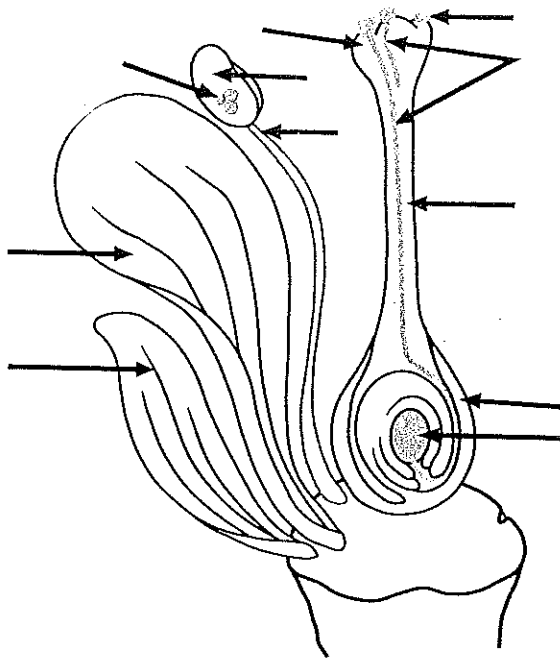
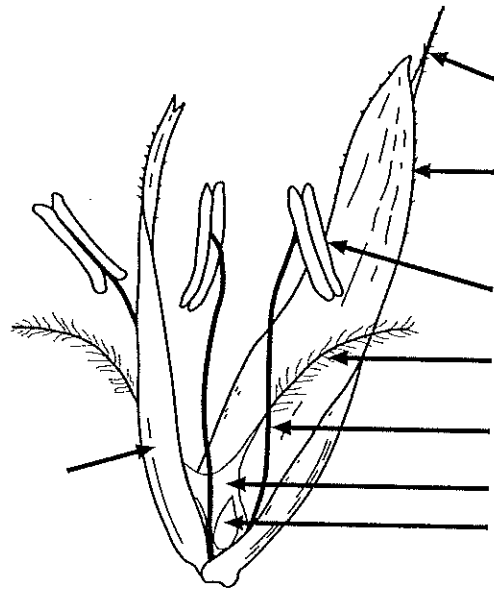


FLOWER STRUCTURE

Flowers represent the reproductive phase of plants. Environmental cues such as temperature or length of the light period are responsible for causing the transition from an indeterminate, vegetative meristem to a determinate, reproductive meristem. Typically, a flower (Figure 11) has four major parts: **sepals** (collectively the calyx) which are the outermost whorl of leaves that are generally green; **petals** (collectively the corolla) which are usually the showy, colorful portion of the flower; **stamens** (the male reproductive structure) that consist of the **anther** and **filament** that produce **pollen**; and the **pistil** (the female reproductive structure) that consists of the **stigma**, **style**, and **ovary** that contains one or more **ovules**. When all four parts are present, the flower is said to be a **complete flower**. If one or more of the four parts are missing, it is an **incomplete flower**. If both sexes are present in the same flower, the flower is termed **perfect**. In some cases, flowers have only male organs or female organs present and are therefore **imperfect**. Label the parts of the typical and grass flowers illustrated in Figure 11.



TYPICAL FLOWER



GRASS FLOWER

Figure 11. The parts of a typical flower and grass flower.

