Breed and Terminology ID

50 Points

Teams must identify 10 breeds of animals from pictures and provide the correct term for five animals based on a picture.

ID #	Breed Name	ID #	Breed Name	ID #	Breed Name
	Dairy Cattle		**Meat Goats**		**Cats**
	Brown Swiss		Boar		Siamese
	Holstein		Kiko		Persian
	Jersey		Myotonic		American Shorthair
			Spanish		Ragdoll
	Beef Cattle				
	Angus		**Dairy Goats**		**Rabbits**
	Brahman		Alpine		Holland Lop
	Charolais		LaMancha		Mini Rex
	Hereford		Nubian		Netherland Dwarf
	Limousin		Toggenburg		
					Dogs
	Pigs		**Chickens**		Labrador Retriever
	Duroc		Cornish Cross		German Shepherd
	Hampshire		Barred Rock		Beagle
	Landrace		Orpington		Daschund
	Yorkshire		Rhode Island Red		French Bulldog
			Silkie		Poodle
	Sheep		White Leghorns		
	Dorset				
	Katahdin				
	Hampshire				
	Rambouillet				

Points Earned: Number Correct _____ X2.5 = _____/25

ID #	Term	ID #	Term	ID #	Term
	Cattle		**Swine**		**Poultry**
	Cow		Sow		Hen
	Heifer		Gilt		Pullet/Poult
	Bull		Boar		Rooster
	Steer		Barrow		Capon
	Calf		Piglet		Chick
	Sheep		**Goat**		
	Ewe		Doe		
	Ewe Lamb		Doe Kid		
	Ram		Buck		
	Wether		Wether		
	Lamb		Kid		

Points Earned: Number Correct _____ X5 = _____/25

Total Points: _____/50

Ear Notching Practicum

50 Points

Teams will ear notch a pig with the provided litter number and individual pig number. The rubric will be used to score the team.

Qualification	Very strong evidence of skill (5–4 pts)	Moderate evidence of skill (3–2 pts)	Weak evidence of skill (1–0 pts)	Points Earned	Weight	Total Score
Placement	All notches are in the correct positions.	Notches are generally in the correct place but might be shifted close to another portion of the ear.	Significant errors in notch placement.		X3	
Numerical Accuracy	Both the litter number and individual pig number are accurate and on the correct ears.	The litter number and individual pig number are correct but are on the wrong ears.	The litter number and individual pig number are inaccurate/ incomplete.		X3	
Clarity	The physical notches are clear and well-defined with no ambiguity.	Notches lack clarity but are still discernable. Notches might overlap or are crooked.	The notches are not clear at all and are impossible to read accurately.		X2	
Use of Notching Tool	Tool was used properly, and notches are the correct size.	Tool was used properly, and notches are mostly the correct size.	The tool was used incorrectly or sloppily, and notches are not the correct size.		X2	
				TOTAL POINTS		

Interior and Exterior Egg Grading Practicum

50 Points

Teams will grade the interior of five eggs that have been broken open and grade the exterior of five eggs while identifying shell defects.

Interior Egg #	AA	A	B	Loss
1				
2				
3				
4				
5				

Grade	Egg Exterior 1	Egg Exterior 2	Egg Exterior 3	Egg Exterior 4	Egg Exterior 5
AA/A					
B					
Nongradable					

Shell Defect	Egg Exterior 1	Egg Exterior 2	Egg Exterior 3	Egg Exterior 4	Egg Exterior 5
Checked					
Dented Checked					
Leaker					
Slight/Moderate Stain					
Prominent Stain					
Adhering Dirt/Foreign Material					
Decidedly Misshapen					
Large Calcium Deposits					
Body Check					
Pronounced Ridges					
Pronounced Thin Spots					
No Defect					

Scoring the Interior and Exterior Egg Grading Practicum

50 Points

Teams will grade the interior of five eggs that have been broken open and grade the exterior of five eggs while identifying shell defects.

