CATA Curricular Code Change Proposal

Submission Instructions, please read in full before submitting your proposal:

1. Fill in all the below information.
2. Download the current code from the CATA Website: Curricular Activities Code
    1. Do not delete anything from the code. Strikethrough parts to delete. Any new wording, type into the code and highlight in yellow.
    2. Upload "Proposed Code" below.
    3. Upload any additional documents if needed
    4. Scroll all the way to the bottom and sign the form.
3. **IMPORTANT - Answering "Yes" to any of the questions requires the Host Site's Contest Coordinator's signature.**
    1. After all information is filled out, codes are updated and you have signed the form, hit "Save" on the bottom right-hand corner. **DO NOT** hit "SUBMIT".
    2. Once you hit "Save" a box will appear with a link. This link is specific to your proposal. You can email the link to yourself and also copy from this box.
    3. Email this link to the Host Site coordinator to review your proposal. When emailing the Host Site, request that they review your proposal and sign in the "Host Site Coordinator's" Signature box. Request that they hit "Save" after signing the document and let you know that the signature is complete.
    4. Using the link, pull up your proposal and confirm that the signatures are complete and hit "Submit". Once you hit "Submit", you will no longer be able to make any changes to your submission.

Name of Contest:
Forestry

Curricular Codes Open - List A
Forestry

Out of Rotation Curricular Codes

Revive a Contest: Please enter the name of the contest below and contact the CATA office for a copy of the Code.

Proposed by:
Katie Alling

School:
Nevada Union

Email:
kalling@njuhsd.com

Issue:
Consulted with industry and selected tools to remove and added relevant logging equipment. Replacing the whole list to improve the formatting for copying and pasting.

This proposal will require a contest to open out of rotation: (Please note: It is highly recommended that you, or a representative, attend the pre-conference governing board meeting to answer any questions regarding proposed curricular code changes to contests that are requested to be opened out of rotation.)
No

The change will affect General Rules:
No

The change will affect the awards needed:
No

The proposed change will affect contest forms:
No

The proposed change will affect contest hosting site (e.g. additional facilities, new sections, additional scoring, etc.)
Yes

If you answered YES to any of the above questions, please explain:
It may change how the site prepares. To Dr. Gill- CATA Contacted me and asked to get your signature.

Which JudgingCard scorecard will be used for tabulations?
Forestry

Is this a New Contest Proposal?
No

If you answered YES to this being a New Contest Proposal, please indicate who will be sponsoring the contest. New Contest Proposals require a 3-year sponsor.

Contact information for Sponsor:

If you answered yes to any of the above questions, you need to include the following signature:

Host Site Contest Coordinator's Name:
Dr. Samantha Gill

CDE Host Site Contest Coordinator's Signature (agreeing that changes are able to be accommodated by the host site.)

Upload code with tracked changes:
2026 Forestry Tool List Upload .docx

2026 Forestry Tool List Upload .docx.pdf

Upload any additional information you would like:

Please sign below:

FORESTRY

Revised 06/2024

Purpose

The purpose of this contest is to stimulate student interest and to promote forestry instruction in the agricultural education curriculum and to provide recognition for those who have demonstrated skills and competencies as a result of forestry instruction.

Contestants

Teams consist of four members, with all four individual scores plus the compass activity team event score counting as the team score. All team members are eligible for individual awards. Individuals not on a complete team may also compete for individual awards.

State Finals will consist of two rounds. Round one will be the team event and knowledge portions and round two the remaining portions of the contest. Round one will be held Friday and round two will be held the following day.

Classes

The contest will consist of five divisions involving eight subject areas. A summary of these Skillsets are as follows:

Area	Description	Time	Individual Points	Team Points
Identification – Skillset I (150 points possible)				
AREA 1	Plant Identification	30	100	400
AREA 2	Identification of Forestry Equipment, Wood Species, and Wood Characteristics	30	50	200
Land Measurement – Skillset II (100 points possible)				
AREA 3	Acreage	30	30	120
AREA 4	Compass	30	20	80
	Map Reading	30	50	200
Forestry Knowledge and Table Interpretation – Skillset III (100 points possible)				
AREA 5	Forestry Knowledge	30	50	200
AREA 6	Graph and Table Interpretation	30	50	200
Timber Measurements - Skillset IV (100 points possible)				
AREA 7	Tree Height	20	30	120
	Diameter	20	40	160
	Log Scaling	20	30	120
Team Event – Skillset V (60 points possible - team score only)				
AREA 8	Timber Cruising	30		100
TOTAL			450	1900

Tie Breaker

1. In the case of ties, Plant Identification scores shall be used to break the tie.
2. If a tie continues to exist, it shall be broken by using the next area of the contest until the tie is broken.

Sub-contest Awards

Sub-contest awards will be given for high teams and individuals in the following areas: Identification – Skillset I, Land Measurement – Skillset II, Forestry Knowledge, and Table Interpretation – Skillset III, Timber Measurements – Skillset IV, Team Event – Skillset V (team only).

Host School Requirements

All equipment for the contestants will be available at the judging sites. Teams should be informed by email at the conclusion of the "on time registration date" with regards to the tools that they are expected to bring. Answer keys will be created by using the same tool that contestants are required to use. For example, the merritt hypsometer will be used to determine the number of logs for given answer key.

