Draw a Bean Sprout: Three Growth Stages from Seed to Young Plant

Original tasks 1, 2, 3 / complete keys

Task 1

Draw Stage 1 only: a bean seed 3 cm tall and 4 cm wide with a root 4.5 cm long. Use a solid outline, a dashed seed-coat split, and a dotted center guide. Label the seed and root.

Answer: A rounded oval 4 cm wide and 3 cm tall, a notch at the lower edge, a dashed split line, and a tapering root 4.5 cm long along the dotted guide, with labels.

Reason: The exercise isolates the first stage so the seed shape, split, and root taper can be checked before adding later stages.

Check: Measure the oval and root, confirm the root tip is thinner than the base, and verify the three line types are used as defined.

Task 2

Draw Stage 2: a seed placed higher in the panel, a stem 2 cm tall, two rounded cotyledons, and a root 6 cm long. Keep the same line convention and label the cotyledons.

Answer: A seed oval with a short 2 cm stem, two rounded cotyledons left and right, and a 6 cm tapering root, with labels and consistent line types.

Reason: This stage adds the stem and cotyledons while keeping the root proportional and the convention consistent.

Check: Measure the stem and root, check that the stem tapers from base to top, and confirm the cotyledons are simple rounded forms without detailed veins.

Task 3

Draw Stage 3: a tapered stem 4 cm tall, two cotyledons slightly larger than in Stage 2, and a root 8 cm long. Use a shared ground line and label the stem and root.

Answer: A 4 cm tapered stem with two larger cotyledons and an 8 cm root, aligned to the ground line, with labels and the same line convention.

Reason: The exercise tests taper, proportion, and the exclusion of full leaves or flowers.

Check: Measure the stem and root, verify the taper, and confirm no full leaves or flowers are present.

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Original tasks 4 / complete keys

Task 4

Create a three-panel sequence using hypothetical lengths: Stage 1 root 4 cm, Stage 2 root 6 cm, Stage 3 root 8 cm. Stems: Stage 2 is 2 cm, Stage 3 is 4 cm. State your line convention at the top and label each stage.

Answer: Three labeled panels with roots of 4 cm, 6 cm, and 8 cm; stems of 2 cm and 4 cm in Stages 2 and 3; a stated line convention applied throughout.

Reason: The full sequence checks growth progression, consistency, and the stated convention across all stages.

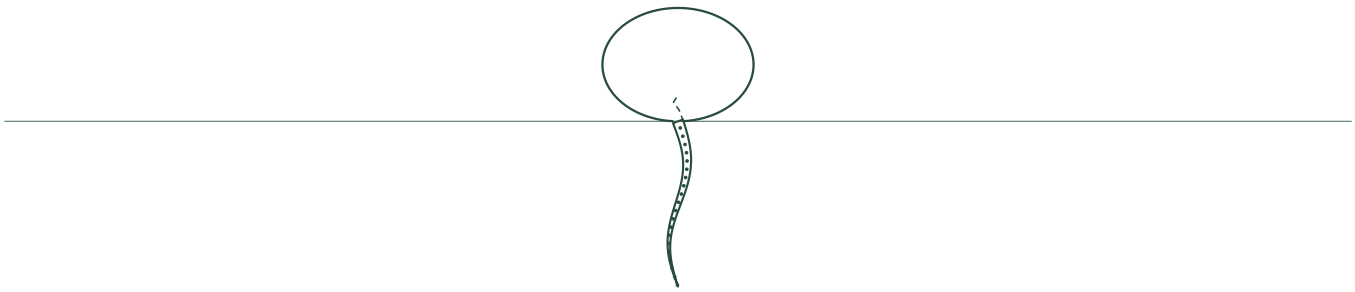
Check: Measure each root and stem, confirm the progression, and verify that the stated convention is used in every panel.

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Task 1 / answers

Early bean stages / hypothetical cm dimensions print 1:2 / roots measured along dotted guide

