

GRADE 7SFO ANCHOR TASK

Science Anchors

Science anchors are ongoing engaging tasks that students can work on independently. They are curriculum based, clearly defined and differentiated for students. Students can work on science anchors as they complete work at varying rates, when the teacher is working a small groups of students, at the beginning or end of the class period, or when they are waiting for teacher assistance. Sample science anchor tasks include: reading and responding to text, journaling, learning or interest centers, listening or viewing centers, independent research or projects and hands-on minds-on science kit tasks.

Overview

The science anchor tasks included in this resource support the MCPS Grade 7 Structure and Function of Living Things unit. Provide a variety of anchor tasks at your anchor station to address the diverse learning styles and needs of your students.

Anchor Task	Topics
1-Tour de School or City	Cellular Anatomy
2-Organelles Rap or Song	Cellular Anatomy
3-“Getting to the Heart of It” Virtual Lab DE Science http://search.discoveryeducation.com/	Circulatory System
4-Journey of a Red Blood Cell Poster Project (Also, see Travels of a Red Blood Cell task on p.77 <i>Human Biology and Health</i> Prentice Hall textbook)	Circulatory System
5-Anti-Smoking Campaign Children’s	Respiratory System
6-Body Systems RAFT	Body Systems
7-Design, Build and Modify a Prosthesis (Also, see Design and Build a Hand Prosthesis task on p.5 <i>Human Biology and Health</i> Prentice Hall textbook)	Benefits and Limitations of Models

STRUCTURE AND FUNCTION OF LIVING THINGS

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Possible Anchor Tasks

Prentice Hall *Cells and Heredity All-in One Teaching Resources*.

Task	Topics
Discovering Cells- <i>Guided Reading and Study</i> pp.48-51	Cell Structure and Function
Looking Inside Cells- <i>Guided Reading and Study</i> pp.57-60	
Looking Inside Cells- <i>Review and Reinforce</i> p.61	
Chemical Compounds in Cells- <i>Guided Reading and Study</i> pp.64-67	
Amino Acids and Proteins- <i>Enrich</i> p.69	
The Cell in Its Environment- <i>Guided Reading and Study</i> p.73-75	
The Cell in Its Environment- <i>Review and Reinforce</i> p.76	
Facilitated Diffusion- <i>Enrich</i> p.77	
Photosynthesis- <i>Guided Reading and Study</i> pp.110-113	Cellular Functions
Chlorophyll and the Color of Light- <i>Enrich</i> p.115	
Respiration- <i>Guided Reading and Study</i> pp.117-120	
Respiration- <i>Review and Reinforce</i> p.121	
History of Fermentation- <i>Enrich</i> p.122	
Task	Topics
Photosynthesis- <i>Guided Reading and Practice</i> pp.21-23	Cellular Functions
Respiration- <i>Guided Reading and Practice</i> pp.24-26	

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Possible Anchor Tasks

Prentice Hall *Human Biology and Health All-in One Teaching Resources*:

Task	Topics
Body Organization and Homeostasis- <i>Guided Reading and Study</i> pp.46-50	Levels of Organization in the Body
Organ and Tissue Transplants- <i>Enrich</i> p.52	
The Skeletal System- <i>Guided Reading and Study</i> pp. 54-58	Skeletal System
A Pain in the Back- <i>Enrich</i> p.60	
Diagnosing Bone and Joint Injuries- <i>Guided Reading and Study</i> pp.62-65	
Diagnosing Bone and Joint Injuries- <i>Review and Reinforce</i> p.66	
The Muscular System- <i>Guided Reading and Study</i> pp.69-71	Muscular System
The Muscular System- <i>Review and Reinforce</i> p.72	
Pumping Iron- <i>Enrich</i> p.73	
A Look Beneath the Skin- <i>Skills Lab</i> pp.74-75	
The Skin- <i>Guided Reading and Study</i> pp.77-79	Skin
The Skin- <i>Review and Reinforce</i> p.80	
Burns- <i>Enrich</i> p.81	
Sun Safety- <i>Skills Lab</i> pp.82-84	
Examining Bones, Muscles, and Skin- <i>Laboratory Investigation</i> pp.87-91	Skeletal System, Muscular System
Skin and Bones- <i>Performance Assessment</i> pp.92-94	Skeletal System, Skin