Rules

I. Contestants in the Forestry Contest will be divided into four groups so that only one member of a school or team will be in the same group at the same time (disqualification will result if this rule is broken). Only one group will be allowed at an area or site at one time.
II. All ID including plants, tools, and wood; and knowledge will be presented in a scantron format.
III. All adjustable tools and equipment provided by the host school will be calibrated so that the students will have the same opportunity to get the correct answer.
IV. All contestants must fill out the official scorecard and will be graded according to the points shown on the scorecard.
V. Calculators shall be allowed in all aspects of the contest. If a contestant is found using a programmable calculator, they are to be disqualified.
VI. Contestants are encouraged to use their own measuring tapes (both logging and diameter tapes), non-adjustable measuring equipment, and surveying pins.
VII. Identification (Skillset I)
    A. AREA 1 Plant Identification (Appendix A)
        1. Fifty specimens from the Plants Identification list in Appendix A will be displayed.
        2. Fresh foliage is preferred and if fruit, flowers, or cones are available they will be part of the identification specimen. Otherwise, cones, fruit or flower, and stems shall be used with a pressed specimen (no more than five pressed items are allowed).
        3. The list in Appendix A and the score card shall list plants by scientific name, in alphabetical order, with common names listed on the right.
        4. Fruit and/or cones can be displayed by themselves if they are underlined in the plant list (not to exceed five fruits and/or cones on the contest).
        5. If contestants are not permitted to touch plants samples; needled plants should have a typical group displayed by taping to a 3x5 card next to the sample so needle length and other features can be observed.
        6. Students are permitted to use a ruler.
        7. Scoring Information
            a) Time allowed: 30 minutes.
            b) Total points for this event: 100.
        8. Scoring: 2 points for each correctly identified plant species.
    B. AREA 2 Identification of Forestry Equipment (Appendix B), Wood Species and Wood Characteristics (Appendix C)
        1. Forestry Equipment Identification
            a) 25 tools or forestry equipment items from the Forestry Equipment Identification list in Appendix B will be displayed.
            b) No more than three (3) Stihl Chain Saw parts will be used.
            c) All items will be clearly marked with a reference number for identification.

d) Pictures or accurate models can be used for heavy equipment portion.
e) Items must be good specimens of the equipment.

2. Wood Species Identification
   a) 5 wood samples from the Wood Species Identification list in Appendix C will be displayed.
   b) Contestants will identify wood samples as to wood type (species).
   c) Wood species samples will be typical of market lumber with all 3 wood surfaces shown (tangential, cross section and radial).
3. Wood Characteristics Identification
   a) Wood samples showing 10 at 2 points each from the Wood Characteristics List.
   b) Characteristics Identification list in Appendix C will be displayed.
   c) Natural or manufactured wood characteristics are to be identified. Each sample will be clearly marked.
   d) Characteristics will be indicated on the sample as follows:
      (1) Knot shape will be marked on the sample if round knot or spike knot are wanted.
      (2) Knot quality will be marked on the sample if encased knot, intergrown knot or knot cluster is to be identified.
      (3) Grain will be marked on the sample to indicate that flat grain or vertical grain is to be identified.
      (4) Wood surface will be marked on the sample to indicate that cross-section, tangential surface or radial surface is to be identified.
      (5) Wood area will be marked on the sample if heartwood, pith, or sapwood is to be identified.
      (6) All other characteristics will be plainly marked as to what is being asked for by circles, arrows, etc., and the characteristic should be the predominant characteristic on the sample.
4. Scoring Information
   a) Time allowed: 30 minutes.
   b) Total points for this event: 50.
   c) Scoring: One (1) point for each correctly identified forestry equipment item (25), wood species (5), and wood characteristic (20).

VIII. Land Measurement (Skillset II)

A. AREA 3 Acreage
   1. A three to four-sided polygon with straight sides shall be measured for area in acres.
   2. It will be free of obstructions so that it can be easily paced.
   3. The acreage problem given must be 0.30 to 1.25 acres in area.
   4. Scoring Information
      a) Time allowed: 30 minutes.
      b) Total points for this event: 30.
      c) Scoring: One (1) point will be deducted for each .01 acres of error

B. AREA 4 Compass and Map Reading
   1. Compass Reading
      a) The contestant will be provided with a bearing hand compass that has been set at a magnetic declination of zero and checked for accuracy prior to each contest.

b) A polygon of 4 stations in the form of a traverse will be laid out in the field. Each forward station will be visible from each back station. The beginning and ending point will be Station A.
c) The contestant will start at Station A and determine the bearing to Station B. Contestant will move to the next station and determine the bearing to the forward station, continuing this procedure until finally determining the fourth bearing while sighting Station A. A total of 4 bearings will be determined. The contestant will record the answers on the form provided.
d) Scoring Information
    (1) Time allowed: 30 minutes.
    (2) Total points for this event: 20.
    (3) Scoring: Five (5) points possible for each correct bearing. One (1) point deducted for each two (2) degrees of error.

2. Map Reading
    a) Contestants will be provided with a U.S. Geological Survey map such as the 7.5 minutes series map.
    b) Specific points will be marked for the contestant to identify.
    c) The contestant is expected to: know legal land description, recognize topographic map symbols, understand the meaning of map symbols, use the scale to correctly determine distance between points, calculate the number of acres in a parcel, and determine elevations.
    d) Example questions:
        (1) What is the legal land description of the five parcels marked?
        (2) What is the item located at this point?
        (3) What is the acreage of the area enclosed?
        (4) What is the distance in miles from point A to point B?
        (5) What is the elevation (on the contour line) at point C?
    e) Five specific parcels will be indicated and numbered on a map and the student will determine the proper legal description.
    f) The following parcels can be determined:
        (1) 1/4 of a section
        (2) 1/4 of a 1/4 section
        (3) 1/2 of a section
        (4) 1/2 of a 1/4 section
    g) The legal description will be written as follows: NW 1/4, SE 1/4, Sec. 23, T4N, R2E, MDM. Abbreviations will be used as above except that section can also be written as S. (as on national contest). Commas can be replaced by the word of.
3. A Dot Grid may be used to determine acreage using either the 660 or 440 scale dot grid. The student will be provided with a dot grid and a map scale. Full point value will be awarded if calculations are within 10% of the total correct acreage.
4. Scoring Information
    a) Time allowed: 30 minutes.
    b) Total points for this event: 50.
    c) Scoring:
        (1) Each correct parcel legal description is worth five points. Five parcels x 5 points each = 25 points. Partial credit will be allowed. For example, each error will have a deduction of one point. If NW 1/4 is correct and SW 1/4 is the answer one point will be deducted. Other examples:

incorrect Sec., etc., is one point de-ducted. Maximum of five points deducted per parcel.

(2) Additional questions will be worth a total of 25 points.

