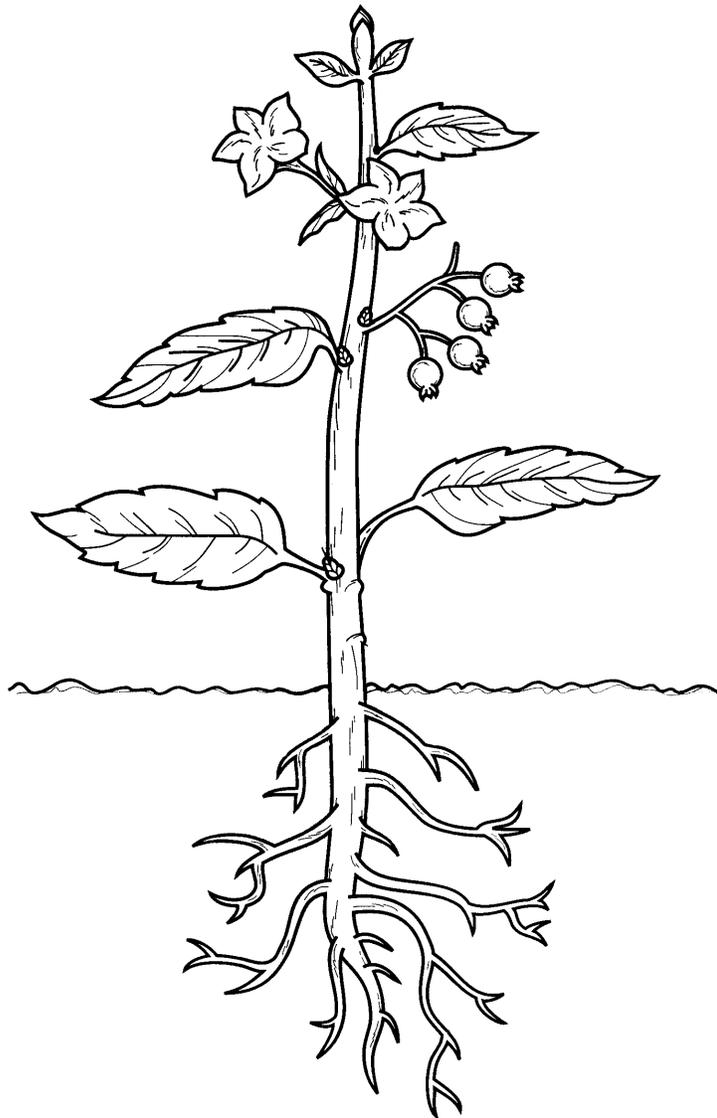


PLANT MORPHOLOGY

PART I: BASIC MORPHOLOGY



PART II: ROOTS

1. Examine the examples of the two root systems on display. Describe how taproot systems are different from fibrous root systems.

TAPROOT SYSTEM	FIBROUS ROOT SYSTEM

2. Which type of root system (tap or fibrous) is adapted for:
- a. Absorption of deep water? _____
 - b. Strong anchorage? _____
 - c. Fast absorption of surface water? _____
 - d. Holding soil / prevention of erosion? _____

3. Examine the roots on display. Each example on display is adapted to perform an additional function. Use the key below to identify the special adaptation for each example on display.

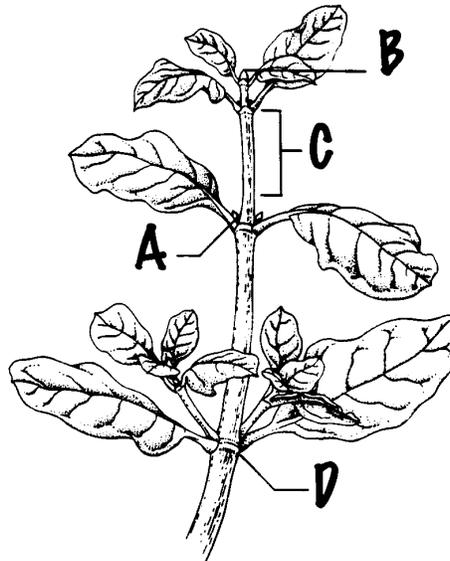
- A. Prop / Support
- B. Food / Water Storage
- C. Climbing / Support
- D. Aquatic

Root	1	2	3	4	5
Adaptation					

PART III: STEMS

4. Examine the herbaceous plant on display and identify the following structures.
- Nodes** are regions of the stem from which leaves, buds, and branches arise, and which contain areas of cell division.
 - Internodes** are the regions of the stem located between nodes.
 - Terminal buds** are located at the tips of stems and branches. They enclose the short apical meristem which gives rise to leaves, buds, and is where the stem grows in length.
 - Axillary or lateral buds** are located in the space between the attachment point of the leaf and the stem. These buds may give rise to lateral branches.
5. Match the parts below with the correct letter from the drawing.

