR8002.034 Determine the educational requirements for certain agricultural occupations.

Becoming Oriented to Agriscience Exploration

ANR8003.001 Explore ideas associated with agriculture.

Recognizing the Importance of Agriculture/Agriscience

ANR8003.003 Explain the importance of agriculture to Virginia, the United States, and the world.

ANR8003.004 Describe the relationship of agriculture to other segments of society.

Exploring Research in Agriculture

ANR8003.017 Explain the importance of agricultural research.

ANR8003.021 Explore career opportunities in agricultural research.

Exploring Plant Science

ANR8003.022 Determine the economic importance of agricultural and horticultural crops.

Exploring Animal Science

ANR8003.031 Determine the importance of animals to agriculture.

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- ANR8003.033 Identify key scientific terms used in the animal industry.
- ANR8003.034 Explore the meat animal industry.
- ANR8003.035 Explore the dairy products industry.
- ANR8003.036 Explore the aquaculture industry.
- ANR8003.041 Explore career opportunities in animal science.

Encouraging Personal Development

- ANR8003.056 Develop oral communication skills.

Becoming Oriented to Agriscience Technology

- ANR8004.001 Identify Agricultural Education concepts.

Identifying New Technologies in Agriculture/Agriscience

- ANR8004.004 Explore new technologies in animal science.
- ANR8004.005 Explore new technologies in plant science.
- ANR8004.006 Explore new technologies in agricultural engineering.
- ANR8004.007 Explore new technologies in environmental areas.
- ANR8004.008 Explore new technologies in agricultural marketing.

Understanding International Agriculture

- ANR8004.009 Define exports.
- ANR8004.010 Define imports.
- ANR8004.011 Define tariffs.
- ANR8004.012 Explain the relationship of international trade to Virginia agriculture.
- ANR8004.013 Identify factors that affect trade agreements.
- ANR8004.014 Explore careers in international agriculture.

Experimenting in Agriculture

- ANR8004.047 Identify the components of a research project.
- ANR8004.048 Practice safety procedures in performing experiments.
- ANR8004.049 Perform an agricultural experiment.
- ANR8004.050 Evaluate the results of an experiment.
- ANR8004.051 Develop experimental reporting skills.

Plant Science

Becoming Oriented to Agriscience

ANR8002.001 Explore ideas associated with agriculture.

Describing Agriscience

ANR8002.003 Define agriculture/agriscience.

ANR8002.004 Discuss the impact of agriculture on the world economy.

ANR8002.005 Identify the key factors that have shaped the agricultural industry in the United States.

ANR8002.006 Describe the interdependency of agriculture and other segments of society.

ANR8002.007 Identify current research and development activities in agriculture.

Introducing Plant and Animal Life Cycles

ANR8002.008 Identify and explain functions of plant systems.

ANR8002.009 Identify basic requirements for plant growth and development.

ANR8002.010 Identify plants of economic importance to the community.

ANR8002.012 Identify careers in plant science.

Communicating with Others

ANR8002.015 Participate in a group discussion.

ANR8002.017 Communicate through letters.

ANR8002.018 Communicate through newspaper, radio, and television releases.

Introducing Ecology and Conservation

ANR8002.023 Explain how organisms and the environment work together.

ANR8002.024 Identify conservation measures.

ANR8002.025 Identify various types of natural resources.

ANR8002.026 Identify ecology and conservation concerns in the community.

ANR8002.030 Describe how agriculture and the environment are interrelated.

Identifying Career Opportunities in Agriculture

ANR8002.031 Identify full-time career opportunities in agriculture in Virginia.

ANR8002.032 Identify part-time career opportunities in agriculture in Virginia.

ANR8002.033 Explain career opportunities in agribusiness.

ANR8002.034 Determine the educational requirements for certain agricultural occupations.

Small Animal Care

Becoming Oriented to Agriscience

ANR8002.001 Explore ideas associated with agriculture.

Introducing Plant and Animal Life Cycles

ANR8002.011 Identify basic requirements for animal growth and development.

ANR8002.013 Identify careers in animal science.

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ANR8002.033 Explain career opportunities in agribusiness.

ANR8002.034 Determine the educational requirements for certain agricultural occupations.

Becoming Oriented to Agriscience Exploration

ANR8003.001 Explore ideas associated with agriculture.

Exploring Research in Agriculture

ANR8003.017 Explain the importance of agricultural research.

ANR8003.018 Identify agricultural research in animal science.

ANR8003.019 Identify agricultural research in plant science.

Exploring Animal Science

ANR8003.033 Identify key scientific terms used in the animal industry.

ANR8003.037 Identify breeds of pleasure and companion animals.

ANR8003.038 Identify basic practices for care of pleasure and companion animals.

ANR8003.039 Discuss new technologies in animal science.