IX. Forestry Knowledge and Graph and Table Interpretation (Skillset III)

A. AREA 5 Forestry Knowledge:

1. 25 questions from the Forestry Knowledge list in Appendix D will be selected.
2. Scoring Information
   a) Time allowed: 30 minutes.
   b) Total points for this event: 50.
   c) Scoring: A total of 25 questions will be selected. Each question is worth two points each.

B. AREA 6 Graph and Table Interpretation: 50 points total.

1. Site Index
   a) A site index graph will be selected from those presented in Appendix E.
   b) Three sets of tree heights and tree ages will be given.
   c) The average tree height and age will be calculated by the contestant.
   d) The site index will be calculated by the contestant from their calculated averages and the graph provided. The site index will be scored correct within a range of plus or minus 2 site index reference numbers.
   e) Scoring Information
      (1) Time allowed: 30 minutes total for both (a) site index, and, (b) board foot volume.
      (2) Total points for site index: 20. Scoring will be based on the actual value plotted (not rounded to the nearest line).
      (3) Scoring: Ten points will be given for the correct Site Index rating, five points will be given for the correct average height, and five points will be given for the correct average age.
2. Board foot volume
   a) The dbh and height for three trees will be given.
   b) Board foot volume will be determined using a volume table in units of board foot volume.
   c) Scoring Information
      (1) Time allowed: 30 minutes total for both (a) site index, and, (b) board foot volume.
      (2) Total points for this event: 30.
      (3) Scoring: Ten points will be awarded for each correct total volume (one point deducted for each ten board feet off).

X. Timber Measurements (Skillset IV)

A. AREA 7 Timber Measurement

1. Tree Height
   a) Contestants will measure tree heights on two trees to the very top of the tree.
2. The clinometer will be used on one tree for total height, and either a logger's tape or a one hundred (100) foot tape will be used for measuring distance from the tree. Answers will be given in feet.
3. The Merritt Hypsometer will be used on one tree for number logs, and either a logger's tape or a one hundred (100) foot tape will be used for measuring distance from the

tree. Answers will be given in logs and ½ logs. When reading the hypsometer; answers will always be rounded down to the nearest half logs.

4. Scoring Information
    a) Time allowed: 10 minutes.
    b) Total points for this event: 30.
    c) Scoring: 15 points per tree possible. One (1) point will be deducted for every foot of error using a Clinometer. Five (5) points will be deducted for every 1/2 log (8 feet) of error using a Merritt Hypsometer.
5. Tree Diameter
    a) Contestants will measure four (4) trees for diameters. Diameter will be determined at dbh (4.5 ft.).
    b) Trees A & B will be measured with a Biltmore Stick
    c) Trees C & D will be measured with a diameter tape to the nearest 0.1 in.
    d) Scoring Information
        (1) Time allowed: 10 minutes.
        (2) Total points for this event: 40.
        (3) Scoring: Ten points will be scored for each diameter. One point will be deducted for each two (2) inches of error for trees measured with a Biltmore Stick. One point will be deducted for each 0.1 inch of error for the trees measured with a diameter tape.
6. Log Scaling (Appendix F)
    a) A Scribner's Decimal C log scaling stick will be used.
    b) The answer will be given in board feet. A log defect may be indicated and will be identified by its volume in either board feet or in Scribner's Decimal C.
    c) No odd length logs will be used. If rounds are used for diameters, two rounds should be used, one for the small end and one for the large end. The log length will be given in even footage. Length rules are included in Appendix F. Rules for butt logs are also provided in Appendix F. If the contest is giving butt logs, this needs to be indicated on the log or score sheet clearly to the contestant.
    d) Scoring Information
        (1) Time allowed: 10 minutes.
        (2) Total points for this event: 30.
        (3) Scoring: Two logs will be measured at 15 points each. One point will be deducted for each 10 bd. ft. of error.

XI. Team Event (Skillset V) – Three team events will be used on a rotating basis.

1. 2025 Timber Cruising
2. 2026 Compass and Tape
3. 2027 Basal Area
4. 2028 Timber Cruising
5. 2029 Compass and Tape
6. 2030 Basal Area

B. Compass and Tape Measurement – Team Event

1. The four (4) team members will be given data for a four-sided traverse.
2. Compass bearings will be to the nearest one (1) degree.
3. The traverse will be set up by the judge with a staff compass, transit or an advanced technique that is superior to a transit. If the course is laid out with a compass, bearings will be true bearings and the compass used will be adjusted for declination.

4. Contestants will be supplied with a Silva Bearing compass and a 100 foot tape. All hand compasses will be set to 0 declination.
5. Answers will be given as a measured distance from the contestant's ending point to the traverse beginning point. The answer will be compared to a known distance from the traverse ending point to the beginning point.
6. The traverse ending point will be located at least 25 feet from the beginning point.
7. Scoring Information
    a) Time allowed: 30 minutes.
    b) Total points for this event: 60.
    c) Scoring: One (1) point will be deducted for every one (1) foot error.

C. Basal Area – Team Event
1. A wedge prism of 10 factor will be used at the contest site and will be designated prior to the contest. It is encouraged to have at least one borderline tree in the plot.
2. Scoring Information
    a) Total points for this event: 60.
    b) Scoring: Two (2) points will be deducted for each one square foot of error.
    c) The answer for Basal Area must be reported in square feet per acre.

D. Timber Cruising - Team Event
1. A cruisers stick will be used to determine the number of logs and diameter class of ten trees. Using the provided Scale table (Appendix H) students will determine the total scale and report their data on the provided table (Appendix G). Contestants will use board foot volume to determine a dollar value of the stand in dollars per thousand board feet (using the given rate of $452/thousand board feet).
2. Contest sights may elect to use fewer trees if ten are not available by providing data (logs and diameter class to plug into the table).
3. Scoring Information
    a) A correct answer will fall within $226 of the determined dollar value amount. Teams will be penalized by five (5) points per each $226 (half of given value/thousand) that their answer is off.