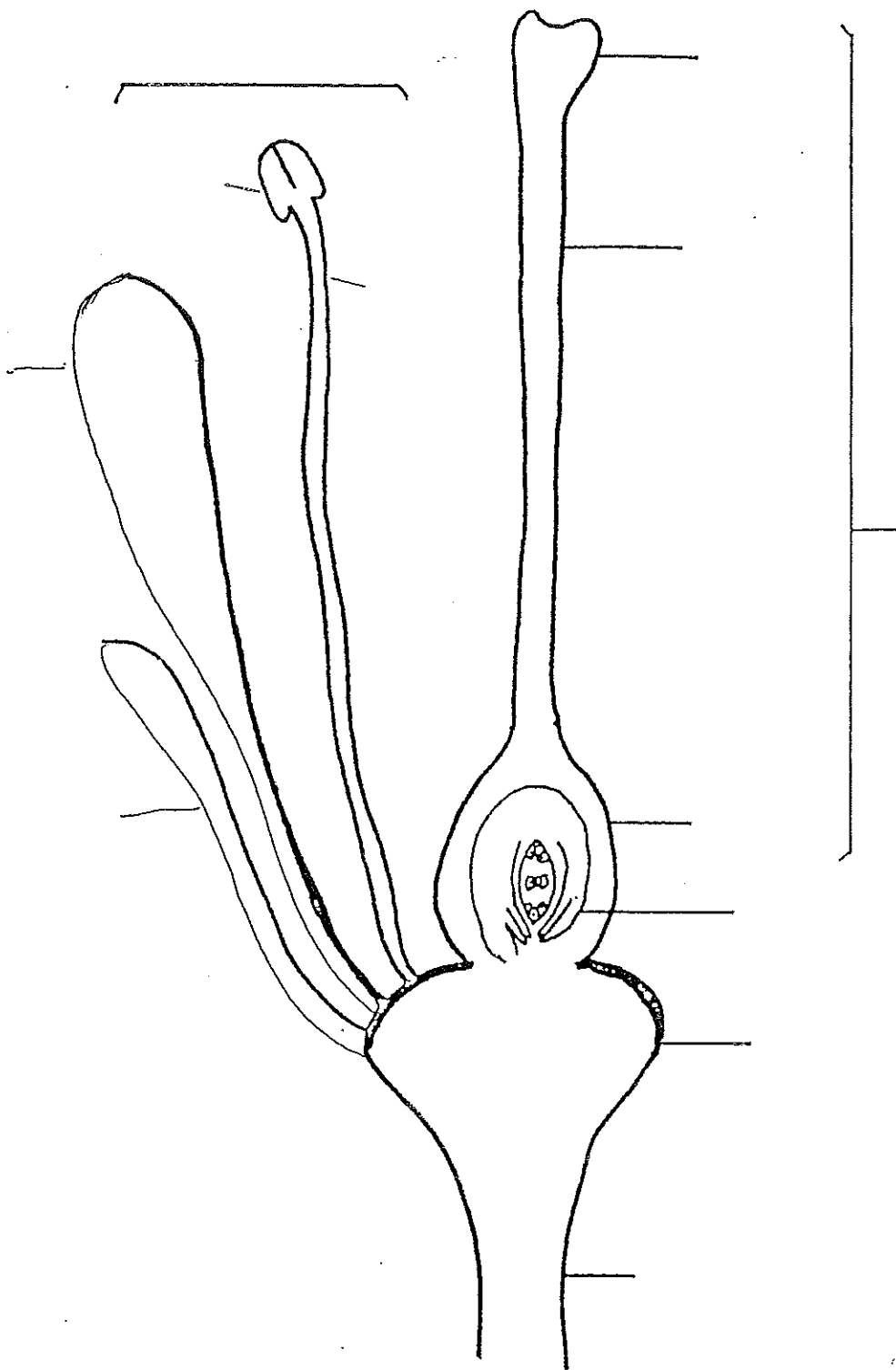
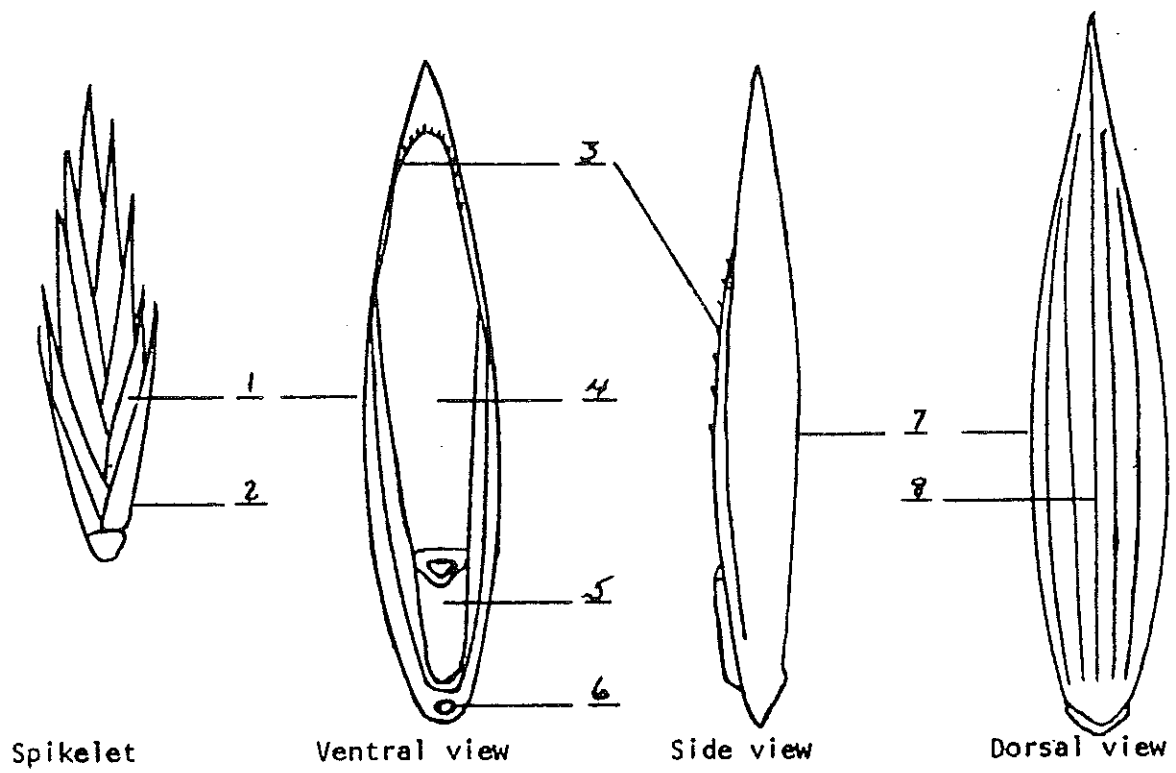