ANR8003.040 Discuss ethical concerns related to animal welfare.

ANR8003.041 Explore career opportunities in animal science.

Identifying New Technologies in Agriculture/Agriscience

ANR8004.004 Explore new technologies in animal science.

Experimenting in Agriculture

ANR8004.047 Identify the components of a research project.

ANR8004.048 Practice safety procedures in performing experiments.

ANR8004.049 Perform an agricultural experiment.

ANR8004.050 Evaluate the results of an experiment.

ANR8004.051 Develop experimental reporting skills.

**Virginia Standards of Learning Correlation
for
Middle School Agriscience CDEs**

Agriscience Technology Mechanics – SOL Correlations

MATH

- 6.1 The student will identify representations of a given percent and describe orally and in writing the equivalence relationships among fractions, decimals, and percents.
- 6.4 The student will compare and order whole numbers, fractions, and decimals, using concrete materials, drawings or pictures, and mathematical symbols.
- 6.6 The student will
- a) solve problems that involve addition, subtraction, multiplication, and/or division with fractions and mixed numbers, with and without regrouping, that include like and unlike denominators of 12 or less, and express their answers in simplest form; and
 - b) find the quotient, given a dividend expressed as a decimal through thousandths and a divisor expressed as a decimal to thousandths with exactly one non-zero digit.
- 6.7 The student will use estimation strategies to solve multistep practical problems involving whole numbers, decimals, and fractions (rational numbers).
- 6.9 The student will compare and convert units of measure for length, area, weight/mass, and volume within the U.S. Customary system and the metric system and estimate conversions between units in each system:
- a) length — part of an inch ($\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{8}$), inches, feet, yards, miles, millimeters, centimeters, meters, and kilometers;
 - b) weight/mass — ounces, pounds, tons, grams, and kilograms;
 - c) liquid volume — cups, pints, quarts, gallons, milliliters, and liters; and
 - d) area — square units.
- 6.10 The student will estimate and then determine length, weight/mass, area, and liquid volume/capacity, using standard and nonstandard units of measure.
- 7.1 The student will compare, order, and determine equivalent relationships between fractions, decimals, and percents, including use of scientific notation for numbers greater than 10.
- 7.5 The student will formulate rules for and solve practical problems involving basic operations (addition, subtraction, multiplication, and division) with integers.

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- 7.7 The student, given appropriate dimensions, will
- estimate and find the area of polygons by subdividing them into rectangles and right triangles; and
 - apply perimeter and area formulas in practical situations.
- 7.8 The student will investigate and solve problems involving the volume and surface area of rectangular prisms and cylinders, using concrete materials and practical situations to develop formulas.
- 8.3 The student will solve practical problems involving rational numbers, percents, ratios, and proportions. Problems will be of varying complexities and will involve real-life data, such as finding a discount and discount prices and balancing a checkbook.
- 8.6 The student will verify by measuring and describe the relationships among vertical angles, supplementary angles, and complementary angles and will measure and draw angles of less than 360° .
- 8.7 The student will investigate and solve practical problems involving volume and surface area of rectangular solids (prisms), cylinders, cones, and pyramids.
- 8.17 The student will create and solve problems, using proportions, formulas, and functions.

ENGLISH

- 6.1 The student will analyze oral participation in small-group activities.
- Communicate as leader and contributor.
 - Evaluate own contributions to discussions.
 - Summarize and evaluate group activities.
 - Analyze the effectiveness of participant interactions.
- 6.5 The student will read and demonstrate comprehension of a variety of informational selections.
- Identify questions to be answered.
 - Make, confirm, or revise predictions.
 - Use context to determine meanings of unfamiliar words and technical vocabulary.
 - Draw conclusions and make inferences based on explicit and implied information.
 - Organize the main idea and details to form a summary.
 - Compare and contrast information about one topic contained in different selections.
 - Select informational sources appropriate for a given purpose.
- 6.6 The student will write narratives, descriptions, and explanations.
- Use a variety of planning strategies to generate and organize ideas.
 - Establish central idea, organization, elaboration, and unity.
 - Select vocabulary and information to enhance the central idea, tone, and voice.
 - Expand and embed ideas by using modifiers, standard coordination, and subordination in complete sentences.
 - Revise writing for clarity.

