Maryland Licensed Tree Expert Exam Study Guide
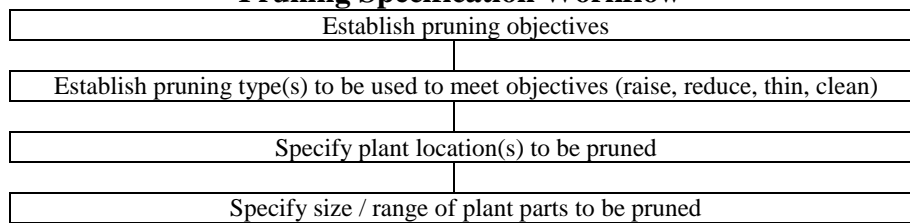
For Exam Domain:

Tree Pruning

Version 5.1

Pruning is defined as the selective removal of plant parts. Pruning objectives shall be established prior to beginning any pruning operation. Specifications for pruning are to include the location and size range of parts to be removed, the pruning objectives, and the pruning type or types to be employed.

Pruning Specification Workflow

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| Establish pruning objectives |
| Establish pruning type(s) to be used to meet objectives (raise, reduce, thin, clean) |
| Specify plant location(s) to be pruned |
| Specify size / range of plant parts to be pruned |

Equipment and work practices that damage living tissue and bark beyond the scope of work should be avoided. Climbing spurs shall not be used when climbing and pruning trees, except in special circumstances as noted in ANSI (American National Standards Institute) A300 (Part 1) Pruning (exceptions: emergency situations; when limbs are more than a throw-line distance apart and there is no other means of climbing the tree; when the outer bark is thick enough to prevent damage to the inner bark or cambium; and, in remote or rural utility rights-or-way).

Branches with strong U-shaped attachment should be retained while branches with a V-shaped attachment and included bark should be removed. A pruning cut that removes a branch at its point of origin shall be made close to the trunk or parent limb without cutting into the branch bark ridge or collar and without leaving a stub. A pruning cut that reduces the length of a branch or parent stem should bisect the angle between its branch bark ridge and an imaginary line perpendicular to the branch or stem. To prevent damage to the parent limb when removing a branch with a narrow branch attachment, the final cut should be made from the outside of the branch inwards.

If a limb is large enough that the cambium may rip during pruning, it should be removed by making three cuts. The first cut eliminates the chance of bark tearing as the limb is removed. The second cut allows the limb to drop smoothly when the weight is released. The third cut removes the remaining stub. Severed limbs shall be removed from the crown upon completion of the pruning, at the end of the workday, or at times when the tree will be unattended. When necessary, ropes or other equipment shall be used to lower large branches, or portions of branches, to the ground. Limbs that cannot be safely controlled by hand or free-dropped shall have a separate rigging line tied to them to help control their fall.
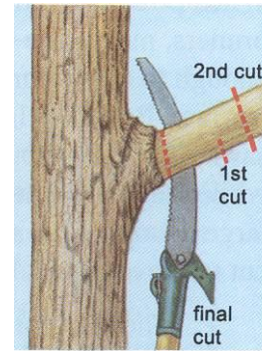
How To Prune Trees
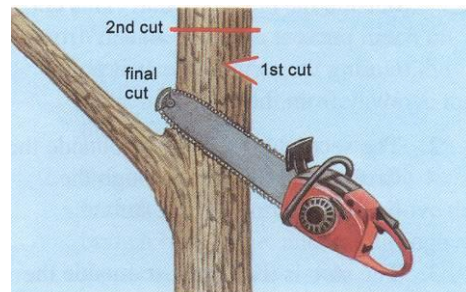USDA Forest Service
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Flush cuts are not recommended as ring shakes, discolored wood, and greater decay are associated with flush cuts.

Wound treatments should not be used to cover wounds or pruning cuts, except when recommended for certain specific reasons.

Topping is defined by ANSI A300 as the reduction of tree size by cutting live branches and leaders to stubs, without regard to long-term tree health or structural integrity. Topping is not an acceptable pruning practice. Topping is NOT an alternative term for crown reduction, directional pruning, drop-crotch pruning, or lateral pruning and is different than pollarding. Topping has been shown to increase the risk of tree failure.

A heading cut is defined as the reduction of a shoot, stem, or branch back to a bud or lateral branch not large enough to assume the terminal role. Heading should be considered an acceptable practice for shrub pruning and specialty pruning, but not for other types of pruning. For most conifers, if branches are headed back to older wood with no foliage the branch stub usually dies. Cutting back to a lateral that is insufficient in size is much like topping.