- _____ Axillary bud
_____ Internode
_____ Node
_____ Terminal bud

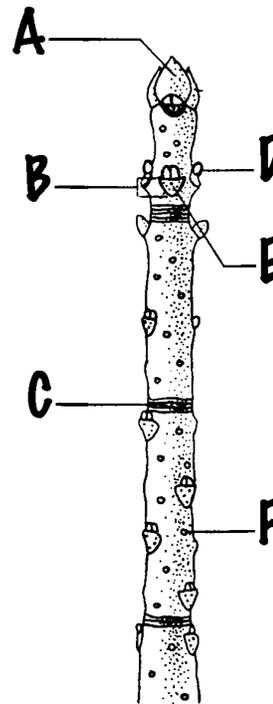


6. Examine one of the woody twigs on display and identify the following parts:
- Terminal bud**
 - Terminal bud scar** is the mark left by the terminal bud. It represents the location of the terminal bud during the previous growing season. The age of a woody twig can be determined by counting the number of spaces between terminal bud scars.
 - Node**

- d. **Internode**
- e. **Axillary** or **lateral bud**
- f. **Leaf scar** represents the point at which a leaf was attached during the previous growing season.
- g. **Bundle scars** are found within the leaf scars and indicate where vascular tissue exited the stem and entered the leaf.
- h. **Lenticels** are circular to oval areas found within the internodes and allow for exchange of gases.

7. Match the following parts with the correct letter from the diagram.

- _____ Axillary bud
- _____ Bundle Scar
- _____ Leaf Scar
- _____ Lenticel
- _____ Terminal Bud
- _____ Terminal Bud Scar



8. Determine the age of each of the woody twigs on display.

WOODY TWIG	1	2	3
AGE			

9. Examine the stems on display. Each example on display is adapted to perform an additional function. Use the key below to identify the special adaptation for each example on display.

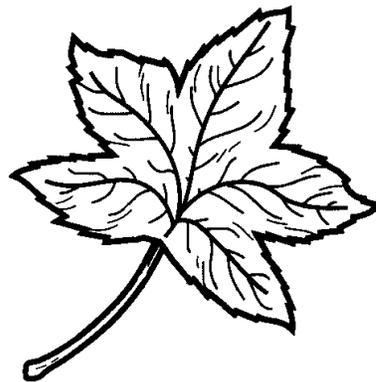
- A. Food making
- C. Climbing
- E. Protection

- B. Food / Water Storage
- D. Reproduction

STEM	1	2	3	4	5	6
ADAPTATION						

PART IV: LEAVES

10. Examine the leaves on display. Identify the **blade**, the broad, flat part of the leaf, and the **petiole**, the stalk that attaches the leaf to the stem. Label the blade and petiole on the drawing below.



11. Examine the monocot and dicot leaves on display. How are monocot and dicot leaves different?

MONOCOT LEAVES	DICOT LEAVES

12. Examine the simple and compound leaves on display. How are simple and compound leaves different?

SIMPLE LEAVES	COMPOUND LEAVES

13. Classify the leaves on display as monocot or dicot, and if dicot, as simple or compound.

LEAF	M / D	S / C	LEAF	M / D	S / C
1			5		
2			6		
3			7		
4					

14. Examine the leaves on display. Each example on display is adapted to perform an additional function. Use the key below to identify the special adaptation for each example on display.

