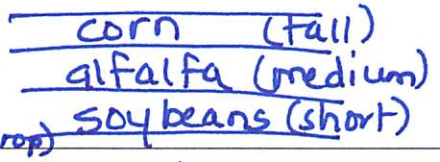
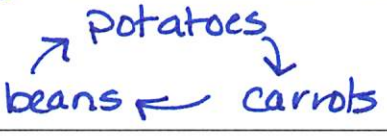
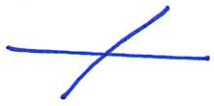
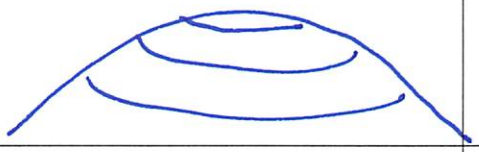
Studying Soils Scientifically

Study Guide Key

1. How does soil form? Weathering breaks rocks down, eventually forming soil
2. Which type of climate does soil form the quickest? Why? Tropical - excess water (speeds weathering)
3. Which type of climate does soil from the slowest? Why? Desert - little to no water (slows weathering)
4. What is another name for the soil layers? Horizons
5. List the correct order in which soil horizons form. O, A, B, C, D
6. Horizon O is the Organic layer (humus)
7. Horizon A is the Topsoil
8. Horizon B is the Subsoil
9. Horizon C is the Weathered Bedrock
10. Horizon D is the Parent Material (Bedrock)
11. Study your soil profile diagram on p. 62 of your ISN. Know the layers/horizons in order.
12. Explain the composition of topsoil. 45% rocks/minerals, 5% humus, 25% air, 25% water
13. Where do plants get most of their nutrients? Humus
14. Arrange the particles of soil in order according to size (smallest to largest). clay, silt, sand
15. Soil with a sticky texture has a large composition of clay.
16. Soil with a silky texture has a large composition of silt.
17. Which particle can water move through the quickest? Why? sand - larger particle, larger space in between
18. Which particle does water not move through quickly? Why? clay - smaller particle, tighter space
19. Why does soil need adequate amounts of sand, silt, and clay? - for proper drainage
20. List the layers of soil in order, beginning with the outermost layer. Humus, topsoil, subsoil, weathered bedrock, parent material
21. List 4 things plants need to survive. air, water, sunlight, nutrients
22. You have a plant that is dying. You think the soil is lacking nutrients. How would you test this?
23. The layer of loose, weathered material on Earth's surface in which plants can grow is topsoil
24. The solid layer of rock beneath the soil is called bedrock/parent material
25. The decayed organic material in soil is called humus
26. The layer of soil that contains some organic matter and nutrients washed down from the topsoil is subsoil
27. The layer of soil that contains weathered bedrock and little to no humus is weathered bedrock

28. Describe the following soil conservations methods and list the type(s) of erosion they reduce.

Soil Conservation Method	Definition/Description	Illustration	Type(s) of Erosion Reduced
Terracing	Step-like ridges built on steep slopes		Water
Strip Cropping	Planting tall, medium, short plants in alternating ordered rows. Tall provide shelter from wind. (also cover crop)		Wind, water
Crop Rotation	Alternating crops yearly which replace nutrients that previous crops have taken out		
Contour Plowing	Planting rows horizontally around hills instead of up and down		Water
No-till Farming	Planting crops in the stubble of previous years crop. Decomposing stubble adds nutrients and protects new seedlings from erosion		Water, wind
Windbreak	Rows of trees planted in between sections of farmland; deflects wind upward		Wind

***Bonus – Explain 2 ways in which earthworms benefit the soil.

1) Leave castings (waste) behind – nutrients for plants
2) Tunnels allow water/air inside near roots
3) Mix the soil