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- 7.6 The student will read and demonstrate comprehension of a variety of informational texts.
- Use knowledge of text structures to aid comprehension.
 - Use knowledge of words and phrases that signal an author’s organizational pattern to aid comprehension.
 - Distinguish fact from opinion in newspapers, magazines, and other print media.
 - Identify the source, viewpoint, and purpose of texts.
- e) Describe how word choice and language structure convey an author’s viewpoint.
f) Summarize what is read.
g) Organize and synthesize information for use in written and oral presentations.
- 7.7 The student will apply knowledge of appropriate reference materials.
- Use print and electronic sources to locate information in books and articles.
 - Use graphic organizers to organize information.
 - Synthesize information from multiple sources.
 - Credit primary and secondary sources.
- 8.6 The student will read, comprehend, and analyze a variety of informational sources.
- Draw on background knowledge and knowledge of text structure to understand selections.
 - Analyze the author’s credentials, viewpoint, and impact.
 - Analyze the author’s use of text structure and word choice.
 - Analyze details for relevance and accuracy.
 - Read and follow instructions to complete an assigned task.
 - Summarize and critique text.
 - Evaluate and synthesize information to apply in written and oral presentations.
 - Draw conclusions based on explicit and implied information.
 - Make inferences based on explicit and implied information.
- 8.7 The student will write in a variety of forms, including narrative, expository, persuasive, and informational.
- Use prewriting strategies to generate and organize ideas.
 - Organize details to elaborate the central idea.
 - Select specific vocabulary and information.
 - Revise writing for word choice, sentence variety, and transitions among paragraphs.
 - Use available technology.

HISTORY AND SOCIAL SCIENCE: CIVICS AND ECONOMICS

- CE.9 The student will demonstrate knowledge of how economic decisions are made in the marketplace by
- applying the concepts of scarcity, resources, choice, opportunity cost, price, incentives, supply and demand, production, and consumption;
 - comparing the differences among free market, command, and mixed economies;
 - describing the characteristics of the United States economy, including free markets, private property, profit, and competition.

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- CE.12 The student will demonstrate knowledge of career opportunities by
- a) identifying talents, interests, and aspirations that influence career choice;
 - b) identifying attitudes and behaviors that strengthen the individual work ethic and promote career success;
 - c) identifying skills and education that careers require;
 - d) examining the impact of technological change on career opportunities.

FFA Quiz Bowl – SOL Correlations

ENGLISH

- 6.1 The student will analyze oral participation in small-group activities.
- a) Communicate as leader and contributor.
 - b) Evaluate own contributions to discussions.
 - c) Summarize and evaluate group activities.
 - d) Analyze the effectiveness of participant interactions.
- 6.5 The student will read and demonstrate comprehension of a variety of informational selections.
- a) Identify questions to be answered.
 - b) Make, confirm, or revise predictions.
 - c) Use context to determine meanings of unfamiliar words and technical vocabulary.
 - d) Draw conclusions and make inferences based on explicit and implied information.
 - e) Organize the main idea and details to form a summary.
 - f) Compare and contrast information about one topic contained in different selections.
 - g) Select informational sources appropriate for a given purpose.
- 7.1 The student will give and seek information in conversations, in group discussions, and in oral presentations.
- a) Use oral vocabulary and style appropriate for listeners.
 - b) Communicate ideas and information orally in an organized and succinct manner.
 - c) Ask probing questions to seek elaboration and clarification of ideas.
 - d) Make supportive statements to communicate agreement with or acceptance of others' ideas.
 - e) Use grammatically correct language and vocabulary appropriate to audience, topic, and purpose.
- 7.2 The student will identify the relationship between a speaker's verbal and nonverbal messages.
- a) Use verbal communication skills, such as word choice, pitch, feeling, tone, and voice.
 - b) Use nonverbal communication skills, such as eye contact, posture, and gestures.
 - c) Compare/contrast a speaker's verbal and nonverbal messages.
- 7.6 The student will read and demonstrate comprehension of a variety of informational texts.
- a) Use knowledge of text structures to aid comprehension.
 - b) Use knowledge of words and phrases that signal an author's organizational pattern to aid comprehension.
 - c) Distinguish fact from opinion in newspapers, magazines, and other print media.
 - d) Identify the source, viewpoint, and purpose of texts.
 - e) Describe how word choice and language structure convey an author's viewpoint.
 - f) Summarize what is read.
 - g) Organize and synthesize information for use in written and oral presentations.

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- 7.7 The student will apply knowledge of appropriate reference materials.
- Use print and electronic sources to locate information in books and articles.
 - Use graphic organizers to organize information.
 - Synthesize information from multiple sources.
 - Credit primary and secondary sources.
- 8.6 The student will read, comprehend, and analyze a variety of informational sources.
- Draw on background knowledge and knowledge of text structure to understand selections.
 - Analyze the author’s credentials, viewpoint, and impact.
 - Analyze the author’s use of text structure and word choice.
 - Analyze details for relevance and accuracy.
 - Read and follow instructions to complete an assigned task.
 - Summarize and critique text.
 - Evaluate and synthesize information to apply in written and oral presentations.
 - Draw conclusions based on explicit and implied information.
 - Make inferences based on explicit and implied information.