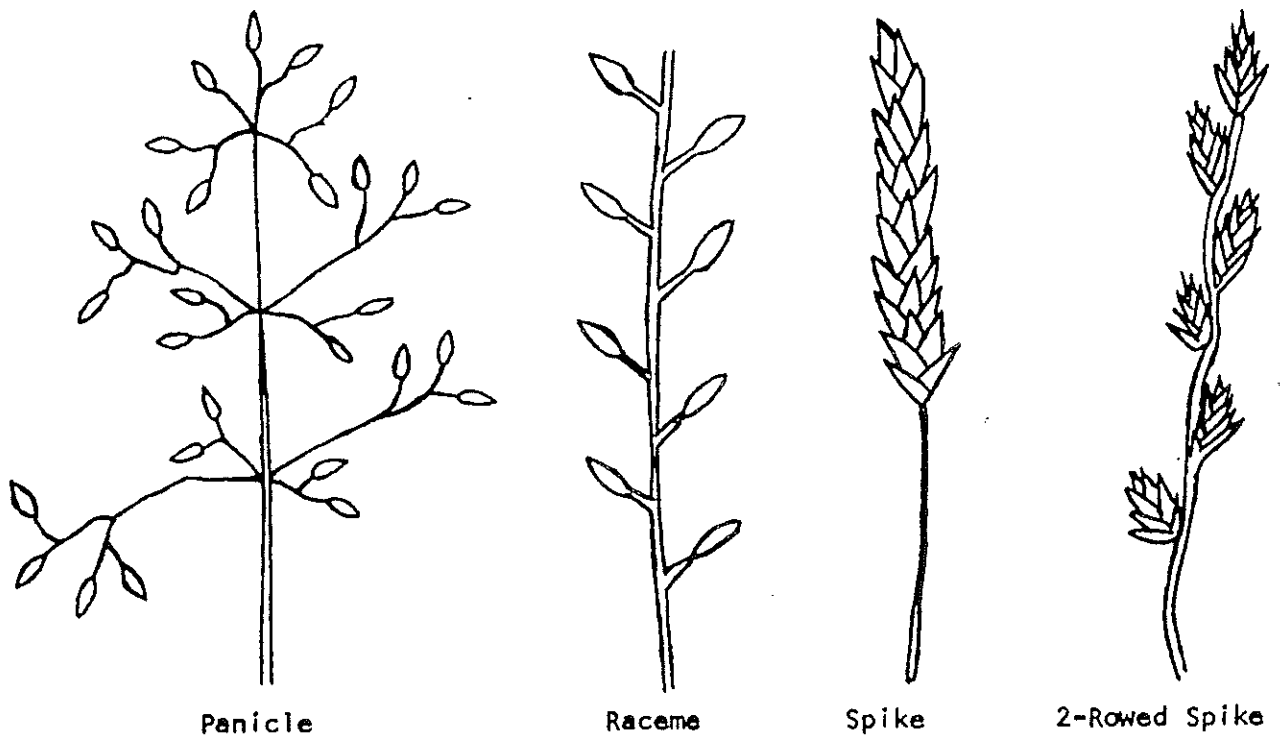