Interior Egg #	AA	A	B	Loss
1				
2				
3				
4				
5				

Interior egg quality grading is scored based on the USDA quality grades AA, A, B, and Loss. Each correct grade receives a score of five points. If the item is graded one quality grade below or above the correct grade, two points will be deducted to obtain a score of three points. If the item is graded two quality grades below or above the correct grade, four points are deducted to obtain a score of one point. However, if a "Loss" line is incorrectly chosen (i.e., an incorrect judgment), all five points are deducted to obtain a score of zero points.

Actual Grade ↓ / Participant Choice →	AA	A	B	Loss
AA	5	3	1	0
A	3	5	3	0
B	1	3	5	0
Loss	0	0	0	5

Grade	Egg Exterior 1	Egg Exterior 2	Egg Exterior 3	Egg Exterior 4	Egg Exterior 5
AA/A					
B					
Nongradable					

Exterior egg quality grading is scored based on the USDA quality grades AA/A, B and NG (nongradable). Each correct grade receives a score of one point. There are zero points earned if the grade is incorrect.

Shell Defect	Egg Exterior 1	Egg Exterior 2	Egg Exterior 3	Egg Exterior 4	Egg Exterior 5
Checked					
Dented Checked					
Leaker					
Slight/Moderate Stain					

Prominent Stain					
Adhering Dirt/Foreign Material					
Decidedly Misshapen					
Large Calcium Deposits					
Body Check					
Pronounced Ridges					
Pronounced Thin Spots					
No Defect					

Correctly identifying all the shell defects of each egg is worth four points, divided among the number of shell defects the judge identifies. Partial credit can be earned if not all defects are identified by the team. Points will be rounded to the nearest whole number not to exceed 20.

Using a Biltmore Stick and Board Feet Calculation Practicum

50 Points

Teams must measure the DBH of four structures and then calculate the total board feet using information provided in a scenario.

Structure	Diameter at Breast Height	Points Earned
1		/5
2		/5
3		/5
4		/5
	Total Points	/20

Tree	Diameter	Number Logs	Volume Board Feet	Points Earned
1				/5
2				/5
3				/5
4				/5
5				/5
		Total Volume Board Feet		/5
			Total Points	/30

Tree Diameter	Gross Volume of Tree, International 1/4 Inch Rule Form Class 78 Volume (Board Feet) by Number of Usable 16 Foot Logs										
	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
10	36	48	59	66	73						
11	46	61	76	88	96						
12	56	74	92	106	120	128	137				
13	67	90	112	130	147	158	168				
14	78	105	132	153	174	187	200				
15	92	124	156	182	206	225	242				
16	106	143	180	210	241	263	285				
17	121	164	206	242	278	304	330				
18	136	184	233	274	314	344	374				
19	154	209	264	311	358	392	427				
20	171	234	296	348	401	440	480	511	542		
21	191	262	332	391	450	496	542	579	616		
22	211	290	368	434	500	552	603	647	691		
23	231	318	404	478	552	608	663	714	766		
24	251	346	441	523	605	664	723	782	840		
25	275	380	484	574	665	732	800	865	930		
26	299	414	528	626	725	801	877	949	1021		
27	323	448	572	680	788	870	952	1032	1111		
28	347	482	616	733	850	938	1027	1114	1201	1280	1358
29	375	521	667	794	920	1016	1112	1210	1308	1398	1488
30	403	560	718	854	991	1094	1198	1306	1415	1517	1619
31	432	602	772	921	1070	1184	1299	1412	1526	1640	1754
32	462	644	826	988	1149	1274	1400	1518	1637	1762	1888
33	492	686	880	1053	1226	1360	1495	1622	1750	1888	2026
34	521	728	934	1119	1304	1447	1590	1727	1864	2014	2163
5	555	776	998	1196	1394	1548	1702	1851	2000	2156	2312
36	589	826	1063	1274	1485	1650	1814	1974	2135	2298	2461
37	622	873	1124	1351	1578	1752	1926	2099	2272	2444	2616
38	656	921	1186	1428	1670	1854	2038	2224	2410	2590	2771
39	694	976	1258	1514	1769	1968	2166	2359	2552	2744	2937
40	731	1030	1329	1598	1868	2081	2294	2494	2693	2898	3103