HISTORY AND SOCIAL SCIENCE: CIVICS AND ECONOMICS

- CE.12 The student will demonstrate knowledge of career opportunities by
- identifying talents, interests, and aspirations that influence career choice;
 - identifying attitudes and behaviors that strengthen the individual work ethic and promote career success;
 - identifying skills and education that careers require;
 - examining the impact of technological change on career opportunities.

Food and Fiber – SOL Correlations

MATH

- 6.8 The student will solve multistep consumer-application problems involving fractions and decimals and present data and conclusions in paragraphs, tables, or graphs. Planning a budget will be included.
- 7.4 The student will
- solve practical problems using rational numbers (whole numbers, fractions, decimals) and percents; and
 - solve consumer-application problems involving tips, discounts, sales tax, and simple interest.
- 7.5 The student will formulate rules for and solve practical problems involving basic operations (addition, subtraction, multiplication, and division) with integers.
- 7.8 The student will investigate and solve problems involving the volume and surface area of rectangular prisms and cylinders, using concrete materials and practical situations to develop formulas.
- 8.3 The student will solve practical problems involving rational numbers, percents, ratios, and proportions. Problems will be of varying complexities and will involve real-life data, such as finding a discount and discount prices and balancing a checkbook.

SCIENCE

- 6.1 The student will plan and conduct investigations in which
- observations are made involving fine discrimination between similar objects and organisms;
 - a classification system is developed based on multiple attributes;
 - precise and approximate measurements are recorded;
 - scale models are used to estimate distance, volume, and quantity;
 - hypotheses are stated in ways that identify the independent (manipulated) and dependent (responding) variables;
 - a method is devised to test the validity of predictions and inferences;
 - one variable is manipulated over time, using many repeated trials;
 - data are collected, recorded, analyzed, and reported using appropriate metric measurements;
 - data are organized and communicated through graphical representation (graphs, charts, and diagrams);
 - models are designed to explain a sequence; and
 - an understanding of the nature of science is developed and reinforced.
- LS.7 The student will investigate and understand that organisms within an ecosystem are dependent on one another and on nonliving components of the environment. Key concepts include
- the carbon, water, and nitrogen cycles;
 - interactions resulting in a flow of energy and matter throughout the system;
 - complex relationships within terrestrial, freshwater, and marine ecosystems; and
 - energy flow in food webs and energy pyramids.

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- LS.9 The student will investigate and understand interactions among populations in a biological community. Key concepts include
- the relationships among producers, consumers, and decomposers in food webs;
 - the relationship between predators and prey;
 - competition and cooperation;
 - symbiotic relationships; and
 - niches.
- LS.12 The student will investigate and understand the relationships between ecosystem dynamics and human activity. Key concepts include
- food production and harvest;
 - change in habitat size, quality, or structure;
 - change in species competition;
 - population disturbances and factors that threaten or enhance species survival; and
 - environmental issues (water supply, air quality, energy production, and waste management).
- LS.13 The student will investigate and understand that organisms reproduce and transmit genetic information to new generations. Key concepts include
- the role of DNA;
 - the function of genes and chromosomes;
 - genotypes and phenotypes;
 - factors affecting the expression of traits;
 - characteristics that can and cannot be inherited;
 - genetic engineering and its applications; and
 - historical contributions and significance of discoveries related to genetics.

ENGLISH

- 6.1 The student will analyze oral participation in small-group activities.
- Communicate as leader and contributor.
 - Evaluate own contributions to discussions.
 - Summarize and evaluate group activities.
 - Analyze the effectiveness of participant interactions.
- 6.5 The student will read and demonstrate comprehension of a variety of informational selections.
- Identify questions to be answered.
 - Make, confirm, or revise predictions.
 - Use context to determine meanings of unfamiliar words and technical vocabulary.
 - Draw conclusions and make inferences based on explicit and implied information.
 - Organize the main idea and details to form a summary.
 - Compare and contrast information about one topic contained in different selections.
 - Select informational sources appropriate for a given purpose.

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- 6.6 The student will write narratives, descriptions, and explanations.
- Use a variety of planning strategies to generate and organize ideas.
 - Establish central idea, organization, elaboration, and unity.
 - Select vocabulary and information to enhance the central idea, tone, and voice.
 - Expand and embed ideas by using modifiers, standard coordination, and subordination in complete sentences.
 - Revise writing for clarity.
- 7.3 The student will describe persuasive messages in nonprint media, including television, radio, and video.
- Identify persuasive technique used.
 - Distinguish between fact and opinion.
 - Describe how word choice conveys viewpoint.
- 7.6 The student will read and demonstrate comprehension of a variety of informational texts.
- Use knowledge of text structures to aid comprehension.
 - Use knowledge of words and phrases that signal an author’s organizational pattern to aid comprehension.
 - Distinguish fact from opinion in newspapers, magazines, and other print media.
 - Identify the source, viewpoint, and purpose of texts.
 - Describe how word choice and language structure convey an author’s viewpoint.
 - Summarize what is read.
 - Organize and synthesize information for use in written and oral presentations.
- 7.7 The student will apply knowledge of appropriate reference materials.
- Use print and electronic sources to locate information in books and articles.
 - Use graphic organizers to organize information.
 - Synthesize information from multiple sources.
 - Credit primary and secondary sources.
- 8.6 The student will read, comprehend, and analyze a variety of informational sources.
- Draw on background knowledge and knowledge of text structure to understand selections.
 - Analyze the author’s credentials, viewpoint, and impact.
 - Analyze the author’s use of text structure and word choice.
 - Analyze details for relevance and accuracy.
 - Read and follow instructions to complete an assigned task.
 - Summarize and critique text.
 - Evaluate and synthesize information to apply in written and oral presentations.
 - Draw conclusions based on explicit and implied information.
 - Make inferences based on explicit and implied information.

