WORKSHEET 1.2

Review the What's Engineering section (pages 2-7) of the Engineering Career Guide and locate 3 facts for each item below.

1. A giant robot can 3D-print a full-size house in just ten days — no hammers, no nails.

2. The oil used to cook French fries can now be reused to fuel cars.

3. A robotic hand can learn your brain and muscle signals and get more lifelike the more you wear it.

4. Special concrete can heal its own cracks using bacteria or algae.

WORKSHEET 1.2 (CONTINUED)

5. Some clothes are now being made from mushrooms.

6. A window that looks like normal glass can secretly act like a solar panel.

7. Glasses lighter than a deck of cards can play movies on a 10-foot virtual screen, for your ears and eyes only.

8. NASA and SpaceX are teaming up to fly astronauts to the Moon — and maybe even Mars.

WORKSHEET 1.2 (CONTINUED)

9. Drones are dropping off blood, vaccines — and yes, even hot pizza — faster than traffic can move.

10. Self-driving trucks are learning to drive cross-country with no one behind the wheel.

WORKSHEET 2.2

Connect each of the 10 amazing engineering feats from worksheet 1.2 to one or more of the Grand Challenges below, and briefly explain your reason for making this connection.

1. Make Solar Energy Economical

2. Provide Energy from Fusion

3. Develop Carbon Sequestration Methods

4. Manage the Nitrogen Cycle

WORKSHEET 2.2 (CONTINUED)

5. Provide Access to Clean Water

6. Restore and Improve Urban Infrastructure

7. Advance Health Informatics

8. Engineer Better Medicines

WORKSHEET 2.2 (CONTINUED)

9. Reverse-Engineer the Brain

10. Prevent Nuclear Terror

11. Secure Cyberspace

12. Enhance Virtual Reality

WORKSHEET 2.2 (CONTINUED)

13. Advance Personalized Learning

14. Engineer the Tools of Scientific Discovery

WORKSHEET 3.1

Review the list of Grand Challenges to identify the one you would pick to solve and briefly explain why you picked the one you did.

My Grand Challenge to solve is:

Why I chose it:

Provide 3 practical benefits or impacts on the world of solving your chosen Challenge.

WORKSHEET 4.1

Listed below are the most common engineering disciplines. What real-world impacts can you connect to each engineering discipline? After you're done, rank the engineering disciplines from the most to the least interesting to you!

Aerospace

Agricultural

Biomedical

keep going ➡

WORKSHEET 4.1 (CONTINUED)

Chemical

Civil

Computer

Electrical

WORKSHEET 4.1 (CONTINUED)

Environmental

Manufacturing

Materials

Mechanical

WORKSHEET 4.1 (CONTINUED)

Mining

Nuclear

Ocean

Systems

WORKSHEET 4.1 (CONTINUED)

Now, rank the engineering disciplines from the most to the least interesting to you!

Aerospace _____

Agricultural _____

Biomedical _____

Chemical _____

Civil _____

Computer _____

Electrical _____

Environmental _____

Manufacturing _____

Materials _____

Mechanical _____

Mining _____

Nuclear _____

Ocean _____

Systems _____

WORKSHEET 5.1

Choose one engineering discipline for exploration, and find three schools granting this degree. Next, provide 3 things you like and 3 you dislike about each school. Then, find two possible employers in this field, describing their main line of business, prominent product(s), and any other notable facts.

MY CHOSEN ENGINEERING DISCIPLINE:

_____

SCHOOL 1 : _____

Three things I like about it:

_____

_____

_____

Three things I dislike about it:

_____

_____

_____

SCHOOL 2 : _____

Three things I like about it:

_____

WORKSHEET 5.1 (CONTINUED)

Three things I dislike about it:

SCHOOL 3 : _____

Three things I like about it:

Three things I dislike about it:

WORKSHEET 5.1 (CONTINUED)

EMPLOYER 1 (main line of business, prominent product(s), and any other notable facts.)

EMPLOYER 2 (main line of business, prominent product(s), and any other notable facts.)

EMPLOYER 3 (main line of business, prominent product(s), and any other notable facts.)