STAGE 1



Shared ground / root-shoot datum

Root 4.5 cm

Seed 4 x 3 cm

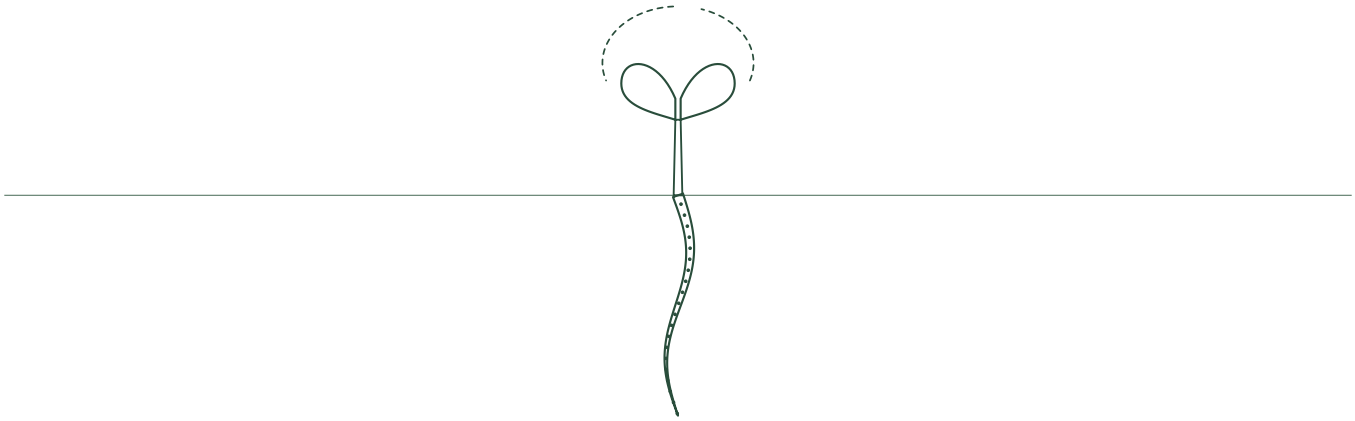
The root is measured along its genuinely dotted curved center guide, not just its vertical drop. The visible stem rises from ground to the attached cotyledon node. Dashed partial coat cues stay around the seed leaves; they are not extra leaves or another seed. Only this selected early stage is illustrated, with no true leaves or flowers.

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Task 2 / answers

Early bean stages / hypothetical cm dimensions print 1:2 / roots measured along dotted guide

STAGE 2



Shared ground / root-shoot datum

Root 6 cm

Stem 2 cm

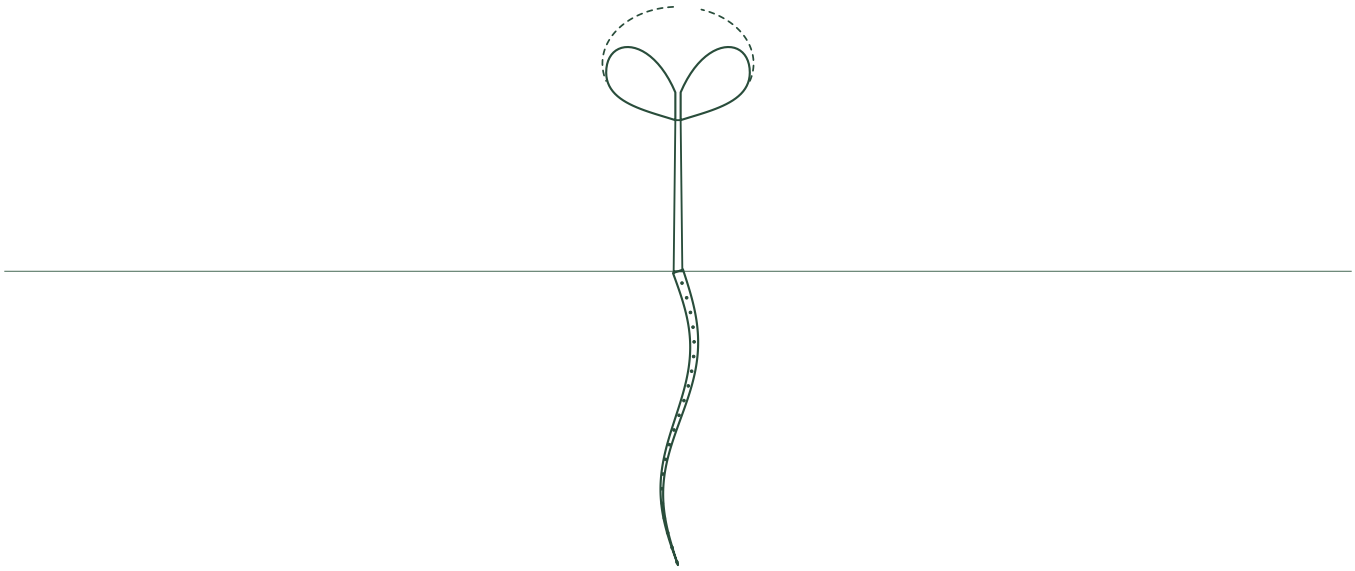
The root is measured along its genuinely dotted curved center guide, not just its vertical drop. The visible stem rises from ground to the attached cotyledon node. Dashed partial coat cues stay around the seed leaves; they are not extra leaves or another seed. Only this selected early stage is illustrated, with no true leaves or flowers.