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- 8.7 The student will write in a variety of forms, including narrative, expository, persuasive, and informational.
- Use prewriting strategies to generate and organize ideas.
 - Organize details to elaborate the central idea.
 - Select specific vocabulary and information.
 - Revise writing for word choice, sentence variety, and transitions among paragraphs.
 - Use available technology.

HISTORY AND SOCIAL SCIENCE: CIVICS AND ECONOMICS

- CE.9 The student will demonstrate knowledge of how economic decisions are made in the marketplace by
- applying the concepts of scarcity, resources, choice, opportunity cost, price, incentives, supply and demand, production, and consumption;
 - comparing the differences among free market, command, and mixed economies;
 - describing the characteristics of the United States economy, including free markets, private property, profit, and competition.
- CE.10 The student will demonstrate knowledge of the structure and operation of the United States economy by
- describing the types of business organizations and the role of entrepreneurship;
 - explaining the circular flow that shows how consumers (households), businesses (producers), and markets interact;
 - explaining how financial institutions encourage saving and investing;
 - examining the relationship of Virginia and the United States to the global economy, with emphasis on the impact of technological innovations.
- CE.11 The student will demonstrate knowledge of the role of government in the United States economy by
- examining competition in the marketplace;
 - explaining the creation of public goods and services;
 - describing the impact of taxation, including an understanding of the reasons for the 16th amendment, spending, and borrowing;
 - explaining how the Federal Reserve System regulates the money supply;
 - describing the protection of consumer rights and property rights.
- CE.12 The student will demonstrate knowledge of career opportunities by
- identifying talents, interests, and aspirations that influence career choice;
 - identifying attitudes and behaviors that strengthen the individual work ethic and promote career success;
 - identifying skills and education that careers require;
 - examining the impact of technological change on career opportunities.

Plant Science – SOL Correlations

MATH

- 6.9 The student will compare and convert units of measure for length, area, weight/mass, and volume within the U.S. Customary system and the metric system and estimate conversions between units in each system:
- a) length — part of an inch ($1/2$, $1/4$, and $1/8$), inches, feet, yards, miles, millimeters, centimeters, meters, and kilometers;
 - b) weight/mass — ounces, pounds, tons, grams, and kilograms;
 - c) liquid volume — cups, pints, quarts, gallons, milliliters, and liters; and
 - d) area — square units.
- 6.10 The student will estimate and then determine length, weight/mass, area, and liquid volume/capacity, using standard and nonstandard units of measure.
- 7.4 The student will
- a) solve practical problems using rational numbers (whole numbers, fractions, decimals) and percents; and
 - b) solve consumer-application problems involving tips, discounts, sales tax, and simple interest.
- 7.5 The student will formulate rules for and solve practical problems involving basic operations (addition, subtraction, multiplication, and division) with integers.
- 7.8 The student will investigate and solve problems involving the volume and surface area of rectangular prisms and cylinders, using concrete materials and practical situations to develop formulas.
- 8.3 The student will solve practical problems involving rational numbers, percents, ratios, and proportions. Problems will be of varying complexities and will involve real-life data, such as finding a discount and discount prices and balancing a checkbook.
- 8.7 The student will investigate and solve practical problems involving volume and surface area of rectangular solids (prisms), cylinders, cones, and pyramids.