Figure 1. Cut-a-way view of a typical perfect flower.

Grass Spikelet and Florets



Inflorescence of Grasses



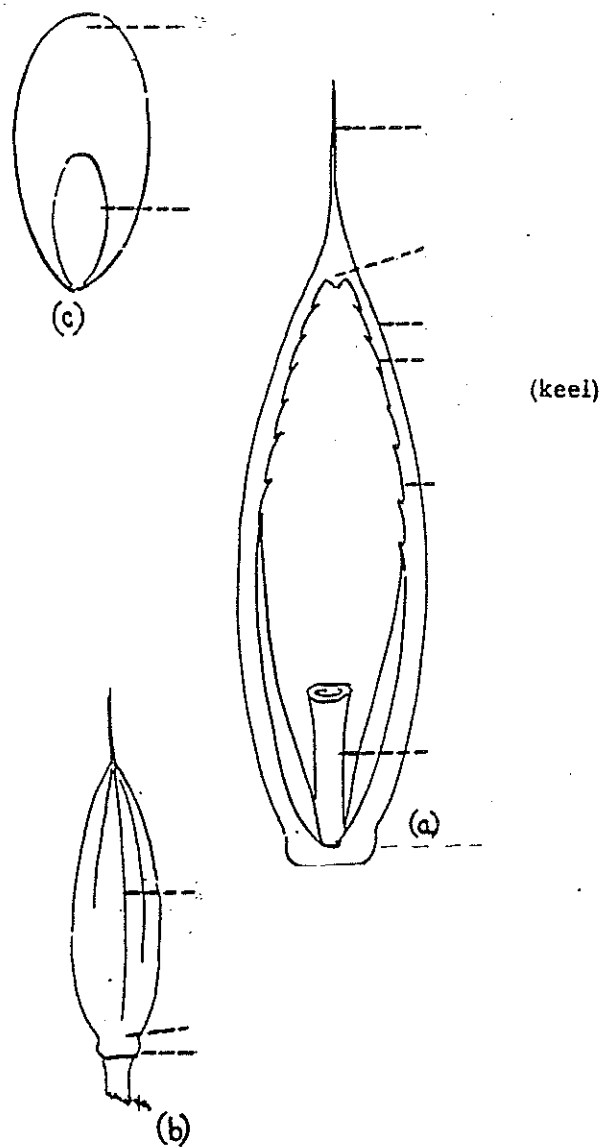


Fig. 3 Diagrammatic drawing of a typical grass "seed." (fruit) (a) Ventral View (b) Dorsal View (c) Naked Caryopsis

A **spikelet** is a flower or group of flowers. It contains two glumes that enclose one or more **florets** or flowers. Each floret consists of three parts: a **lemma** (dorsal covering of the seed), **palea** (ventral covering of the seed) and a seed (in this case a **caryopsis** because ovary tissue remains attached to the seed) (Figure 10).