Appendices

A – Plant Identification List
B – Forestry Equipment Identification List
C – Wood Identification Species and Characteristics List
D – Forestry Knowledge List
E – Site Index Graphs
F – Log Scaling Lengths and Rules for Butt Logs
G – Cruising Table
H – Volume Table
I – Basal Area
J – References

Appendix A -- Plant Identification List

1	Abies concolor	White fir
2	Abies magnifica	Red Fir
3	Abies grandis	Grand Fir
4	Acer negundo	Box-elder
5	Acer macrophyllum	Big-leaf Maple
6	Adenostoma fasciculatum	Chamise
7	Aesculus californica	California Buckeye
8	Alnus rhombifolia	White Alder
9	Alnus rubra	Red Alder
10	Arbutus menziesii	Pacifica Madrone
11	Arctostaphylos spp.	Manzanita (California Native)
12	Baccharis pilularis	Coyote Bush
13	Berberis aquifolium	Oregon Grape
14	Betula occidentalis	Water Birch
15	Calocedrus decurrens	Incense Cedar
16	Ceanothus cuneatus	Buckbush
17	Ceanothus interrimus	Deerbrush
18	Ceanothus leucodermis	Chaparral Whitethorn
19	Cercis occidentalis	Western Redbud
20	Cerocarpus betuloides	Mountain Mahogany
21	Chamaebatia foliolosa	Sierra Mountain Misery
22	Chamaecyparis lawsoniana	Port Orford-Cedar
23	Chrysolepis chryophylla	Golden Chinkapin
24	Cornus nuttallii	Pacific Dogwood
25	Diplacus spp.	Monkey Flower (California Native, shrub)
26	Eriodoctyon spp.	Yerba Santa
27	Fraxinus latifolia	Oregon Ash
28	Fremontodendron californica	Flannel Bush
29	Hesperocyparis macrocarpa	Monterey Cypress
30	Heteromeles arbutifolia	Toyon
31	Jugalans californica	California Black Walnut
32	Juniperus californica	California Juniper
33	Lupinus albifrons or arboreus	Bush Lupine or Tree Lupine
34	Natholithocarpus densiflorus	Tan Oak Tanbark Oak
35	Picea sitchensis	Sitka Spruce
36	Pinus attenuata	Knobcone Pine
37	Pinus contorta	Lodgepole Pine
38	Pinus coulteri	Coulter Pine
39	Pinus jeffreyi	Jeffrey Pine
40	Pinus lambertiana	Sugar Pine
41	Pinus monophylla	Singleleaf Pinyon Pine

42	Pinus monticola	Western White Pine
43	Pinus muricata	Bishop Pine
44	Pinus ponderosa	Ponderosa Yellow Pine
45	Pinus radiata	Monterey Pine
46	Pinus sabiniana	Foothill Pine Grey Pine
47	Pinus torreyana	Torrey Pine
48	Platanus racemosa	California Sycamore
49	Populus fremontii	Fremont Cottonwood
50	Populus trichocarpa	Black Cottonwood
51	Populas tremulodies	Quaking Aspen
52	Pseudotsuga menziessii	Douglas Fir
53	Pteridium aquilinium	Bracken Fern
54	Quercus agrifolia	Coastal Live Oak
55	Quercus chrysolepsis	Canyon Live Oak
56	Quercus douglasii	Blue Oak
57	Quercus kelloggii	California Black Oak
58	Quercus lobata	Valley Oak
59	Quercus wilezinii	Interior Live Oak
60	Rhamnus spp.	Coffee Berry
61	Rhododendron occidentiale	Western Azalea
62	Ribes spp.	Current or Gooseberry (California Native)
63	Rosea spp.	Rose (California Native)
64	Rubus parviflorus	Thimbleberry
65	Salix spp.	Willow (California Native)
66	Sambucus mexicana	Blue Elderberry
67	Sequoiadendron giganteum	Giant Sequoia
68	Sequoia sempervirens	Coast Redwood
69	Taxus brevifolia	Western Yew
70	Thuja plicata	Western Red Cedar
71	Torreya californica	California Nutmeg
72	Tsuga spp.	Mountain Hemlock or Western Hemlock
73	Umbellularia californica	California Bay Laurel
74	Woodwardia fimbriata	Giant Chain Fern

*Fruits and/or cones may be displayed by themselves from the plants that are underlined.

Appendix B – Forestry Tools & Equipment Identification List

1 Abney Level
2 Altimeter
3 Anemometer
4 Axe – Cruiser's
5 Axe – Double Bit
6 Axe – Hand
7 Axe – Single Bit
8 Bark Gauge
9 Back Pump
10 Brand Hammer

Chain Saw Parts Identification

11 Chain Saw Chain
12 Chain Saw File
13 Guide Bar
14 Oil Filler Cap
15 Starter Grip
16 Ignition Switch
17 Spark Plug
18 Throttle Lever Lock
19 Spark Plug Wire
20 Air Filter
21 Brake Lever
22 Fuel Filler Cap
23 Choker Lever
24 Throttle Trigger
25 Chaps A
26 Choker B
27 Clinometer
28 Cross-cut Saw
29 Cruiser's Stick
30 Data Recorder
31 Diameter Tape
32 Dot Grid
33 Drip Torch
34 Dibble Bar
35 Dixie Pike Pole
36 Dumpy Level
37 Ear Protectors
38 Engineer's Tape
39 Fire Rake
40 Fixed Radius Plot Tape
41 Flagging Tape
42 Forester's Hand Compass
43 Fusee
44 GPS – Hand Held
45 Hazel Tool
46 Hoedad
47 Hookeroon
48 Increment Borer
49 Jacob's Staff
50 Leveling Rod
51 Logger's Tape
52 McLeod
53 Peavy
54 Plumb Bob
55 Pulaski
56 Range Finder
57 Relaskop
58 Safety Hard Hat
59 Scaling Stick
60 Shovel
61 Sledge (or Single Jack)
62 Sling Psychrometer
63 Soil Tube
64 Splitting Maul
65 Staff Compass
66 Stereoscope
67 Surveying Pins
68 Talley Sheet
69 Tree Caliper
70 Tree Injector
71 Tree Marking Gun
72 Tree Planting Bag
73 Tree or Pole Climbers
74 Wedge Prism
75 Wedge – Falling
76 Wedge – Splitting