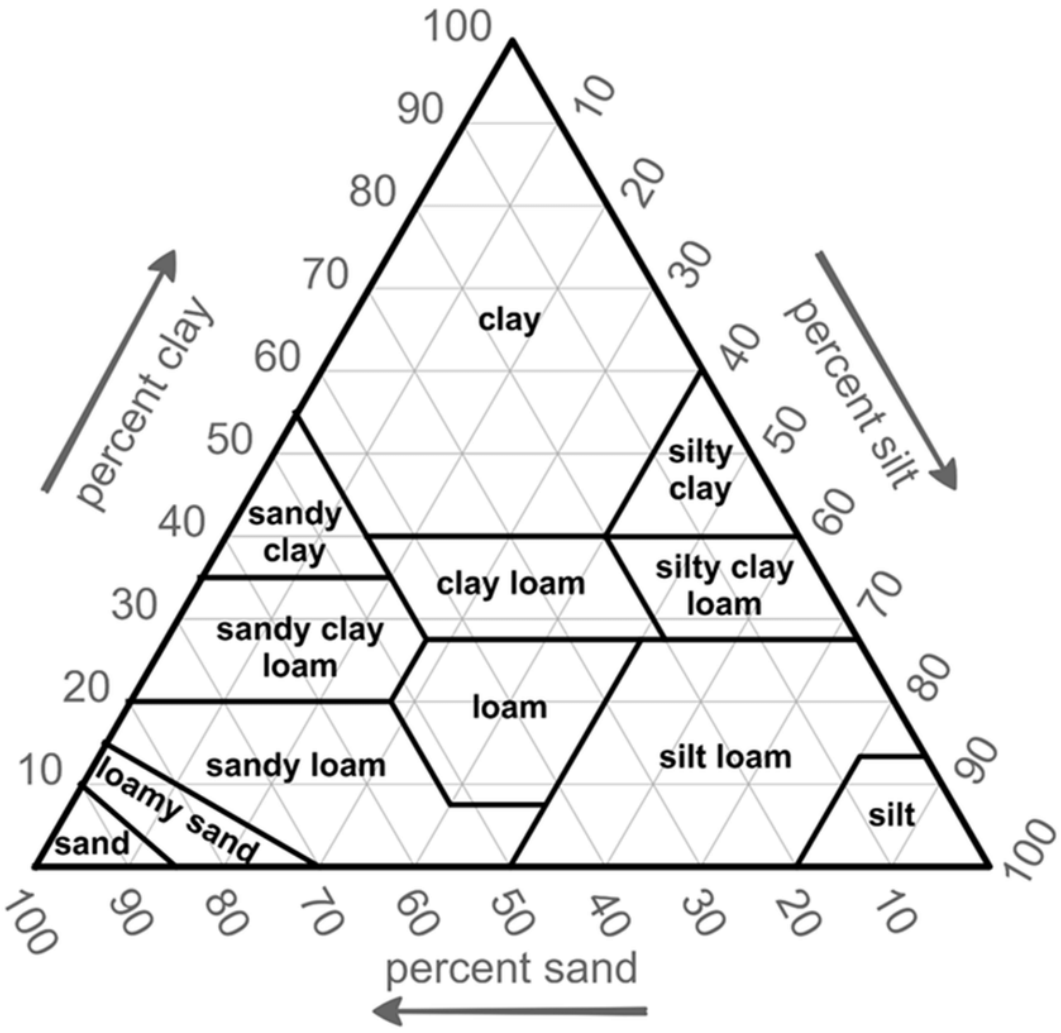
Soil Texture Triangle Practicum

50 Points

Teams must use the soil texture triangle to categorize five soils.