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GRADE 7SFO ANCHOR TASK

Possible Anchor Tasks

Prentice Hall *Human Biology and Health All-in One Teaching Resources*:
continued

Task	Topics
What's for Lunch?- <i>Chapter Project</i> pp.108-114	Nutrients
Food and Energy- <i>Guided Reading and Study</i> pp.116-120	
Food and Energy- <i>Review and Reinforce</i> p.121	
Sugar Substitutes- <i>Enrich</i> p.122	
Raisin' the Raisin Question- <i>Consumer Lab</i>	Mass, Sampling, Redesign
Nutrient and Health Claims- <i>Enrich</i> p.130	Nutrients
The Digestive Process- <i>Guided Reading and Study</i> pp.132-135	Digestive System
Stomach Ulcers- <i>Enrich</i> p.137	
As the Stomach Churns – <i>Skills Lab</i> pp.138-140	
Final Digestion and Absorption- <i>Guided Reading and Study</i> pp.142-144	
Lactose Intolerance- <i>Enrich</i> p.146	
Food Flight- <i>Performance Assessment</i> pp.156-158	
Heart Murmurs- <i>Enrich</i> p.185	Cardiovascular System
A Closer Look at Blood Vessels- <i>Guided Reading and Study</i> pp.187-189	
A Closer Look at Blood Vessels- <i>Review and Reinforce</i> p.190	
Blood Pressure- <i>Enrich</i> p.191	

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Possible Anchor Tasks

Prentice Hall *Human Biology and Health All-in One Teaching Resources*:
continued

Task	Topics
Heart Beat, Health Beat- <i>Skills Lab</i> pp.192-193	Cardiovascular System
Blood and Lymph- <i>Guided Reading and Study</i> pp.195-198	Circulatory System
More About Blood Types- <i>Enrich</i> p.200	
Cardiovascular Health- <i>Guided Reading and Study</i> pp.202-205	
Bypass Surgery- <i>Enrich</i> p.207	
Direction of Blood Flow- <i>Laboratory Investigation</i> pp.212-216	
Get the Message Out- <i>Chapter Project</i> pp.232-238	Respiratory System
The Respiratory System- <i>Guided Reading and Study</i> pp.240-245	
The Respiratory System- <i>Review and Reinforce</i> p.246	
Analyzing a Spirogram- <i>Enrich</i> p.247	
A Breathe of Fresh Air- <i>Skills Lab</i> pp.248-249	
The Excretory System- <i>Guided Reading and Study</i> pp.258-261	Excretory System
The Excretory System- <i>Review and Reinforce</i> p.262	
Urinalysis- <i>Enrich</i> p.263	
Waste Doctor- <i>Performance Assessment</i> pp.274-275	
Stop the Invasion- <i>Chapter Project</i> pp.290-294	Infectious Disease

GRADE 7SFO ANCHOR TASK

Possible Anchor Tasks

Prentice Hall *Human Biology and Health All-in One Teaching Resources*
continued

Task	Topics
Infectious Disease-Guided Reading and Study pp.296-299	Infectious Disease
Stopping Malaria-Enrich p.301	Fighting Disease
The Body's Defenses-Review and Reinforce p.308	
Inflammation: Clue to Infection-Enrich p.309	Infectious Disease
Preventing Infectious Disease-Guided Reading and Study pp.313-316	Preventing Disease
Testing a Vaccine-Enrich p.318	
Noninfectious Disease-Guided Reading and Study pp.320-323	Noninfectious Disease
Leading Noninfectious Diseases-Enrich p.325	
Causes of Death, Then and Now-Skills Lab pp.326-328	Preventing Disease
How the Nervous System Works-Guided Reading and Study pp.366-369	Nervous System
How the Nervous System Works-Review and Reinforce p.370	
Polygraph Test-Enrich p.371	
Sleep and Your Brain-Enrich p.381	
The Senses-Review and Reinforce p.387	
Color Vision, Colorblindness-Enrich p.388	
The Endocrine System-Guided Reading and Study pp.430-433	Endocrine System
A Balancing Act-Enrich p.435	

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Possible Anchor Tasks

Prentice Hall *Human Biology and Health Guided Reading and Study Workbook*.

