Human Plus Exhibit Worksheet Grade 4 – 5

NAME _____

Follow the headings on this worksheet to find the matching exhibit sections and record your discoveries as you explore.

Visit the *Human Plus* exhibit section

Watch the videos and look at the objects. Pick one person and describe what tool they use, and how it helps them every day?

Visit the *RAMPS* exhibit section

After reading the RAMPS story and trying the activity, who was this design made for and how does it help them?

Think Outside the Box: A wheelchair is usually for moving around. What is one other thing a wheelchair's wheels could be used for? (Example: powering a light, making art, etc.)

Visit the *Every Body Plays* exhibit section

Read Kanya's story and look at the mono-ski. Engineering Challenge: If you were the lead engineer, what is one part of the mono-ski you would change to make it even better for Kanya?

Visit the *Ask, Imagine, Create* exhibit section

Choose a technology from the touchscreen. Which one did you pick, and how does it work?

The Knee Test: Feel how the three knees move. These knees move in different ways. Why would a person need one design instead of another?

Human Plus Exhibit Worksheet Grade 4 – 5

NAME _____

Visit the Engineering Challenge: Caring for a Pet exhibit section

Ask	Who was the user you were designing for? What was the design challenge?
Imagine & Create	Draw your first idea here:
Test	What part worked? What part failed or needed to be better?
Improve	How did you change your design to make it better? Did it work better the second time?

Adapted from the Human Plus Teacher Guide developed by NYSCI in partnership with OMSI and the Quality of Life Technology Center. Supported by the National Science Foundation (Grant No. DRL-1010507). Learn more at nysci.org/educators#educatorResourcesSec.

nysci ANSWER KEY

NAME _____

Follow the headings on this worksheet to find the matching exhibit sections and record your discoveries as you explore.

Visit the *Human Plus* exhibit section

Watch the videos and look at the objects. Pick one person and describe what tool they use, and how it helps them every day?

Carrie Krischke — prosthetic arm, electric mixer; Erik Weihenmayer — trekking poles, rope, bell, GPS for blind users;

Elaine Houston — prosthetic hand, rugby ball, soldering iron, wheelchair.

Visit the *RAMPS* exhibit section

After reading the RAMPS story and trying the activity, who was this design made for and how does it help them?

E-Money. He was an expert wheelchair user, and RAMPS made it possible for him to use his wheelchair skills

for self-expression, as a DJ. (Answers will vary).

Think Outside the Box: A wheelchair is usually for moving around. What is one other thing a wheelchair's wheels could be used for? (Example: Powering a light, making art, etc.)

Answers will vary.

Visit the *Every Body Plays* exhibit section

Read Kanya's story and look at the mono-ski. Engineering Challenge: If you were the lead engineer, what is one part of the mono-ski you would change to make it even better for Kanya?

Answers will vary.

Visit the *Ask, Imagine, Create* exhibit section

Choose a technology from the touchscreen. Which one did you pick, and how does it work?

Answers will vary but should reflect an understanding of one of the following: Fusion Foot, Flex-Run foot with Nike Sole,

C-Leg, Jaipur Leg with Jaipur-, Stanford Knee, Inflatable Robot Arm, Ball Launcher, Articulated LEGO Hand, SensorHand,

BrainPort Device V100, eSight Intelligent Eyewear, SoundBite Hearing System, Modular Prosthetic Limb, Utah Electrode Array

The Knee Test: Feel how the three knees move. These knees move in different ways. Why would a person need one design instead of another?

Each knee is made for different types of users with different needs. The Jaipur-Stanford Knee is designed to be durable

and inexpensive. The XT9 Knee has a spring that provides support for action sports like snowboarding and skiing.

The GeoFlex Knee is designed to give a user stability and control.

ANSWER KEY

NAME _____

Visit the Engineering Challenge: Caring for a Pet exhibit section

Ask	Who was the user you were designing for? What was the design challenge? Rudel Zaragoza-Rios. Create a tool that will help a wheelchair user like Rudel to move a pet's bowl or toy.
Imagine & Create	Draw your first idea here: Answers will vary.
Test	What part worked? What part failed or needed to be better? Answers will vary.
Improve	How did you change your design to make it better? Did it work better the second time? Answers will vary.

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Curriculum Connections

The following table outlines how Human Plus exhibit aligns with the New York State Science Learning Standards (NYSSLS), Science and Engineering Practices, Disciplinary Core Ideas, Crosscutting Concepts.

Disciplinary Core Ideas	Welcome to Human Plus	Ramps	Everybody Plays	Ask, Imagine, Create	Caring for a Pet
ETS1.A: Defining and Delimiting Engineering Problems	✔	✔	✔	✔	✔
ETS1.B: Developing Possible Solutions	✔	✔		✔	✔
ETS1.C: Optimizing the Design Solution	✔	✔		✔	✔
Cross Cutting Concepts					
Influence of Science, Engineering, and Technology on Society	✔	✔	✔	✔	✔
Sciences & Engineering Practices					
Asking Questions and Defining Problems					✔
Planning and Carrying Out Investigations					✔
Constructing Explanations and Designing Solutions					✔