Type of Soil	Soil 1	Soil 2	Soil 3	Soil 4	Soil 5
Sand					
Loamy Sand					
Sandy Loam					
Sandy Clay Loam					
Sandy Clay					
Clay					
Clay Loam					
Loam					
Silty Clay					
Silty Clay Loam					
Silt Loam					
Silt					

Number Correct _____ X 10 = _____/50 points



Tree Identification Practicum

50 Points

Teams must identify 1 0 trees from the provided list.

Tree #	Common Name	Scientific Name
	Ash	*Fraxinus sp.*
	Bald Cypress	*Taxodium distichum*
	Beech	*Fagus americana*
	Birch	*Betula nigra*
	Black Cherry	*Prunus serotina*
	Blackgum	*Nyssa sylvatica*
	Cottonwood	*Populus deltoides*
	Dogwood	*Cornus florida*
	Elm	*Ulmus sp.*
	Hemlock	*Tsuga Canadensis*
	Hickory	*Carya sp.*
	Loblolly Pine	*Pinus taeda*
	Longleaf Pine	*Pinus palustris*
	Northern Red Oak	*Quercus rubra*
	Pecan	*Carya illioinensis*
	Persimmon	*Diospryos virginiana*
	Post Oak	*Quercus stellata*
	Red Cedar	*Juniperus virginianna*
	Red Maple	*Acer rubrum*
	Redbud	*Cercis canadensis*
	Shortleaf Pine	*Pinus echinata*
	Sourwood	*Oxydendrum arboreum*
	Southern Red Oak	*Quercus falcata*
	Sugar Maple	*Acer saccharum*
	Sweetgum	*Liquidambar styraciflua*
	Sycamore	*Plantanus sp.*
	Virginia Pine	*Pinus virginiana*
	White Oak	*Quercus alba*
	White Pine	*Pinus strobus*
	Yellow Poplar	*Liriodendron tulipifera*

Number Correct _____ X 5 = _____/50 points

Water Quality Practicum

50 Points

Teams must use the provided dichotomous key to identify three macroinvertebrates and from that identification, determine the water quality of the sample of water the macroinvertebrates are from.

SPECIMEN ID

Specimen 1: _____

Specimen 2: _____

Specimen 3: _____

Number correct _____ x 10 = _____/30 points

WATER QUALITY RATING

Circle the correct Water Quality Rating. The correct answer is worth 20 points.

Very Low Pollution Low Pollution Somewhat Polluted Very Polluted

TOTAL POINTS CALCULATION

Specimen ID _____/30
+
Water Quality Rating _____/20
=
Total Points _____/50

Aquatic macroinvertebrate identification key

NRM Education
climate change biodiversity water food air waste transport purchasing

1 Microscopic
Bigger than microscopic — go to 2

green, white or black	teardrop shape, jerking movement	swims with a jerk using antennae
		
seed shrimp (NR)	copepod (NR)	water flea (NR)

2 Shell
No shell — go to 3

OR

Single shell

flattened shell with small hump	spiral shell, opening on left	spiral shell, opening on right
		
freshwater limpet (4)	pouch snail (1)	gilled snail (1)

Double shell

small, pale delicate shell	small, darker shell with ridges
	
pea shell (5)	little basket shell (4)

3 Legs — go to 4 over page
No legs

OR

Worm-like

green to red, twisting	segmented, no suckers, +/- bristles	long, very thin, swims in 'S' shape, can't coil	suckers, expands and contracts	hair-like, swims in 'S' shape	slides along bottom
					
non-biting midge larva (3)	segmented worm (2)	biting midge larva (4)	leech (1)	round worm (3)	flatworm (2)

Tentacles, brushes or tails

six fleshy lobes at end of body	breathing tube at rear	large head, wriggles	grub-like with no obvious head	sucker on end of body, waves head	slender, with tentacles, attached to solid surface	hangs from surface by ring of hairs
						
cranefly larva (5)	mosquito larva (1)	mosquito pupa (1)	March fly larva (3)	blackfly larva (5)	hydra (2)	soldier fly larva (2)

OR

Mat-like

simple, multi-cellular colony

freshwater sponges (4)

Pollution sensitivity*:

- (NR) not rated
- 10–8 very sensitive
- 7–6 sensitive
- 5–4 tolerant
- 3–1 very tolerant

Acknowledgements

This key was designed by Ron Simms and Amy Blaylock, 2002.