Task	Topics
Diagnosing Bone and Joint Injuries- <i>Guided Reading and Study</i> pp.17-19	Skeletal System
How the Nervous System Works- <i>Guided Reading and Study</i> pp.77-79	

GRADE 7SFO ANCHOR STATION**Tour de School or City****Anchor Task 1****Overview**

Students that have a strong understanding of cellular anatomy complete Tour de City or a similar task. Students that are still learning about cellular anatomy complete the Tour de School task.

Goals

Students should be able to distinguish between

plant and animal cells.

Students should understand

the function of various organelles.

Students should be able to

develop analogies to demonstrate their understanding of the interactions of organelles within a cell.

Required Resources

- One Tour de School or Tour de City resource per student
- Poster paper
- Colored pencils or markers
- A variety of resources on cells including textbook

GRADE 7SFO ANCHOR STATION

Tour de School

Anchor Task 1

Instructions: You are about to take a tour, either real or imagined, around your school. You will pass through parts of the school that are familiar, yet you must think of them in new ways. You are going to develop analogies, or comparisons, to the parts of your school and the organelles of a cell. For instance, think of something that you are familiar with, like a refrigerator. Your refrigerator has many parts, some that you see and some that you can not. Now, think of a cell. You have seen some organelles of a cell, and some have remained unseen. You also know that certain organelles have certain functions. The mitochondria are the powerhouse of the cell. Your refrigerator has a powerhouse as well. It is the motor that helps to keep your food cold.

Now you will go out into the school to try to compare school parts to the organelles of a cell.

Organelle	School Part	Why It Matches

GRADE 7SFO ANCHOR STATION

Tour de City Anchor Task 1

Instructions: You are about to take a tour, either real or imagined, around your city (mall or another location). You will pass through parts of the city that are familiar, yet you must think of them in new ways. You are going to develop analogies, or comparisons, to the parts of your city and the organelles of a cell. For instance, think of something that you are familiar with in a city, like city hall. City hall is where city policies and regulations are passed. It is like the control center for the city. Now, think of a cell. You have seen some organelles of a cell, and some remain unseen. You also know that certain organelles have certain functions. The nucleus is the control center of the cell. City hall is the control center for your city.

Now you will go out into your city to try to compare city parts to the organelles of a cell.

Organelle	City Part	Why It Matches

GRADE 7SFO ANCHOR STATION

Tour de School or City

Anchor Task 1

Teacher Resource Page

Below are examples of possible student responses. All student responses with proper justification should be accepted.

Tour de School

<u>Organelle</u>	<u>School Part</u>
nucleus	office
cell wall	fences
cell membrane	walls
vacuoles	classrooms
cytoplasm	air in building
chloroplast	cafeteria

Tour de City

<u>Organelle</u>	<u>City Part</u>
lysosome	waste disposal plant
mitochondria	power plant
endoplasmic reticulum	transportation system
chloroplast	food production factory
nucleus	city hall
golgi bodies	post office
cytoplasm	open space (land/air)
ribosomes	human work force

GRADE 7SFO ANCHOR STATION**Organelles Rap or Song****Anchor Task 2****Overview**

This anchor task is designed to be used by students as they are learning about the cellular anatomy.

Goals

Students should be able to distinguish between

plant and animal cells.

Students should understand

the function of various organelles.

Students should be able to

develop a rap or song to communicate the functions of organelles within a plant or animal cell.

Engage

Show and discuss the “The Organelle Song” at the link below:

<http://www.youtube.com/watch?v=JnitUtEGa4I>

The lyrics of the song are provided on the next page.

Optional-Show and discuss the “Cell Rap” at the link below:

<http://www.youtube.com/watch?v=jtf7MKDBF6O>

GRADE 7SFO ANCHOR STATION**Organelles Rap or Song****Anchor Task 2**

continued

Required Resources

- “The Organelle Song” or “Cell Rap” video segment
- One Organelles Rap or Song resource page per student
- Music selections provided by teacher or students
- Computer(s) or audio player with headphones
- Blank paper
- Optional– Music composition paper

Extend

Have students make a music video.