SCIENCE

- 6.1 The student will plan and conduct investigations in which
- a) observations are made involving fine discrimination between similar objects and organisms;
 - b) a classification system is developed based on multiple attributes;
 - c) precise and approximate measurements are recorded;
 - d) scale models are used to estimate distance, volume, and quantity;
 - e) hypotheses are stated in ways that identify the independent (manipulated) and dependent (responding) variables;
 - f) a method is devised to test the validity of predictions and inferences;
 - g) one variable is manipulated over time, using many repeated trials;

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- h) data are collected, recorded, analyzed, and reported using appropriate metric measurements;
 - i) data are organized and communicated through graphical representation (graphs, charts, and diagrams);
 - j) models are designed to explain a sequence; and
 - k) an understanding of the nature of science is developed and reinforced.
- 6.9 The student will investigate and understand public policy decisions relating to the environment. Key concepts include
- a) management of renewable resources (water, air, soil, plant life, animal life);
 - b) management of nonrenewable resources (coal, oil, natural gas, nuclear power, mineral resources);
 - c) the mitigation of land-use and environmental hazards through preventive measures; and
 - d) cost/benefit tradeoffs in conservation policies.
- LS.2 The student will investigate and understand that all living things are composed of cells. Key concepts include
- a) cell structure and organelles (cell membrane, cell wall, cytoplasm, vacuole, mitochondrion, endoplasmic reticulum, nucleus, and chloroplast);
 - b) similarities and differences between plant and animal cells;
 - c) development of cell theory; and
 - d) cell division (mitosis and meiosis).
- LS.3 The student will investigate and understand that living things show patterns of cellular organization. Key concepts include
- a) cells, tissues, organs, and systems; and
 - b) life functions and processes of cells, tissues, organs, and systems (respiration, removal of wastes, growth, reproduction, digestion, and cellular transport).
- LS.4 The student will investigate and understand that the basic needs of organisms must be met in order to carry out life processes. Key concepts include
- a) plant needs (light, water, gases, and nutrients);
 - b) animal needs (food, water, gases, shelter, space); and
 - c) factors that influence life processes.
- LS.5 The student will investigate and understand how organisms can be classified. Key concepts include
- a) the distinguishing characteristics of kingdoms of organisms;
 - b) the distinguishing characteristics of major animal and plant phyla; and
 - c) the characteristics of the species.
- LS.6 The student will investigate and understand the basic physical and chemical processes of photosynthesis and its importance to plant and animal life. Key concepts include
- a) energy transfer between sunlight and chlorophyll;

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- b) transformation of water and carbon dioxide into sugar and oxygen; and
 - c) photosynthesis as the foundation of virtually all food webs.
- LS.7 The student will investigate and understand that organisms within an ecosystem are dependent on one another and on nonliving components of the environment. Key concepts include
- a) the carbon, water, and nitrogen cycles;
 - b) interactions resulting in a flow of energy and matter throughout the system;
 - c) complex relationships within terrestrial, freshwater, and marine ecosystems; and
 - d) energy flow in food webs and energy pyramids.
- LS.9 The student will investigate and understand interactions among populations in a biological community. Key concepts include
- a) the relationships among producers, consumers, and decomposers in food webs;
 - b) the relationship between predators and prey;
 - c) competition and cooperation;
 - d) symbiotic relationships; and
 - e) niches.
- LS.10 The student will investigate and understand how organisms adapt to biotic and abiotic factors in an ecosystem. Key concepts include
- a) differences between ecosystems and biomes;
 - b) characteristics of land, marine, and freshwater ecosystems; and
 - c) adaptations that enable organisms to survive within a specific ecosystem.
- LS.11 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic and change over time (daily, seasonal, and long term). Key concepts include
- a) phototropism, hibernation, and dormancy;
 - b) factors that increase or decrease population size; and
 - c) eutrophication, climate changes, and catastrophic disturbances.
- LS.12 The student will investigate and understand the relationships between ecosystem dynamics and human activity. Key concepts include
- a) food production and harvest;
 - b) change in habitat size, quality, or structure;
 - c) change in species competition;
 - d) population disturbances and factors that threaten or enhance species survival; and
 - e) environmental issues (water supply, air quality, energy production, and waste management).
- LS.13 The student will investigate and understand that organisms reproduce and transmit genetic information to new generations. Key concepts include
- a) the role of DNA;
 - b) the function of genes and chromosomes;
 - c) genotypes and phenotypes;

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- d) factors affecting the expression of traits;
- e) characteristics that can and cannot be inherited;
- f) genetic engineering and its applications; and
- g) historical contributions and significance of discoveries related to genetics.

LS.14 The student will investigate and understand that organisms change over time. Key concepts include

- a) the relationships of mutation, adaptation, natural selection, and extinction;
- b) evidence of evolution of different species in the fossil record; and
- c) how environmental influences, as well as genetic variation, can lead to diversity of organisms.

ENGLISH

6.1 The student will analyze oral participation in small-group activities.

- a) Communicate as leader and contributor.
- b) Evaluate own contributions to discussions.
- c) Summarize and evaluate group activities.
- d) Analyze the effectiveness of participant interactions.

6.5 The student will read and demonstrate comprehension of a variety of informational selections.

- h) Identify questions to be answered.
- i) Make, confirm, or revise predictions.
- j) Use context to determine meanings of unfamiliar words and technical vocabulary.
- k) Draw conclusions and make inferences based on explicit and implied information.
- l) Organize the main idea and details to form a summary.
- m) Compare and contrast information about one topic contained in different selections.
- n) Select informational sources appropriate for a given purpose.