Adapted by Steve Walker, 2011.

Assistance was kindly provided by the following staff members of the South Australian Musuem: Dr. Errol Matthews, Dr. Chris Watts and Mr Robert Hamilton-Bruce.

*Sensitivity ratings from SIGNAL2 system in "New sensitivity grades for Australian river macroinvertebrates. Bruce C. Chessman. Marine and Freshwater Research. 2003. 54. 95-103."

4 more than 3 pairs legs

3 pairs legs — go to 5

OR

more than 4 pairs of legs

- lobster-like — yabbie (4)
- swims with back up — freshwater shrimp (3)
- shrimp-like, swims on side — scud (side swimmer) (3)
- walks on bottom — freshwater slater (2)
- walks on bottom or swims by flicking tail — freshwater prawn (4)
- rest on bottom of pool or swim with back facing up — shield shrimp (1)
- can swim sideways very quickly — freshwater spider crab (3)

4 pairs legs

- tiny, swims in water — water mite (7)
- runs on top of water — fishing spider (2)

5 No wings — go to 6

Wings

OR

Soft wings, piercing mouth parts (bug)

- swims fast, right side up, black back — water boatman (2)
- swims on back — back swimmer (1)
- runs on surface of water, black — water strider (4)
- on water surface and grass edges — small water strider (3)
- long, stick-like lives on surface — water measurer (3)
- long breathing tube, grasping front legs — needle bug (3)
- long breathing tube, grasping front legs — water scorpion (3)
- swims quickly using two hind pairs of legs — creeping water bug (1)
- swims swiftly through the water — giant water bug (1)
- climb or crawl across plants, poor swimmers — pygmy back swimmer (2)

Hard wings, jaws (beetle)

- swims moving hind legs alternately — water scavenger beetle (2)
- back legs move at same time — predacious diving beetle (2)
- swims on surface, often in fast circles — whirligig beetle (4)
- crawls through water plants — crawling water beetle (3)

6 No obvious tail

Tails

OR

2 tails

- fast water and stream edges — stonefly nymph (10)

3 tails

- plate-like tails, no gills on abdomen — damselfly nymph (3)
- long tails, gills on abdomen — mayfly nymph (9)

No obvious tail

- crawls along rocks — water penny (6)
- can't swim, can only crawl — riffle beetle larva (7)
- usually brown, prefer to crawl rather than swim — marsh beetle larva (6)
- large mouthparts, may have 7 pairs gills on side — water scavenger beetle larva (2)
- spines on side, large mouthparts, — whirligig beetle larva (4)
- large body, hinged mouth — dragonfly nymph (3)
- hangs from surface, large mouthparts — predacious diving beetle larva (2)
- small and hops on surface and in edge plants — springtail (1)
- in tube, case or free-living — caddisfly larva (8)

All images on this ID Key are adapted by Steve Walker (2006) from the B&W images in 'Critter Catalogue: a guide to the aquatic invertebrates of South Australian inland waters (2004 EPA)' except for the crawling water beetle (Steve Walker 2006).

Government of South Australia
Adelaide and Mount Lofty Ranges
Natural Resources Management Board

Aroma Identification

50 Points

Teams will identify 10 aromas.

Aroma #	Aroma Name
	Apple
	Basil
	Cherry
	Cinnamon
	Clove
	Garlic
	Ginger
	Grape
	Licorice (anise)
	Maple
	Molasses
	Onion
	Oregano
	Peach
	Peppermint
	Sage
	Smoke (liquid)
	Strawberry
	Vanilla
	Watermelon

Number Correct _____ X 5 = _____/50 points

Nutrition Problem Practicum

50 Points

Teams will calculate the calories per serving of a provided recipe. Nutrition labels for each ingredient will be provided. Math will be evaluated using the rubric below.

