

The following page includes the answer key for all machine-scored items, followed by the rubric for the hand-scored item.

- The rubric shows sample student responses. Other valid methods for solving the problem can earn full credit unless a specific method is required by the item.
- In items where the scores are awarded for full and partial credit, the definition of partial credit will be confirmed during range-finding (reviewing sets of real student work).
- If students make a computation error, they can still earn points for reasoning or modeling.

Unit 1

Item Number	Answer Key	Evidence Statement Key/Content Scope
1. VR024214	C, D, E	G.CO.12/13
2. VR065363	1.25	G.SRT.1/2/3
3. VR063204	A, B, D	G.GMD.4
4. VR63261	A, C, E, F	G.CO.2/3/4/5

Unit 2

Item Number	Answer Key	Evidence Statement Key/Content Scope
1. VR024396	A	G.GPE.4/5
2. VR065368	17	G.C.2
3. VR063229	A	G.GMD.4
4. VR065372	See rubric	G.MG.1/2/3

Rubric starts on the next page.

Unit 2 #4

Part A

The hole is in the shape of a cylinder with a diameter of 36 inches (radius is 18, or 1.5 feet) and a height of 18 inches (1.5 feet). The root ball is a sphere with a radius of 9 inches (0.75 feet). The volume of soil is the difference in these two quantities:

$$\left[\pi(1.5)^2(1.5) \right] - \left[\frac{4}{3}\pi(0.75)^3 \right] \approx 10.6 - 1.8 \approx 8.8 \text{ cubic feet of soil.}$$

Part B

The amount of mulch will fill the circle with a radius of 1.5 feet minus the area of a cross section of the tree trunk with a radius of 0.25 feet (3 inches).

$$\left[\pi(1.5)^2 \right] - \left[\pi(0.25)^2 \right] = 2.1875\pi \approx 6.87 \text{ square feet of mulch.}$$

Scoring

This question is worth 4 points. Each of the following components is worth 1 point.

- The response provides a clear description of the process used to find the volume of soil.
- The response contains the correct answer to the amount of soil, based on the process the student used.
- The response contains the correct answer to the amount of mulch.
- Both answers account for the conversion to feet.

4	Student response includes all four components.
3	Student response includes three of the components.
2	Student response includes two of the components.
1	Student response includes one of the components.
0	Student response is incorrect or irrelevant.