DEFINITIONS

Spikelet - portion of the inflorescence. This may consist of one or several florets.

Glume - empty bract(s) at the base of the grass spikelet.

Floret - A grass flower consisting of a lemma and palea enclosing a caryopsis or male and female reproductive structures (stamens and pistil).

Lemma - larger (dorsal) of the two bracts surrounding the caryopsis.

Lodicules - rudimentary perianth of grasses. They open the flower during anthesis.

Palea - smaller (ventral) of the two bracts surrounding the caryopsis.

Rachilla - a short stalk at the base of the lemma that supports another floret.

Callus - thickened tissue at the base of the lemma.

Awn - a bristle-like tip which projects from the lemma.

Sinus region - the region at the base of the rachilla.

Based on these definitions, label the parts in Figure 10.

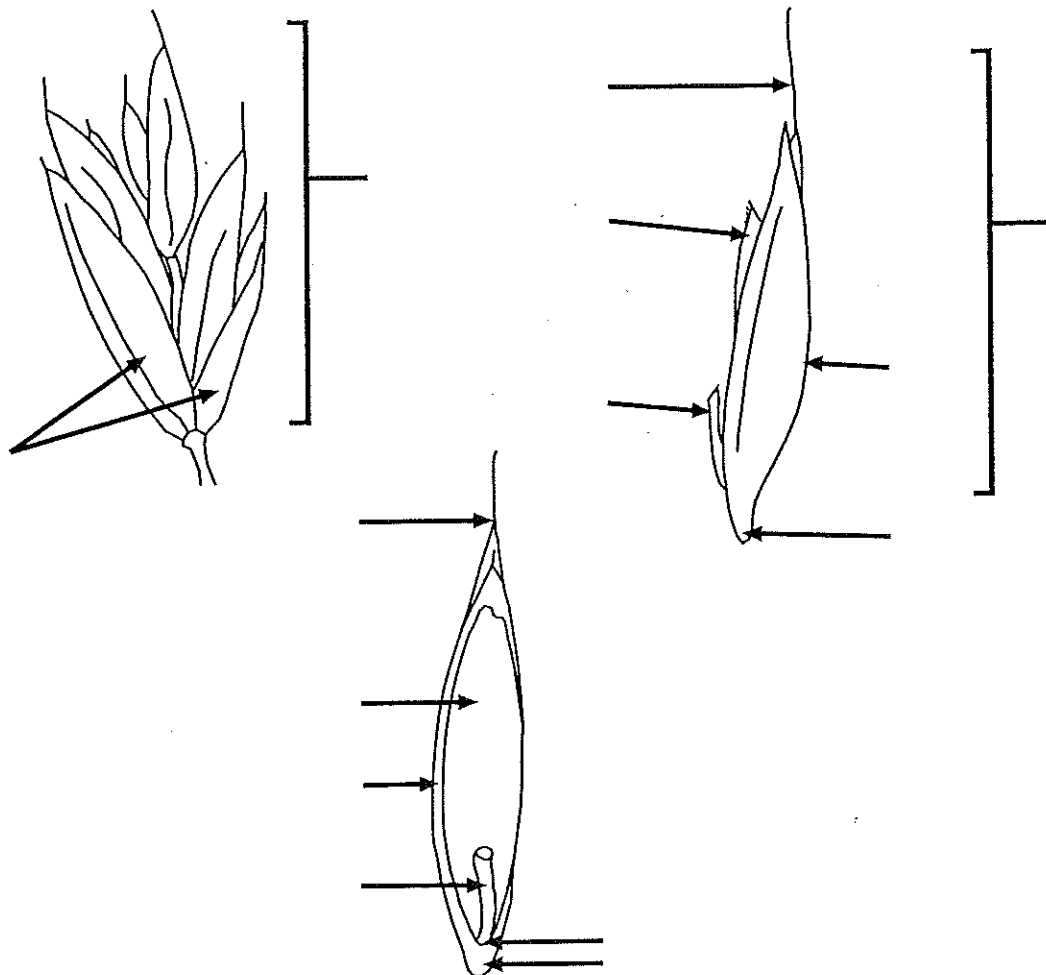


Figure 10. The parts of a grass spikelet.

