

3D PRINTING - LEADER KEY

SAINTS GLOBAL MEMBER

NAME: _____

BATTALION: _____

TROOP: _____

SKILL BADGE ADVISOR

NAME: _____

EMAIL: _____

PHONE: _____

LEADER KEY

WITH EVALUATION HINTS

**Gold boxes contain leader hints for evaluating each requirement*

STEP 1 | DISCOVER

INITIALS

- a) Explain why safety matters in 3D printing, including tool safety, digital safety, and precautions when using heated or hazardous materials. _____

♂ LEADER KEY

Look for seriousness and awareness, not casual familiarity.

- b) Explain different types of models (architectural, mechanical, process, industrial) and how 3D printing supports each. _____

♂ LEADER KEY

Ensure understanding of purpose-driven design.

STEP 2 | PLAN

INITIALS

- a) Design an original 3D-printable model (not from a kit) using CAD software, scaled appropriately for its purpose. _____

♂ LEADER KEY

Design must be original and purposeful.

- a.1) Explain why you chose this subject _____
- a.2) Prepare a scaled digital design _____
- a.3) List materials and printer settings needed _____
- a.4) Identify tools and software used _____

b) Explain how CAD, slicing software, and the printer work together from design to finished object. _____

 LEADER KEY

Look for systems-level understanding.

STEP 3 | ACT

INITIALS

a) Print the designed model and demonstrate proper printer setup, operation, and shutdown under supervision. _____

 LEADER KEY

Safety and procedure matter more than speed.

a.1) Prepare the build plate correctly _____

a.2) Load filament or resin safely _____

a.3) Start and monitor the print _____

a.4) Shut down and clean the printer properly _____

b) Evaluate the printed model for accuracy, strength, and fit, then revise the design or settings and reprint if needed. _____

 LEADER KEY

Iteration demonstrates true understanding.

b.1) Identify at least one flaw or improvement _____

b.2) Explain the cause of the issue _____

b.3) Adjust the design or slicing settings _____

b.4) Explain the result of the change _____

c) Explain intellectual property considerations in 3D printing, including file licensing, remixing, and responsible sharing. _____

 LEADER KEY

Ensure understanding applies to real behavior.

STEP 4 | REFLECT

INITIALS

- a) Explain what you learned about design thinking, iteration, and responsibility through this project, and identify one improvement you would make next time. _____

 LEADER KEY

Look for concrete lessons, not vague statements.

- b) Identify three careers related to 3D printing or digital fabrication and explain the training required for one. _____

 LEADER KEY

Ensure career paths are realistic and informed.

END OF REQUIREMENTS

BY SIGNING BELOW, I CERTIFY TO THE BEST OF MY KNOWLEDGE THAT ALL REQUIREMENTS WERE MET AT OR ABOVE THE REQUIRED STANDARDS AS OUTLINED IN THE BADGE REQUIREMENTS CHECKLIST.

SKILL BADGE ADVISOR

DATE (YYYY-MM-DD)