Forestry Heavy Equipment

77 Skidder
78 Feller-Buncher
79 Dozer
80 Logging Helicopter
81 Yarder
82 Self Loading Log Truck
83 Rubber Tire Loader
84 Processor

Appendix B – Forestry Tools, Equipment Identification and Chainsaw Parts List

Tools		Equipment	
1	Abney Level	50	Brush rake dozer
2	Altimeter	51	Cable skidder
3	Anemometer	52	Chipper
4	Axe – Cruiser's	53	Delimber
5	Axe – Double Bit	54	Dozer
6	Axe – Hand	55	Dump truck
7	Axe – Single Bit	56	Excavator
8	Back Pump	57	Feller buncher
9	Bark Gauge	58	Wildland Engine Type 3
10	Brand Hammer	59	Wildland Engine Type 6
11	Engineer's Tape	60	Forestry mulcher / masticator
12	Fire Rake	61	Forwarder
13	Fixed Radius Plot Tape	62	Fuel truck
14	Flagging Tape	63	Grapple Cat
15	Forester's Hand Compass	64	Grapple skidder
16	Fusee	65	Harvester
17	GPS – Hand Held	66	Horizontal grinder
18	Hazel Tool	67	Log loader / knuckleboom loader
19	Hoedad	68	Log truck
20	Hookeroon	69	Logging Helicopter
21	Increment Borer	70	Lowboy trailer
22	Jacob's Staff	71	Motor grader
23	Leveling Rod	72	Processor
24	Logger's Tape	73	Front End Loader
25	McLeod	74	Self Loading Log Truck
26	Peavy	75	Service truck
27	Plumb Bob	76	Shovel logger
28	Pulaski	77	Skid steer
29	Range Finder	78	Stump grinder
30	Relaskop	79	Track loader
31	Safety Hard Hat	80	Tub grinder
32	Scaling Stick	81	Water tender

33	Shovel	82	Yarder
34	Sledge (or Single Jack)	**Chain Saw Parts**	
35	Sling Psychrometer	83	Chain Saw Chain
36	Soil Tube	84	Chain Saw File
37	Splitting Maul	85	Guide Bar
38	Staff Compass	86	Oil Filler Cap
39	Stereoscope	87	Starter Grip
40	Surveying Pins	88	Ignition Switch
41	Talley Sheet	89	Spark Plug
42	Tree Caliper	90	Throttle Lever Lock
43	Tree Injector	91	Spark Plug Wire
44	Tree Marking Gun	92	Air Filter
45	Tree or Pole Climbers	93	Brake Lever
46	Tree Planting Bag	94	Fuel Filler Cap
47	Wedge - Splitting	95	Choker Lever
48	Wedge – Falling	96	Throttle Trigger
49	Wedge Prism		

Appendix C – Wood Identification Species and Characteristics List

Wood Identification Species List

1	Alder	7	Ponderosa Pine
2	Black Walnut	8	Sugar Pine
3	Coast Redwood	9	Western Red Cedar
4	Douglas-Fir	10	White Ash
5	Incense-Cedar	11	White Fir
6	Maple	12	Oak Species

Wood Identification Characteristics

Area:		Other:	
13	Heartwood	25	Birdseye
14	Pith	26	Flecks
15	Sapwood	27	Grub Holes
Grain:		28	Pitch Pocket
16	Flat Grain	29	Planer Miss or Skip
17	Vertical Grain	30	Season Check
Knot Quality:		31	Shake

18	Encased Knot	32	Split
19	Intergrown Knot	33	Stain
Knot Shape:		34	Timber Break
20	Round Knot	35	Unsound Wood (Rot)
21	Spike Knot	36	Wane
Wood Surface:		37	Warp
22	Cross Section	38	White Speck
23	Radial		
24	Tangential		

Appendix D -- Forestry Knowledge List

Forestry knowledge questions will be derived from this list.

No.	Term	Description
A	Acre	Ten square chains, or 208.7 ft. by 208.7 ft. square, or 43,560 square ft.
B	Afforestation	Establishment of a forest or stand in an area not previously forested.
C	Age-Class	Classification of a stand of trees based on when regeneration started.
D	Rotation-Age	Age at which a tree is ready to harvest.
E	Annual Ring	A summer and spring ring representing one growth year.
A	All-Aged	A stand of timber where all age classes are represented.
B	Aspect	Direction the slope faces.
C	Azimuth	Three hundred sixty (360) degrees on compass.
D	Back-Fire	Fire set along a control line which burns back into the fire.
E	Inner Bark	Area between the cambium and periderm.
A	Outer Bark	Layer of tissue outside of the last periderm layer.
B	Bearing Compass	A compass set up with four (4) 90 degree quadrants.
C	Tree Biomass	Weight of complete trees (living material).
D	Board Foot	The volume equivalent to a board one inch thick x twelve inches wide x twelve inches long.
E	Bole	Trunk or stem of a tree.
A	Breast Height	A point on a tree 4.5 ft. above the ground on the uphill side of a tree.
B	Controlled Burning	A deliberately started fire to accomplish a particular management purpose.
C	Burning Prescription	Describes the conditions and results to be garnered from a control burn.
D	Buck	To cut logs into specific lengths.
E	Butt Log	The first log above the stump.
A	Cambium	Growing tissue, produces xylem and phloem, that is part of the inner bark.
B	Chain	66 ft. measurement unit, or four (4) rods long.
C	Chaparral	A thicket of low, evergreen oaks or dense tangled brushwood.
D	Season Check	Lengthwise separation of wood which goes or extends across the rings of annual growth and is caused by stress during seasoning.
E	Clearcutting	Area in which the entire timber stand has been cut.
A	Codominant	Trees which are the average level of the canopy and receive light on the top but not necessarily on all sides of the crown.
B	Conifer	Cone bearing trees, usually evergreen.
C	Cord	Unit of measurement for stocked wood, four ft. by four ft. by 8 ft. (4’ x 4’ x 8’) or 128 cubic feet.
D	Crown	The part of a tree or woody plant bearing live branches and foliage.
E	Crown Fire	Fire which has moved into the tops of the trees.
A	Cruise	Survey of forest lands to locate and estimate volume and grades of standing timber.
B	Cubic foot	A unit of true volume that measures 1 x 1 x 1 ft or the equivalent of 12 board feet.
C	Cunit	A unit of volume, usually pulpwood, that measures 100 ft^3.

