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| MONOCOTS | DICOTS |
| 1 cotyledon | 2 cotyledons |
| Parallel veins | Netlike veins |
| Scattered vascular tissue | Vascular tissue in ring |
| Fiberous root | Taproot |
| Pollen grains-1 opening | Pollen grains-3 openings |
| Flower parts in THREES | Flower parts in 4’s or 5’s |
| Corn, grasses, lily | Poppy, rose, pea |

1.- proton pumps set up H+ gradient for :  
 - cotransport of sugars into companion/sieve tube cells  
 -uptake of K+ by roots  
 - cotransport of nitrates into cells  
 - pumping H+ ions out of root into soil displaces cations (Ca++) for uptake  
 -active pumping of K+ into guard cells opens stomata   
 - auxin acts through pumping H+ ions; acidity weakens cell walls and allows cell elongation (phototropism)  
2. Bryophytes & Pteridophytes need water  
3. Casparian strip  
4. Plasmodesmata  
5. ethylene  
6. It is a gas  
7. Used to make chlorophyll; enzyme cofactor  
8. One sperm fertilizes the egg to make the zygote; the 2nd sperm fertilizes the 2 polar nuclei to make endosperm  
9. Angiosperms have double fertilization  
10. Gametophytes make gametes using mitosis. Sporophytes make spores using meiosis.  
11. Root hairs & mychorrhizae  
12.

13. Provide food to developing embryo in seed  
14. Pteridophytes  
15. Roots grow away from light  
16. phytochrome  
17. Reception-Transduction-Response  
18. Gotta have long period of dark; light flash prevents flowering  
19. phloem  
20. Parenchyma  
21. auxin  
22. Phloem  
23. Nitrogen fixation  
24. Bacteria in root nodules of legumes  
25. Sporophytes are 2n  
26. eggs  
27. Carpels (stigma, style, ovary) are female  
28. fruit  
29. Gymnosperms  
30. Air spaces in leaf mesophyll cells