GRADE 7SFO ANCHOR STATION

The Organelle Song

Lyrics

<http://www.youtube.com/watch?v=JnitUtEGa4I>

People have organs

And so does a cell

But they're not called cellgans

They're called organelles

The nucleus is the center

Without it there's no life

If the cell were a husband

The nucleus is the wife

It's quite important I have to say

Because it's the house for the DNA

The endoplasmic re-tic-u-lum

It transports proteins just for fun

Ribosomes hang out in the ER all day

Where they sit and store RNA

There's the powerhouse or mitochondria (um)

If energy's what you need Mito's the one

Vacuoles catch food or waste to maintain fluid levels

Without these fellas you'd feel pretty disheveled

The cytoskeleton helps a cell keep its shape

While cilia and flagella they go place to place

Plastids help with photosynthesis

Finally there's lysosomes which help to digest

If there's more well we don't know the rest

Because people have organs

And so does a cell

But they're not called cellgans

They're called organelles

These are the organelles that reside within a cell

Or-ganelles x3

We love organelles

GRADE 7SFO ANCHOR STATION**Organelles Rap or Song****Anchor Task 2****Directions**

Work with your group to choose your music, write your lyrics, and prepare your performance.

Your group will perform for the class on_____.

Work as a group to answer the questions below.

1. Will your group write a rap or another type of song?
2. Will your group generate its own music or re-write the lyrics to an existing song?
3. How will your group work together to produce a rap or song?

Extend:

Make a music video for your rap or song. An example of an organelle song can be viewed at the link below.

<http://www.youtube.com/watch?v=JnitUtEGa4I>



GRADE 7SFO ANCHOR STATION**Getting to the Heart of It****Discovery Education Virtual Lab****Anchor Task 3****Overview**

This anchor task is to be used by students as they explore the circulatory system.

Goals

Students should know

changing eating and exercise habits can lead to a healthful life.

Students should understand

there are different levels (excellent, normal and poor) of physical condition.

Students should be able to

devise an effective health plan (caloric reduction, activity level, duration of activity, frequency of activity) for Uncle George to improve his physical condition.

Resources:

- Access to Discovery Education’s “Getting to the Heart of It” virtual lab at the link below:
<http://search.discoveryeducation.com/>
- Hard copies of “Getting to the Heart of It” student resource pages

GRADE 7SFO ANCHOR STATION

Journey of a Red Blood Cell Poster Project

Anchor Task 4

Overview

This anchor task is to be used by students as they are exploring the circulatory system.

Goals

Students should know

the cardiovascular system consists of the heart, blood vessels, and blood.

Students should understand

most substances that need to get from one place in the body to another are carried by blood.

Students should be able to

illustrate and describe a journey that a red blood cell might take through the human body.

Resources:

- One Journey of a Red Blood Cell Poster Project resource per student
- One Researching the Heart and Circulation resource from the Prentice Hall *All in One Teaching Resources Human Biology and Health* p. 176 per student
- Poster paper
- Markers and colored pencils

Scaffold:

Students that need more structure can use The Body's Transport System student resource pp. 37-39 from the Prentice Hall *Science Explorer Human Biology and Health Guided Reading and Study Workbook* to guide their research.

GRADE 7SFO ANCHOR STATION**Journey of a Red Blood Cell Poster Project****Anchor Task 4****Project Overview**

You will design and make a poster that shows and describes a complete journey that a red blood cell might take through the human body.

The journey must include:

- one loop that starts at the heart goes to the lungs and back to the heart
- one loop that starts at the heart go to another specific body part and back to the heart


Directions

- Review the Journey of a Red Blood Cell Poster Project Rubric.
- Research the heart and circulation. Refer to Chapter 3 in your Prentice Hall *Science Explorer Human Biology and Health* textbook pages 77-89. Use the Researching the Heart and Circulation Worksheet 1 to guide your research. Use information from your research to complete questions 1-6.
- Make a poster that illustrates the journey of your red blood cell. Be sure to use scientific vocabulary to describe your illustrations.