No.	Term	Description
D	Cull	Any item of production, e.g., trees, logs, lumber, or seedlings, rejected because it does not meet certain specifications of usability or grade.
E	Deciduous	Trees which usually drop all of their leaves more or less at one time, usually in the fall.
A	Mill Deck	Platform where logs are held in the sawmill prior to sawing.
B	Log Defect	Any irregularity or imperfection in a log which reduces the volume of sound wood or lowers the durability, strength or utility value.
C	Dendrology	Identification or systematic classification of trees.
D	Crown Density	The compactness of foliage of the crowns of trees and shrubs.
E	Dioecious	Male and female flowers produced on separate plants.
A	Dominant	Trees whose crowns extend above the average level of the forest canopy. They receive direct sunlight from above and some from the sides.
B	Duff	Organic debris in various stages of decomposition on top of the mineral soil.
C	Ecology	The study of the interrelationships between living organisms and the environment.
D	Even-Aged Management	Applied to a stand where relatively small age differences exist between individual trees. The maximum age difference is usually 10 to 20 years.
E	Tree Farm	Area usually privately owned which is dedicated to the production of timber products.
A	Surface Fire	A fire which burns over the forest floor and burns only the surface litter, loose debris and small vegetation.
B	Exploitation	Use of natural resources with economic greed as the primary motivation and the manipulation of the environment with no consideration for sustained yield.
C	Firebreak	A barrier existing or constructed before a fire to serve as a line from which work can be facilitated. Inflammable materials have been removed from the area and it is designed to stop creeping or running fires.
D	Multiple Use of the Forest	Management of the forest with concern for all natural resources including timber, wildlife, recreation, mining, watershed, and range. All of the uses are used without the harming or detrimental affects on the other uses.
E	Gall	A pronounced localized swelling of modified structure which occurs on plants usually as the result of the irritation or stimulus by another organism.
A	Girdle	To completely encircle the bole of a tree with cuts that completely sever the cambium layer eventually killing the tree.
B	Ground Fire	A fire which burns in the organic matter and down into the soil and roots.
C	Habitat	The site or area in which the plants or animals live. The unit area of the environment synonymous with site.
D	Hardwood	Wood produced by broadleaf trees; same as porous wood.
E	Heartwood	The inner core of the woody stem or bole wholly composed of nonliving cells and usually has a darker color.
A	Hectare	A unit of land measure within the metric system. About 2.471 acres.
B	Heeling In	Placing small bundles of bare-root seedlings in a shallow trench or hole and covering the roots.
C	Herbicide	A chemical used for killing or controlling the growth of plants.
D	Humus	Plant and animal residues of the duff which is in varying stages of decomposition.
E	Hypsometer	Instrument used to measure tree height using geometric or trigonometric principles.

No.	Term	Description
A	Intermediate Cuts	Harvest of trees made before a final harvest.
B	Intolerance	Inability of a tree to develop and grow in shade or in competition with other trees.
C	Kerf	Saw width of cut made by the saw. Basically sawdust residue.
D	Litter	Organic materials on upper layer of the duff.
E	Log	a) To cut and deliver logs aka logging.
A		b) Tree segments, cut to length and suitable for lumber.
B	Lookout	A station used for detection of fires. Usually a tower at a high point so a good view of the forest is available.
C	Lop	To cut limbs from trees, whether standing, felled, or fallen.
D	Maturity	Age beyond which growth declines in a given species.
E	Mensuration	Science of measurement of volume and growth and development of individual trees and stands and of the products they produce.
A	Merchantable Log	Size of a log, usually 16 ft., which is marketable.
B	Mixed Stand	Less than 75% of the stems in the stand are of the same species.
C	Monoecious	Having male and female flowers on the same plant.
D	Overrun	Excess amount of lumber actually sawed from the logs compared to the estimated volume from scaling.
E	Overstory	Upper crown cover.
A	Pathology	Study of the science of diseases of forest trees or stands, and the deterioration of the products by the organisms.
B	Phloem	Inner bark, just outward of the cambium, that translocates food made in the leaves down to the branches, twigs and roots.
C	Photosynthesis	Process by which plants manufacture food and oxygen.
D	Pole (size class)	Name for trees less than 12 inch dbh. Young: dbh of 4 inches. Small: 4 to 8 inch dbh. Large: 8 to 12 inch dbh.
E	Pruning	The removal of live or dead stems from dead or living trees.
A	Pulpwood	Wood cut or prepared primarily to be used in wood pulp manufacture for paper products, etc.
B	Reforestation	The natural or artificial restocking of an area with forest trees.
C	Rot	Wood in a state of decay.
D	Rotation	The period of years required to establish and grow a timber crop to a specified condition of maturity.
E	Sapling (size class)	A tree usually 3-10 ft. in height with a 2-4 inch dbh. Not over 4 inch dbh.
A	Sapwood	The light colored wood which conducts water and nutrients to the crown of the tree.
B	Saw Timber	Trees that yield logs of suitable size and quality to be made into lumber.
C	Scale	Measuring to determine the sound volume or contents of a log or group of logs.
D	Seasoning	The process of reducing the moisture content of wood or lumber by exposing it to air or using a kiln.
E	Section	An area of land one mile square containing 640 acres.
A	Seeding	Planting of seed by man or by natural process.