- | | |
|-----------------------------|-------------------------|
| A. Getting nutrients | B. Food / Water Storage |
| C. Prevention of water loss | D. Reproduction |
| E. Protection | F. Climbing |

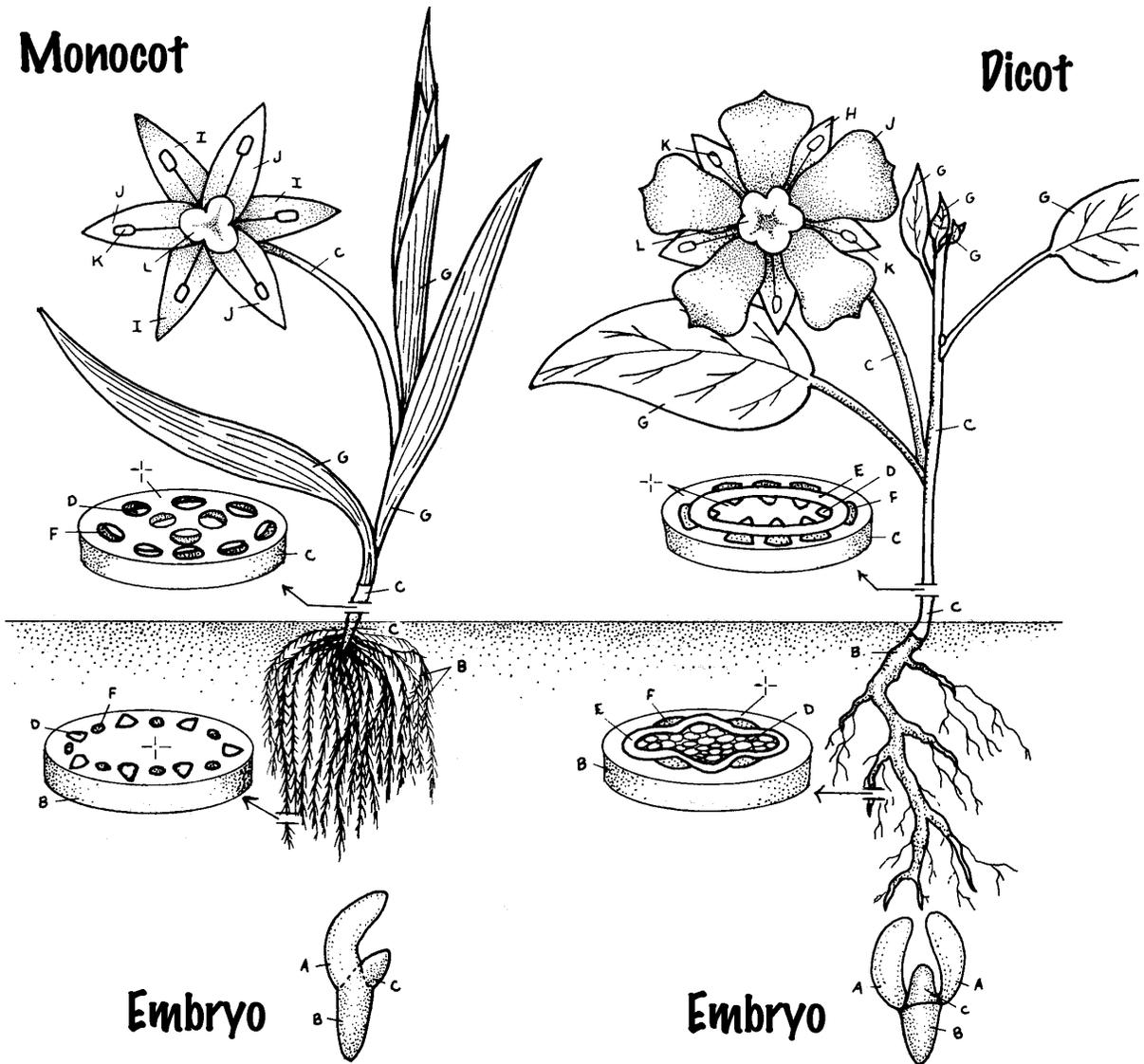
LEAF	1	2	3	4	5	6
ADAPTATION						

PART V: MONOCOTS & DICOTS

15. Color the following parts on the drawings below.

- Cotyledon (A)
- Root (B)
- Stem (C)
- Xylem (D)
- Cambium (E)
- Phloem (F)

- Leaf (G)
- Dicot sepal (H)
- Monocot sepal (I)
- Petal (J)
- Stamen (K)
- Pistil (carpel) (L)



16. Use the drawings in #16 to complete the following chart.

CHARACTERISTIC	MONOCOT	DICOT
# of cotyledons (1 or 2)		
Root system (Tap or fibrous)		
Leaf veins (netted or parallel)		
Flower parts (multiples of 3 or multiples of 4/5)		
Stem cross section (vascular bundles scattered or arranged in ring)		

17. Examine the plants on display and classify each as monocot or dicot.

PLANT	M / D	PLANT	M / D
1		6	
2		7	
3		8	
4		9	
5		10	