Journey of a Red Blood Cell Poster Project Rubric

Anchor Task 4

	<p>Research on the Heart and Circulation</p>	<p>Poster</p>
<p>4</p>	<ul style="list-style-type: none"> Answers questions 1-6 accurately Question 6 response includes a detailed sketch of poster display described correctly Uses scientific terminology to describe the display 	<ul style="list-style-type: none"> Displays function of both loops accurately Uses scientific terminology to accurately describe the function of both loops
<p>3</p>	<ul style="list-style-type: none"> Answers at least 4 questions including question 6 accurately Question 6 response includes a detailed sketch of poster display described correctly Uses some or no scientific vocabulary to describe the display 	<ul style="list-style-type: none"> Displays function of both loops with 1-2 mistakes Uses scientific terminology to describe the function of both loops
<p>2</p>	<ul style="list-style-type: none"> Answers at least 3 questions including question 6 accurately Question 6 response includes a detailed sketch of poster display described with less than three mistakes 	<ul style="list-style-type: none"> Displays function of both loops with 3-4 mistakes Describes the function of both loops
<p>1</p>	<ul style="list-style-type: none"> Answers fewer than 3 questions accurately 	<ul style="list-style-type: none"> Displays function of both loops with more than 4 mistakes Partially describes the function of both loops

GRADE 7SFO ANCHOR STATION

GRADE 7SFO ANCHOR STATION

Anti-Smoking Campaign Children's Picture Book

Anchor Task 5

Overview

This anchor task is to be used by students as they are the respiratory system.

Goals

Students should know

the respiratory system moves oxygen from the environment into the body and removes carbon dioxide and water from the body.

Students should understand

serious respiratory problems can result from long-term smoking.

Students should be able to

create a children's picture book that explains the harmful chemicals in tobacco smoke and how tobacco smoke affects a person's health over time.

Resources:

- One Anti-Smoking Advertisement Campaign Children's Picture Book resource per student
- One Smoking and Your Health resource pp. 54-56 from the Prentice Hall *Science Explorer Human Biology and Health Guided Reading and Study Workbook* per student (Also, see the Smoking and Your Health pp.251-254 and Analyzing Smoking Costs p.256 resources in the Prentice Hall *Science Explorer Human Biology and Health All-in-One Teaching Resources*)
- Blank paper
- Stapler
- Markers and colored pencils

GRADE 7SFO ANCHOR STATION**Anti-Smoking Campaign Children's Picture Book****Anchor Task 5****Project Overview**

You will create a children's picture book. The purpose of your book will be to persuade young children not to smoke.

The book must include:

- Names and descriptions of the harmful chemicals found in tobacco smoke
- A description of how tobacco smoke affects a human's health over time
- Illustrations that help the reader understand the text

Directions

Review the Anti-Smoking Campaign Children's Picture Book Rubric.

Research the harms of cigarette smoking. Refer to Chapter 4 in your Prentice Hall *Science Explorer Human Biology and Health* textbook pages 122-126. Use the Smoking and Your Health worksheet to guide your research.


Write a book that explains and illustrates how smoking impacts human health. Be sure to use scientific vocabulary.



GRADE 7SFO ANCHOR STATION

Anti-Smoking Campaign Children's Picture Book Rubric

Anchor Task 5

	4	3	2	1
 <p>Research on the harms of cigarette smoking</p>	<ul style="list-style-type: none"> • Completes smoking cause and effect graphic organizer and questions 1-10 and • 0-3 inaccuracies 	<ul style="list-style-type: none"> • Completes smoking cause and effect graphic organizer and questions 1-10 and/or • 4-5 inaccuracies 	<ul style="list-style-type: none"> • Completes smoking cause and effect graphic organizer and at least eight and/or • 6-7 inaccuracies 	<ul style="list-style-type: none"> • Attempt but does not meet the criteria for a 2
<p>Picture Book</p>	<ul style="list-style-type: none"> • Includes the names and descriptions of at least three harmful chemicals found in tobacco smoke • Describes how tobacco smoke affects a human's health over time • Illustrations help the reader understand the text 	<ul style="list-style-type: none"> • Includes the names and descriptions of at least two harmful chemicals found in tobacco smoke • Describes how tobacco smoke affects a human's health over time • All or some of the illustrations help the reader understand the text 	<ul style="list-style-type: none"> • Includes the names and descriptions of one of the harmful chemical found in tobacco smoke • Describes how tobacco smoke affects a human's health over time • All or some of the illustrations help the reader understand the text 	<ul style="list-style-type: none"> • Attempts but does not meet the criteria for a 2

GRADE 7SFO ANCHOR STATION

Body Systems RAFT

Anchor Task 6

Overview

This RAFT is designed to be used by students in science as they are developing the basic understanding of the form and function of various body systems.