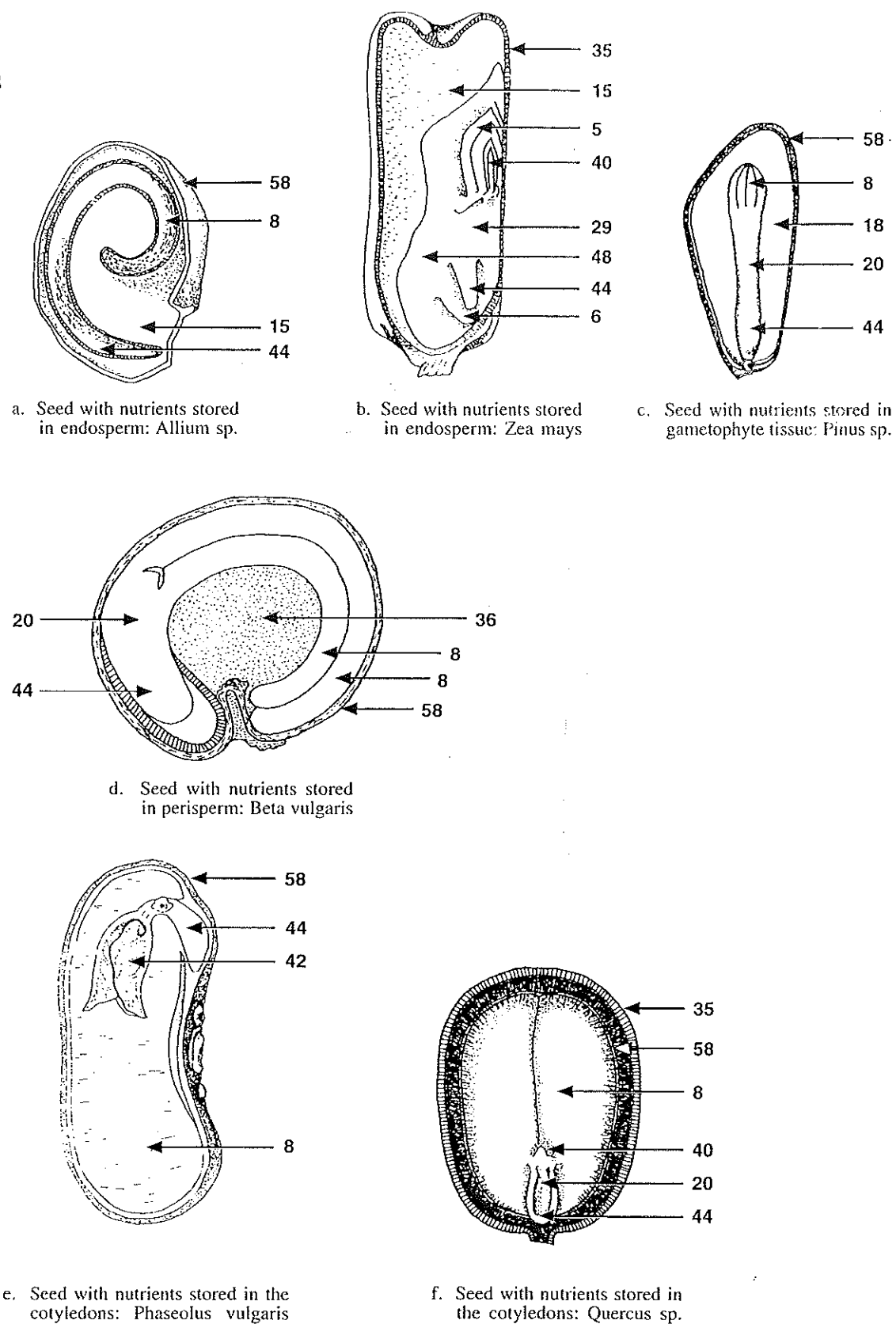


Figure 16. Examples of nutrient storage in differing tissues among seeds (from ISTA Seedling Evaluation Handbook).