6.6 The student will write narratives, descriptions, and explanations.

- a) Use a variety of planning strategies to generate and organize ideas.
- b) Establish central idea, organization, elaboration, and unity.
- c) Select vocabulary and information to enhance the central idea, tone, and voice.
- d) Expand and embed ideas by using modifiers, standard coordination, and subordination in complete sentences.
- e) Revise writing for clarity.

7.6 The student will read and demonstrate comprehension of a variety of informational texts.

- a) Use knowledge of text structures to aid comprehension.
- b) Use knowledge of words and phrases that signal an author's organizational pattern to aid comprehension.
- c) Distinguish fact from opinion in newspapers, magazines, and other print media.
- d) Identify the source, viewpoint, and purpose of texts.
- e) Describe how word choice and language structure convey an author's viewpoint.
- f) Summarize what is read.
- g) Organize and synthesize information for use in written and oral presentations.

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- 7.7 The student will apply knowledge of appropriate reference materials.
- Use print and electronic sources to locate information in books and articles.
 - Use graphic organizers to organize information.
 - Synthesize information from multiple sources.
 - Credit primary and secondary sources.
- 8.6 The student will read, comprehend, and analyze a variety of informational sources.
- Draw on background knowledge and knowledge of text structure to understand selections.
 - Analyze the author’s credentials, viewpoint, and impact.
 - Analyze the author’s use of text structure and word choice.
 - Analyze details for relevance and accuracy.
 - Read and follow instructions to complete an assigned task.
 - Summarize and critique text.
 - Evaluate and synthesize information to apply in written and oral presentations.
 - Draw conclusions based on explicit and implied information.
 - Make inferences based on explicit and implied information.
- 8.7 The student will write in a variety of forms, including narrative, expository, persuasive, and informational.
- Use prewriting strategies to generate and organize ideas.
 - Organize details to elaborate the central idea.
 - Select specific vocabulary and information.
 - Revise writing for word choice, sentence variety, and transitions among paragraphs.
 - Use available technology.

HISTORY AND SOCIAL SCIENCE: CIVICS AND ECONOMICS

- CE.9 The student will demonstrate knowledge of how economic decisions are made in the marketplace by
- applying the concepts of scarcity, resources, choice, opportunity cost, price, incentives, supply and demand, production, and consumption;
 - comparing the differences among free market, command, and mixed economies;
 - describing the characteristics of the United States economy, including free markets, private property, profit, and competition.
- CE.12 The student will demonstrate knowledge of career opportunities by
- identifying talents, interests, and aspirations that influence career choice;
 - identifying attitudes and behaviors that strengthen the individual work ethic and promote career success;
 - identifying skills and education that careers require;
 - examining the impact of technological change on career opportunities.

Small Animal Care – SOL Correlations

MATH

- 6.8 The student will solve multistep consumer-application problems involving fractions and decimals and present data and conclusions in paragraphs, tables, or graphs. Planning a budget will be included.
- 6.10 The student will estimate and then determine length, weight/mass, area, and liquid volume/capacity, using standard and nonstandard units of measure.
- 7.4 The student will
- solve practical problems using rational numbers (whole numbers, fractions, decimals) and percents; and
 - solve consumer-application problems involving tips, discounts, sales tax, and simple interest.
- 7.5 The student will formulate rules for and solve practical problems involving basic operations (addition, subtraction, multiplication, and division) with integers.
- 7.7 The student, given appropriate dimensions, will
- estimate and find the area of polygons by subdividing them into rectangles and right triangles; and
 - apply perimeter and area formulas in practical situations.
- 7.8 The student will investigate and solve problems involving the volume and surface area of rectangular prisms and cylinders, using concrete materials and practical situations to develop formulas.
- 8.3 The student will solve practical problems involving rational numbers, percents, ratios, and proportions. Problems will be of varying complexities and will involve real-life data, such as finding a discount and discount prices and balancing a checkbook.
- 8.7 The student will investigate and solve practical problems involving volume and surface area of rectangular solids (prisms), cylinders, cones, and pyramids.