RAFT Format

RAFT is an acronym for Role, Audience, Format, and Topic. In a RAFT, students take on a particular role, develop a product for a specified audience in a particular format and on a topic that gets right at the heart of what matters most in a particular segment of study. At some points, a teacher may want to assign students particular RAFTs and at other points may want the student to make the choice. RAFT assignments are typically of fairly short duration and can be completed at school or at home. RAFTs offer teachers great flexibility to plan for student readiness, interest and learning profile.

For more information: Billmeyer, R. and Barton, M. (1998). *Teaching reading in the content areas, If not me then who?* Aurora, CO: MCREL.

Goals

Students should know

the levels of organization of living things.

the structure and function of human body systems.

Students should understand

how the levels of organization (cells, tissues, organs, systems) interrelate within the human body.

how body systems are necessary for survival in humans and other living organisms.

Students should be able to

Collect, organize and communicate scientific information.

Required Resources

- One Body Systems Raft resource per student
- Variety of electronic and print resources on the various body systems
- Variety of paper and cardstock
- Colored pencils and markers

GRADE 7SFO ANCHOR STATION

Body Systems RAFT

Anchor Task 6

Directions: First, select a body system from the list on the board. Next, use research materials on the bookshelf, Internet (<http://www.innerbody.com/htm/body.html>, <http://kidshealth.org/kid/body/>), and in your textbook to find information on your selected body system. Get as much information as you can find. Consider the following questions as you conduct your research.

- What is the purpose of your body system?
- How does the body system help human's survive?
- What types of organs, tissues or cells make up the body system?
- Does this body system interact with other body systems?

Use the next page to write down information you learn about your body system. Then, select one of the following options to help you organize your knowledge. When you finish your research, you'll do two more things. First, you'll have a chance to go over your work with a classmate to find ways to make it stronger. Second, you'll share what you have done with students who researched other body systems.

Role	Audience	Format	Topic
Skeletal System	Younger Children	Children's Book	Health/Safety/Function
Digestive System	Science Teacher	Poster with Narration	Interactions with other Systems
Muscular System	Football Coach	Power Point Presentation	Injuries
Circulatory System	Doctor's Patient	Brochure	Disease/Condition
Respiratory System	Athlete	Magazine Article	Functioning of the System
Immune System	Medical Student	Letter	Human vs. Other Organism
Endocrine System	Peer	Board Game	Bodily Function
Fill in your choice below. Check with The teacher for approval.			

Adapted from Body Systems RAFT by Yvonne Mah Shady Grove MS

GRADE 7SFO ANCHOR STATION

Please write each of your facts below.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

GRADE 7SFO ANCHOR STATION

Design, Build and Modify a Prosthesis

Anchor Task 7

Overview

This task is designed to be used by students in science as they are developing an understanding of the benefits and limitations of models.

Goals

Students should know:

scientists use models to help them understand how things work.

Students should understand:

models have benefits and limitations.

Students should be able to:

build a and modify a model of a human hand, leg or another example that carries out the basic functions of that body part.

Engage

Show video clips of people learning to use or using prostheses.

Using a prosthetic leg:

<http://www.youtube.com/watch?v=Nmkrzt8u30c> (first steps on prosthetic leg)

<http://www.youtube.com/watch?v=oYEjiRudBnk> (roller skating)

Using a prosthetic hand to complete daily tasks:

http://www.youtube.com/watch?v=Exxh4B_V_iQ (grasping and removing milk jug from refrigerator)

<http://www.youtube.com/watch?v=ejGCT9v1938&NR=1> (tie shoe lace)

<http://www.youtube.com/watch?v=vwxma69qWac&NR=1> (catching an object)

GRADE 7SFO ANCHOR STATION**Design, Build and Modify a Prosthesis****Anchor Task 7**

continued

Required Resources

- One Design, Build and Modify a Prosthesis resource per student
- Variety of electronic and print resources on the various body parts
- Variety of materials to build models such as bendable coat hangers, heavy cardboard, washers, clothes pins, binder clips, paper clips, pipe cleaners, chop sticks, string, rubber bands, variety of adhesive products, scissors, wire cutters

Scaffold

Students that need more structure can complete the Design and Build a Hand Prosthesis Chapter Project. Refer to Prentice Hall *Human Biology and Health All-in-One Teacher Resources* pp. 40-44 for more information.