Qualification	5 Points	3 Points	0 Points	Points Earned	Weight	Total Score
Calculation of Total Calories in Recipe	Calculation is 100% accurate.	Calculation is up to ±100 calories off.	Calculation is ±101 or more calories off.		X4	
Calculation of Calories per Serving	Calculation is 100% accurate.	Calculation is up to ±25 calories off.	Calculation is ±26 or more calories off.		X4	
Work Is Shown	All steps in calculations are shown.	Most work is shown but some steps are skipped.	Most work is not shown and several steps are skipped.		X2	
				TOTAL POINTS		

Food Science Triangle Test Practicum

50 Points

Teams must conduct two triangle tests on the given samples. Select the odd or different sample from each based on smell, taste, texture or color. Circle the letter that represents the odd or different sample for each triangle test.

Triangle Test 1 (25 points)

A B C

Triangle Test 2 (25 points)

A B C

Participants Score = Number Right ____ X 25 = _____

Food Science Triangle Test Practicum

50 Points

Teams must conduct two triangle tests on the given samples. Select the odd or different sample from each based on smell, taste, texture or color. Circle the letter that represents the odd or different sample for each triangle test.

Triangle Test 1 (25 points)

A B C

Triangle Test 2 (25 points)

A B C

Participants Score = Number Right ____ X 25 = _____

Flower Parts Identification

50 Points

Teams will identify five parts of a flower.

Plant Part #	Plant Part
	Anther
	Filament
	Ovary
	Peduncle
	Petal
	Pistil
	Receptacle
	Sepal
	Stamen
	Stigma
	Style

Number Correct _____ X 10 = _____/50 points

Soil Media Identification

50 Points

Teams will identify 10 types of growing media.

Growing Media #	Type of Growing Media
	Aged Pine Bark
	Clay Pebbles (Hydroton/Hydrocorn)
	Coco Coir/Fiber/Chips
	Gravel
	Grow Stones
	Oasis Cubes
	Peat Moss
	Perlite
	Phenolic Foam
	Pine Shavings
	Pumice
	Red Ash (Scoria)
	Rice Hulls
	Rooting Plugs/Starter Plugs
	Sand
	Soil
	Stone Wool (Rockwool)
	Vermiculite
	Water Absorbing Crystals
	Wood Fiber/Chips

Number Correct _____ X 5 = _____/50 points

Plant Identification Practicum

50 Points

Teams must identify 10 plants from the provided plant list.

Plant #	Botanical Name	Common Name
	Aucuba japonica	Japanese Aucuba
	Begonia x semperflorens-cultorum	Wax Begonia
	Buddleia davidii cv.	Butterfly Bush
	Buxus sempervirens	Common Boxwood
	Chlorophytum comosum cv.	Spider Plant
	Clematis spp.	Clematis
	x Cupressocyparis leylandii	Leyland Cypress
	Forsythia x intermedia cv.	Border Forsythia
	Gardenia jasminoides cv.	Gardenia
	Hedera helix cv.	English Ivy
	Hemerocallis	Day Lilly
	Hosta x hybrida cv.	Hosta
	Ilex crenata cv.	Japanese Holly
	Impatiens hybrid cv.	Impatiens
	Juniperus horizontalis cv.	Creeping Juniper
	Leucanthemum x superbum cv.	Shasta Daisy
	Magnolia grandiflora	Southern Magnolia
	Maranta leuconeura	Prayer Plant
	Nandina domestica	Heavenly Bamboo
	Nephrolepis exaltata cv.	Boston Fern
	Pelargonium x hortorum cv.	Geranium
	Salvia splendens cv.	Salvia
	Spathiphyllum cvs.	Peace Lily
	Tagetes species cv.	Marigold
	Zinnia cv.	Zinnia

Number Correct _____ X 5 = _____/50 points