No.	Term	Description
B	Seedling (size class)	A tree usually grown by natural process from seed that is less than three ft. tall and smaller than a sapling.
C	Seed Tree	A mature tree left for natural seed regeneration or for seed collection.
D	Shake	A lengthwise separation of the wood usually between the annual growth rings.
E	Shelterwood	The establishment of natural reproduction with a partial shade left to protect the young seedlings. Removal of the mature timber in a series of cuttings, cuts not more than 25% or less than 1/10th of the stand.
A	Shrub	A woody perennial with a multiple branching stem.
B	Silviculture	The growing or the art and science of tending the forest.
C	Site	An area considered as to its environmental or ecological factors.
D	Site Index	A species-specific measure of actual or potential forest productivity expressed in terms of the average height of trees at a specified index or base age.
E	Slash	The debris and materials (limbs, etc.) left over from logging.
A	Snag	A standing dead tree usually over 20 ft. in height. Under 20 ft. is termed a stub.
B	Softwood	Wood produced by coniferous trees; same as nonporous wood.
C	Springwood	Wood formed of less dense, larger, cells.
D	Pure Stand	A stand in which 75% or more of the species are of the same species .
E	Stumpage	The value of timber as it stands in the woods.
A	Sustained Yield	Continuous yield of forest products from a specific area, year after year.
B	Taper	The difference in diameter between any two points along the tree stem.
C	Thinning	Cutting in an immature stand to increase its rate of growth to foster quality growth, improve composition and to promote a healthy stand.
D	Shade Tolerance	The ability of a tree to withstand shade.
E	Township	36 sections; a six mile by six mile parcel of land.
A	Transpiration	The process by which water vapor passes from the foliage or other parts of a living plant to the atmosphere.
B	Tree	A woody plant which has a bole or trunk of at least 8 ft. which is well defined.
C	Wolf Tree	A tree taking up space which has no value itself but competes with wanted trees. Usually stubby, short boled trees with many limbs.
D	Undercut	A cut in felling trees which is what creates a notch determining which way the tree is to fall.
E	Understory	The forest growth below the overstory, or taller plants in the canopy.
A	Uneven-Aged Management	Management of a stand where different age classes are maintained.
B	Wildfire	Natural occurring fires or man induced fires which no matter how they were started are burning out of control.
C	Windfall	A tree uprooted by wind or broken off by wind.
D	Xylem	The principal water-conducting tissue and the chief supporting system of higher plants, composed of tracheids, fibers, and parenchyma.

APPENDIX E -- Table Interpretation: Site Index Graphs

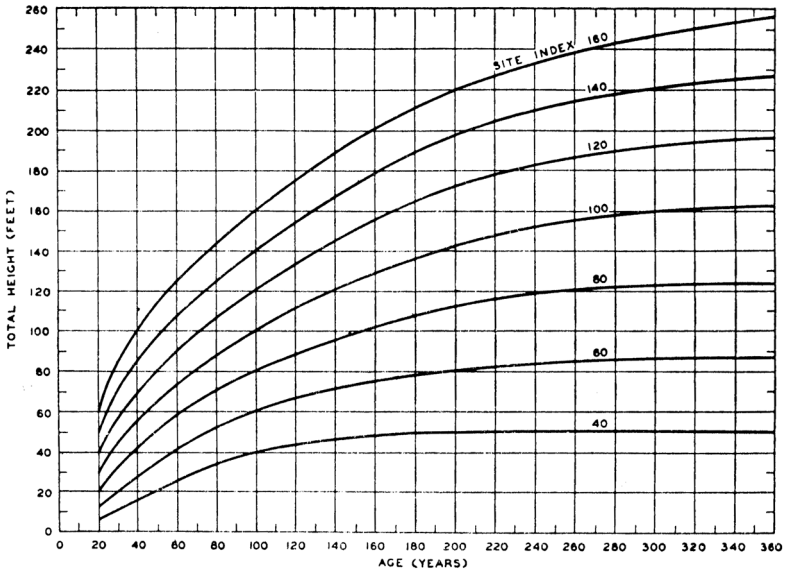

Figure A-4. Site index values of dominant and codominant ponderosa pine trees of average breast high diameter.

Fig 1. Ponderosa Pine Site Index Graph.

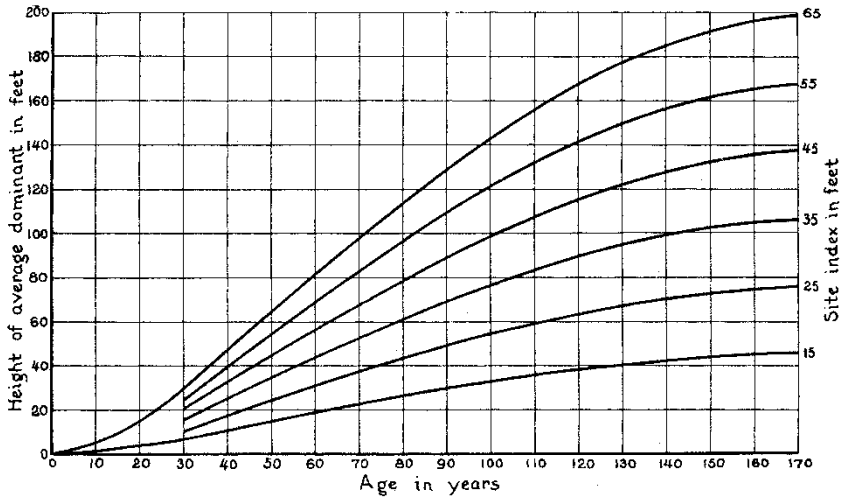

Figure A-6 Site index values of average dominant red fir trees.

U.C., Schumacher, 1928

Fig. 2. Red Fir Site Index Graph.