A reduction cut is used to reduce the size of a tree. A reduction cut removes a stem or branch back to a lateral branch or stem that is large enough to assume the terminal role. This lateral branch should be at least one-third the diameter of the removed portion. When possible, avoid large reduction cuts (more than 2 inches diameter) on permanent scaffold limbs.

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To obtain the defined objective, the growth cycle of the species, the structure of the species, and the type of pruning to be performed should be considered. Not more than 25 percent of the foliage of a branch or limb should be removed in a single growing season when it is cut back to a lateral, and that lateral should be at least 1/3rd the diameter of the removed portion so that it can assume apical dominance. The Maryland Department of Natural Resources Forest Service recommends that not more than 25 percent of the foliage on a mature tree should be removed within a growing season.

Excessive removal of the laterals and foliage from the interior portion of a branch is called lion's tailing. The negative effects of lion's tailing include reduced branch taper, sunburned bark tissue, and weakened branch structure and breakage. Topping and lion's tailing shall be considered unacceptable practices for pruning trees.

Pruning Types

Structure pruning is the selective removal of live branches to improve tree and branch architecture primarily on young- or medium-aged trees. The size and location of leaders or branches to be subordinated or removed should be specified. The dominant leader(s) should be selected for development and strong, properly spaced scaffold branch structure should be selected and maintained by reducing or removing others. Interfering, overextended, defective, weak, and poorly attached branches should be removed or reduced.

Crown cleaning is the selective removal of dead, diseased, detached, and broken branches. The location of parts and the size range of parts shall be specified.

Crown thinning is the selective removal of live branches to reduce crown density. Thinning should result in an even distribution of branches on individual branches and throughout the crown. The percentage of foliage, the location and size of parts to be removed shall be specified.
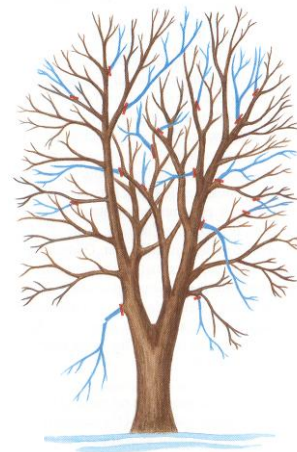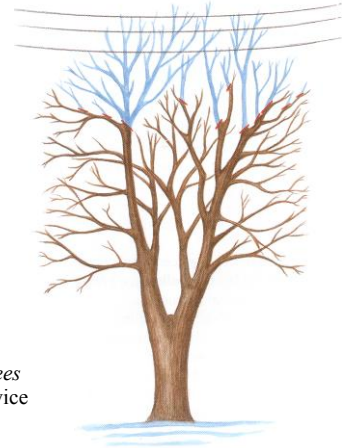
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Crown raising is the selective removal of branches to provide vertical clearance. The location and size range of the parts to be removed should be specified. The clearance distance shall be specified. After pruning, the ratio of live crown to the total tree height should be at least two-thirds.

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retain 67% crown

prune 33%
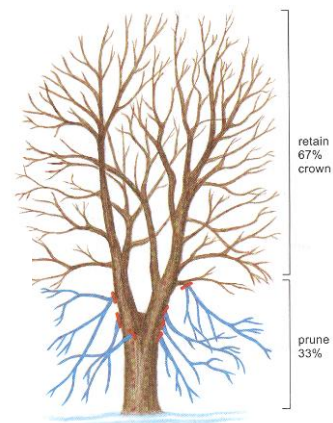
Crown reduction is the selective removal of branches and stems to decrease the height and/or spread of a tree. Consideration shall be given to the ability of a species to tolerate this type of pruning. The location of parts to be removed and the clearance requirements shall be specified. The size of parts should be removed. This method, sometimes called drop crotch pruning, is preferred to topping because it results in a more natural appearance, increases the time before pruning is needed again, and minimizes stress to the tree. Crown reduction should be accomplished with reduction cuts, not heading cuts.

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Crown restoration consists of selective removal of branches, sprouts, and stubs to redevelop structure, form, and appearance of severely pruned, vandalized, or damaged trees. The location and size range of parts, and the percentage of sprouts to be removed should be specified.

Pollarding is a tree training system that involves severe heading the first year followed by annual sprout removal. Pollarding is not topping. Management plans shall be made prior to the start of the pollarding process for routine removal of sprouts. Consideration shall be given to the ability of the individual tree to respond to pollarding.

Vista pruning consists of the use of one or more pruning methods to enhance a specific line of sight. Pruning methods shall be specified. The size range of parts, location in tree, and percentage of foliage to be removed should be specified.

Espalier is a combination of pruning, supporting, and training branches to orient a plant in one plane. Ties should be replaced as needed to prevent girdling the branches at the attachment site.