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Task 3 / answers

Early bean stages / hypothetical cm dimensions print 1:2 / roots measured along dotted guide

STAGE 3



Shared ground / root-shoot datum

Root 8 cm

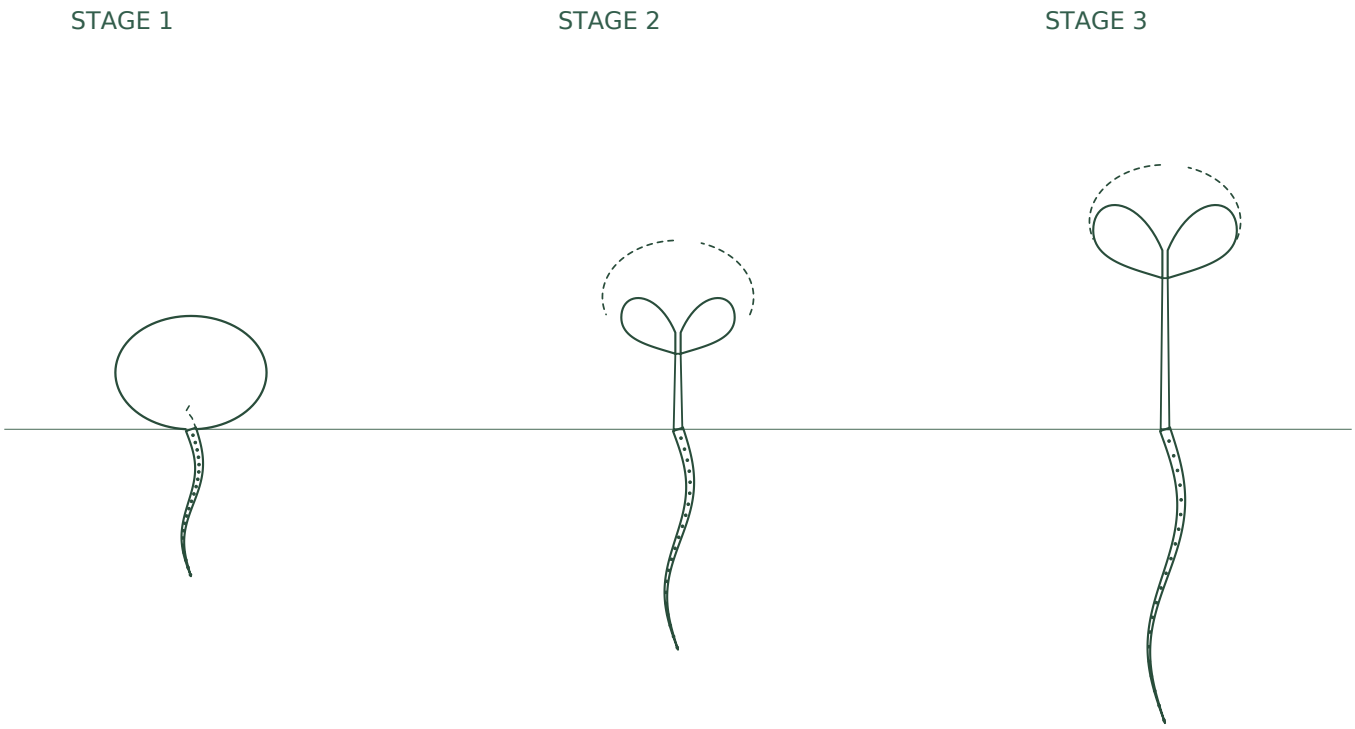
Stem 4 cm

The root is measured along its genuinely dotted curved center guide, not just its vertical drop. The visible stem rises from ground to the attached cotyledon node. Dashed partial coat cues stay around the seed leaves; they are not extra leaves or another seed. Only this selected early stage is illustrated, with no true leaves or flowers.

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Task 4 / answers

Early bean stages / hypothetical cm dimensions print 1:2 / roots measured along dotted guide



Shared ground / root-shoot datum

STAGE 1	STAGE 2	STAGE 3
Root 4 cm	Root 6 cm	Root 8 cm
Seed 4 x 3 cm	Stem 2 cm	Stem 4 cm

The root is measured along its genuinely dotted curved center guide, not just its vertical drop. The visible stem rises from ground to the attached cotyledon node. Dashed partial coat cues stay around the seed leaves; they are not extra leaves or another seed. Only this selected early stage is illustrated, with no true leaves or flowers.

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Source rubric / reflection

- [ ] Three stages are present and clearly labeled.
- [ ] Stage 1 shows a seed with a notch, dashed split, and tapering root.
- [ ] Stage 2 shows a short stem, two rounded cotyledons, and a longer root.
- [ ] Stage 3 shows a taller tapered stem, two cotyledons, and a longer root.
- [ ] The line convention is stated and applied consistently.
- [ ] No full leaves, flowers, or detailed vein study are included.
- [ ] Proportions are consistent with the stated hypothetical values or a clearly noted alternative.
- [ ] Labels are legible in the student's normal handwriting.

Reflection: What did you check, what did you change, and what will you try next?