SCIENCE

- 6.1 The student will plan and conduct investigations in which
- observations are made involving fine discrimination between similar objects and organisms;
 - a classification system is developed based on multiple attributes;
 - precise and approximate measurements are recorded;
 - scale models are used to estimate distance, volume, and quantity;
 - hypotheses are stated in ways that identify the independent (manipulated) and dependent (responding) variables;
 - a method is devised to test the validity of predictions and inferences;
 - one variable is manipulated over time, using many repeated trials;
 - data are collected, recorded, analyzed, and reported using appropriate metric measurements;

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- i) data are organized and communicated through graphical representation (graphs, charts, and diagrams);
 - j) models are designed to explain a sequence; and
 - k) an understanding of the nature of science is developed and reinforced.
- LS.4 The student will investigate and understand that the basic needs of organisms must be met in order to carry out life processes. Key concepts include
- a) plant needs (light, water, gases, and nutrients);
 - b) animal needs (food, water, gases, shelter, space); and
 - c) factors that influence life processes.
- LS.5 The student will investigate and understand how organisms can be classified. Key concepts include
- a) the distinguishing characteristics of kingdoms of organisms;
 - b) the distinguishing characteristics of major animal and plant phyla; and
 - c) the characteristics of the species.
- LS.8 The student will investigate and understand that interactions exist among members of a population. Key concepts include
- a) competition, cooperation, social hierarchy, territorial imperative; and
 - b) influence of behavior on a population.
- LS.9 The student will investigate and understand interactions among populations in a biological community. Key concepts include
- a) the relationships among producers, consumers, and decomposers in food webs;
 - b) the relationship between predators and prey;
 - c) competition and cooperation;
 - d) symbiotic relationships; and
 - e) niches.

ENGLISH

- 6.1 The student will analyze oral participation in small-group activities.
- a) Communicate as leader and contributor.
 - b) Evaluate own contributions to discussions.
 - c) Summarize and evaluate group activities.
 - d) Analyze the effectiveness of participant interactions.
- 6.5 The student will read and demonstrate comprehension of a variety of informational selections.
- a) Identify questions to be answered.
 - b) Make, confirm, or revise predictions.
 - c) Use context to determine meanings of unfamiliar words and technical vocabulary.
 - d) Draw conclusions and make inferences based on explicit and implied information.
 - e) Organize the main idea and details to form a summary.
 - f) Compare and contrast information about one topic contained in different selections.
 - g) Select informational sources appropriate for a given purpose.
- 6.6 The student will write narratives, descriptions, and explanations.
- a) Use a variety of planning strategies to generate and organize ideas.
 - b) Establish central idea, organization, elaboration, and unity.
 - c) Select vocabulary and information to enhance the central idea, tone, and voice.

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- d) Expand and embed ideas by using modifiers, standard coordination, and subordination in complete sentences.
 - e) Revise writing for clarity.
- 7.6 The student will read and demonstrate comprehension of a variety of informational texts.
- a) Use knowledge of text structures to aid comprehension.
 - b) Use knowledge of words and phrases that signal an author’s organizational pattern to aid comprehension.
 - c) Distinguish fact from opinion in newspapers, magazines, and other print media.
 - d) Identify the source, viewpoint, and purpose of texts.
 - e) Describe how word choice and language structure convey an author’s viewpoint.
 - f) Summarize what is read.
 - g) Organize and synthesize information for use in written and oral presentations.
- 7.7 The student will apply knowledge of appropriate reference materials.
- a) Use print and electronic sources to locate information in books and articles.
 - b) Use graphic organizers to organize information.
 - c) Synthesize information from multiple sources.
 - d) Credit primary and secondary sources.
- 8.6 The student will read, comprehend, and analyze a variety of informational sources.
- a) Draw on background knowledge and knowledge of text structure to understand selections.
 - b) Analyze the author’s credentials, viewpoint, and impact.
 - c) Analyze the author’s use of text structure and word choice.
 - d) Analyze details for relevance and accuracy.
 - e) Read and follow instructions to complete an assigned task.
 - f) Summarize and critique text.
 - g) Evaluate and synthesize information to apply in written and oral presentations.
 - h) Draw conclusions based on explicit and implied information.
 - i) Make inferences based on explicit and implied information.
- 8.7 The student will write in a variety of forms, including narrative, expository, persuasive, and informational.
- a) Use prewriting strategies to generate and organize ideas.
 - b) Organize details to elaborate the central idea.
 - c) Select specific vocabulary and information.
 - d) Revise writing for word choice, sentence variety, and transitions among paragraphs.
 - e) Use available technology.

HISTORY AND SOCIAL SCIENCE: CIVICS AND ECONOMICS

- CE.9 The student will demonstrate knowledge of how economic decisions are made in the marketplace by
- a) applying the concepts of scarcity, resources, choice, opportunity cost, price, incentives, supply and demand, production, and consumption;
 - b) comparing the differences among free market, command, and mixed economies;

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- c) describing the characteristics of the United States economy, including free markets, private property, profit, and competition.

CE.12 The student will demonstrate knowledge of career opportunities by

- a) identifying talents, interests, and aspirations that influence career choice;
- b) identifying attitudes and behaviors that strengthen the individual work ethic and promote career success;
- c) identifying skills and education that careers require;
- d) examining the impact of technological change on career opportunities.