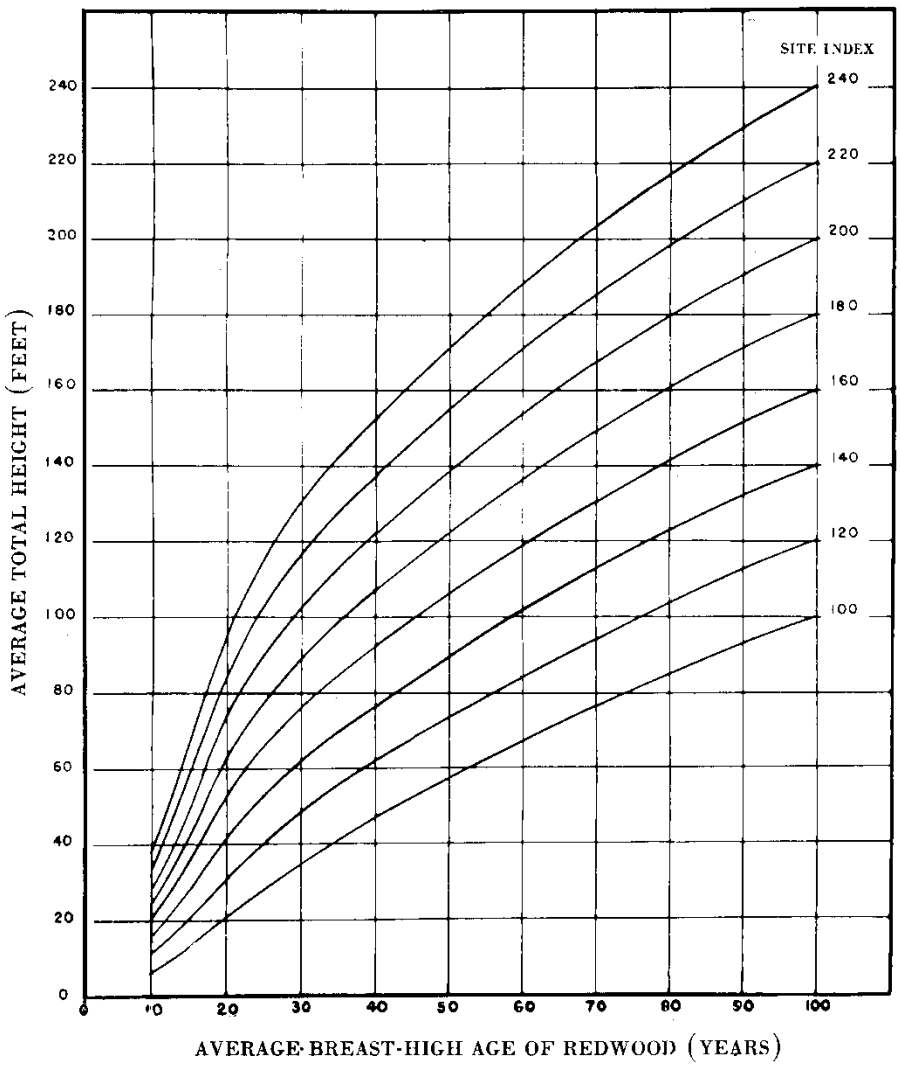

Figure A-1. Site index values of dominant redwood by height and breast-high age classes.

U.C., Lindquist and Palley, 1963

Fig. 3. Redwood Site Index Graph.

Appendix F -- Log Scaling

The following reference will be used for the log scaling portion of the Timber measurement Skillset, *"National Forest Log Scaling Handbook"*
https://fs.fed.us/im/directives/fsh/2409.11/2409.11-NF%20LOGSCALING%20HDBK.pdf

Scaling Rules:

When logs are measured for length, they must be in even 2 foot increments that include 6 inches of trim if they do not have the needed 6 inches then they will be scaled to the next shorter 2 foot increment. For example a 16' 8" log would be scaled as a 16' log; a 16' 2" log would be scaled as a 14" log. Two segment logs must have a minimum of 1 foot of trim or 6 inches for each segment.

Rules for scaling butt logs:

20' and under, no taper
22' - 26', 1" taper per segment, 2" total taper.
28' - 40', 2" taper per segment, 4" total taper

Appendix G -- Cruising Table

Tree Number	***DBH***	***Ht***	***Volume in BF***
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
Total Volume			

Appendix H – Volume Table

FORM CLASS 65

TABLE 34.—*Gross volume of tree, Scribner log rule*

Tree diameter (inches)	VOLUME (board feet) BY NUMBER OF USABLE 16-FOOT LOGS										
	1	1½	2	2½	3	3½	4	4½	5	5½	6
10	16	19	22	-----	-----	-----	-----	-----	-----	-----	-----
11	22	27	32	-----	-----	-----	-----	-----	-----	-----	-----
12	28	35	42	46	50	-----	-----	-----	-----	-----	-----
13	36	45	54	60	66	-----	-----	-----	-----	-----	-----
14	43	55	67	75	83	-----	-----	-----	-----	-----	-----
15	52	67	82	93	104	-----	-----	-----	-----	-----	-----
16	61	79	97	111	125	133	141	-----	-----	-----	-----
17	71	92	114	131	148	158	168	-----	-----	-----	-----
18	81	106	132	151	170	183	196	-----	-----	-----	-----
19	92	122	152	175	198	213	228	-----	-----	-----	-----
20	104	138	173	200	226	243	260	273	286	-----	-----
21	116	156	195	226	256	276	297	314	330	-----	-----
22	129	173	217	252	287	310	334	354	375	-----	-----
23	143	192	242	282	322	348	373	398	424	-----	-----
24	157	212	267	312	356	384	412	442	472	-----	-----
25	172	233	294	344	393	426	460	492	525	-----	-----
26	187	254	320	375	430	468	507	542	578	-----	-----
27	204	277	350	411	472	514	556	596	637	-----	-----
28	221	300	380	446	513	559	605	650	696	737	778
29	239	326	412	484	557	606	656	708	760	808	857
30	257	350	444	522	601	654	708	766	825	880	936
31	276	378	479	565	651	711	771	832	894	957	1,020
32	296	405	514	608	701	768	834	898	962	1,033	1,104
33	316	434	551	652	753	826	898	967	1,036	1,114	1,193
34	337	462	588	696	805	883	961	1,036	1,110	1,196	1,282
35	360	495	630	747	864	948	1,032	1,113	1,194	1,284	1,373
36	382	527	672	797	922	1,012	1,102	1,190	1,279	1,372	1,464
37	406	560	714	850	986	1,082	1,178	1,275	1,372	1,470	1,568
38	429	592	756	902	1,049	1,151	1,253	1,358	1,464	1,568	1,672
39	454	628	803	958	1,113	1,224	1,334	1,443	1,552	1,663	1,774
40	478	664	850	1,014	1,177	1,296	1,414	1,526	1,630	1,757	1,875

Appendix I – Basal Area

Basal Area: Skillset V (60 points- team score only)				
	Total Basal Area measured in square feet per acre			***60***
TOTAL				***60***

Appendix J -- References

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