GRADE 7SFO ANCHOR STATION

Design and Build a Prosthesis

Anchor Task 7

Background

Scientists design devices to replace or enhance missing or injured body parts. Such a device is called a prosthesis. To design an efficient prosthesis a scientist builds, tests and modifies models.

Modifying models helps the scientist figure out how a prosthesis will carry out the basic functions of a body part. For example, to create a prosthetic hand a scientist would need to build and modify models of a human hand to figure out how the prosthetic hand would perform the basic functions of a human hand such as grasping.

Step 1

Select a body part to research. _____

Get teacher approval. X _____

Step 2

Read about the body part and list the basic functions (e.g. grasps, lifts , supports, bends) in the space below.

Step 3

Consider the materials available. Sketch a design for a prosthesis on the back of this page.

Step 4

Use the materials available to construct a model.

Step 5

Test and modify your model until it performs the basic functions of the body part. (refer back to Step 2)

Step 6

Record your modifications on the table provided.



GRADE 7SFO ANCHOR STATION

Design and Build a Prosthesis

Anchor Task 7

Record your modifications below.

Modification Log

Modification	Purpose	Result
<p>Use your results to justify the number of times that you modified your model. Explain you thinking in the space below.</p> <div style="height: 150px; border: 1px solid black; margin-top: 10px;"></div>		


Step 6

Answer the question below on a separate sheet of paper. Be sure to explain your thinking.

- Could a human use your model as is to replace a missing body part? Why or why not?

Design and Build a Prosthesis
Rubric

Anchor Task 7

	4	3	2	1
 <p>Research and Planning</p>	<ul style="list-style-type: none"> Lists basic functions of body part and Prosthesis design sketch shows basic function criteria that model body part must meet 	<ul style="list-style-type: none"> Lists most basic functions of body part Prosthesis design sketch shows most basic function criteria that model body part must meet 	<ul style="list-style-type: none"> Lists some basic functions of body part Prosthesis design sketch shows some of basic function criteria that model body part must meet 	<ul style="list-style-type: none"> Lists one basic function of body part Prosthesis design sketch shows one basic function criteria that model body part must meet
Modifications	<ul style="list-style-type: none"> 3 or more modifications made to try to increase performance or Justifies the number of modifications made 	<ul style="list-style-type: none"> 2 modifications made to try to increase performance and Provides no justification 	<ul style="list-style-type: none"> 1 modification made to try to increase performance and Provides no justification 	<ul style="list-style-type: none"> No modifications made to try to increase performance Provides no justification
Model	<ul style="list-style-type: none"> Performs the basic functions of the body part 	<ul style="list-style-type: none"> Performs most of the basic functions of the body part 	<ul style="list-style-type: none"> Performs some of the basic functions of the body part 	<ul style="list-style-type: none"> Performs one basic function of the body part

GRADE 7SFO ANCHOR STATION

TEACHER FEEDBACK

School _____

Date _____

Feedback about this document will be helpful to the Division of Accelerated and Enriched Instruction as new anchors are developed. Please complete this feedback form and return it to Kristi Cameron in the Division of Accelerated and Enriched Instruction, CESC Room 177.

Effectiveness Indicator	Strongly Agree	Agree	Dis-agree	Strongly Disagree
1. The organization of this document is user friendly. Comments:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. The suggested anchor tasks promote access and opportunities for all students. Comments:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The anchor tasks support the MCPS science curriculum. Comments: <i>Provide an example of an task that worked well and one that could be improved.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please indicate your feedback on the effectiveness by checking the appropriate box.

Additional Comments: