The Science Behind PIXAR Activity Sheets
These activity sheets have been designed to reinforce the general themes of The Science Behind Pixar and help guide your students’ experiences within the exhibition. The themes of this exhibition are:

- Art, technology, science, and creativity are inseparable in animation.
- At Pixar, art drives digital technology, and digital technology inspires the art.
- People at Pixar imagine and create compelling movies, using computers as another filmmaking tool.
- Understanding science, math, and computer science are necessary to create believable animated films.
- Filmmaking is a team sport.

Additional pre- and post-activities and exhibition-related questions to create your own activity sheets can be found at sciencebehindpixar.org/educators.

**ELEMENTARY SCHOOL ACTIVITY SHEETS**

- **Pixar 3-2-1:** This activity sheet is designed for students to make observations and ask questions about their experience in The Science Behind Pixar.

- **Working Together in Pixar:** This worksheet highlights the collaborative nature of the animation process. Students are asked to identify different examples of when Pixar team members used math, art, science, and creativity to make an animated film.

- **Searching for Shapes!**: Designed for younger students in grades K − 1, this worksheet guides students to identify and draw different shapes within the exhibition. They are then asked to combine different shapes they have found to create an imaginary robot.

- **Vocabulary:** These eight activity sheets highlight the vocabulary words related to the eight steps of Pixar’s production pipeline (one step per sheet). Students can write or draw a description of each word.

**MIDDLE & HIGH SCHOOL ACTIVITY SHEETS**

- **Pixar Production Pipeline I:** This worksheet asks students to identify two different steps of the Pixar production process and answer questions related to each step.

- **Pixar Production Pipeline II:** This activity sheet encourages students to identify how different steps of the production process contribute to various elements of a Pixar film, such as the development of characters, scenes, and movement.

- **Collaboration in Pixar:** Designed to highlight the importance of collaboration within digital animation, this worksheet asks students to identify ways that Pixar team members have used math, art, science, computer science, technology, and creativity to solve problems.

- **Careers at Pixar:** This activity sheet encourages students to explore different types of STEM careers within the field of digital animation. Students are asked to identify two different careers at Pixar and answer questions related to those careers.
Name: ____________________________________

Choose a character from any of the Pixar films you see in the exhibition. Draw or describe your character in the box below:

Describe 3 physical characteristics of your character. What does he/she look like?

1. ________________________________________
2. ________________________________________
3. ________________________________________

Describe 2 personality traits. How does your character act?

1. ________________________________________
2. ________________________________________

What is one question you have about how the animators created this character?

___________________________________________________________________________________________
___________________________________________________________________________________________
Art, science, math, and creativity are very important in animation.

Math, art, science, and creativity are all used to make a Pixar film. Explore *The Science Behind Pixar* and write or draw an example of how each of these areas are used by Pixar.

Which of these areas could you help out with on a Pixar film? Why?

Which of these areas could you help out with on a Pixar film? Why?
Name: __________________________________________________________

Find examples of different shapes in the exhibition. Name and draw the shape.

<table>
<thead>
<tr>
<th>SHAPE:</th>
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<table>
<thead>
<tr>
<th>SHAPE:</th>
<th>SHAPE:</th>
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</table>

Draw a character that uses the shapes you found:

<p>| | |</p>
<table>
<thead>
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</table>
Activity Sheet:
Pixar Vocabulary: Modeling

Name: ____________________________________________________________

Sketch and Stretch: Complete each box with a phrase and/or drawing that describes each word.

Modeling:
  digital sculpting creates virtual 3D Models

Model

Digital

Sculpting

3D

Virtual

Modeling:
digital sculpting creates virtual 3D Models

© Disney / Pixar
Activity Sheet:
Pixar Vocabulary: Rigging

Name: ___________________________________________________________

Sketch and Stretch: Complete each box with a phrase and/or drawing that describes each word.

Digital

Rig

Rigging: digital rigs make movement possible

Movement

Model

Pose

© Disney / Pixar
Activity Sheet:
Pixar Vocabulary: Surfaces

Name: ____________________________________________

Sketch and Stretch: Complete each box with a phrase and/or drawing that describes each word.

Virtual

Surface

Shape

Surfaces: Appearance is controlled separately from shape

Light

Appearance

© Disney / Pixar
Name: ________________________________

Sketch and Stretch: Complete each box with a phrase and/or drawing that describes each word.

**Sets & Cameras: Virtual cameras view virtual 3D worlds**

- **Virtual**
- **Set**
- **Camera**
- **View**
- **3D**
Name: ________________________________________________________________

Sketch and Stretch: Complete each box with a phrase and/or drawing that describes each word.

Animation: Animation is acting

Frame

Animation

Movement

Acting

Pose
Name: ________________________________________________________________

Sketch and Stretch: Complete each box with a phrase and/or drawing that describes each word.

**Simulation**

- Computer programs create automated motion

**Motion**

**Simulate**

**Automated**

**Computer**

**Program**

© Disney / Pixar
Sketch and Stretch: Complete each box with a phrase and/or drawing that describes each word.
Sketch and Stretch: Complete each box with a phrase and/or drawing that describes each word.

Rendering:
Rendering turns a virtual 3D scene into a 2D image
There are eight technical steps in the film production process that contribute to the development of a Pixar film.

Choose 2 steps of the Pixar Production Pipeline and answer the following questions:

**Step 1**

**Technical Step:** _____________________________

How does this step contribute to the development of a Pixar film?

__________________________________________________________

__________________________________________________________

What is one challenge that Pixar members face during this step?

__________________________________________________________

__________________________________________________________

What skills are necessary to contribute toward this production step?

__________________________________________________________

__________________________________________________________

**Step 2**

**Technical Step:** _____________________________

How does this step contribute to the development of a Pixar film?

__________________________________________________________

__________________________________________________________

What is one challenge that Pixar members face during this step?

__________________________________________________________

__________________________________________________________

What skills are necessary to contribute toward this production step?

__________________________________________________________

__________________________________________________________

Did any of the production steps interest or surprise you? Why?

___________________________________________________________________________________________

____________________________________________________________________________________________

____________________________________________________________________________________________

____________________________________________________________________________________________
Name: ____________________________________________________________________________

There are eight technical steps in the film production process that contribute to the development of a Pixar film.

Explore the exhibition and identify how different steps of the production process contribute to various elements of a Pixar film.

Identify **two steps** that contribute to the development of a **character's features or persona**. How do these steps affect how the character is perceived?

1. _______________________: ______________________________________________________________________________________
   ______________________________________________________________________________________

2. _______________________: ______________________________________________________________________________________
   ______________________________________________________________________________________

Identify **two steps** that contribute to the development of a **scene**. How do these steps make the scene look believable? How do these steps affect the mood or feeling of a scene?

1. _______________________: ______________________________________________________________________________________
   ______________________________________________________________________________________

2. _______________________: ______________________________________________________________________________________
   ______________________________________________________________________________________

Identify **two steps** that contribute to the development of **action or movement**. How do these steps affect how characters or objects move in a film?

1. _______________________: ______________________________________________________________________________________
   ______________________________________________________________________________________

2. _______________________: ______________________________________________________________________________________
   ______________________________________________________________________________________
Art, technology, science, math, computer science, and creativity are inseparable in animation.

Look for examples of how each of the following areas are used in the production of a Pixar film. In the spaces below, explain how each area has been used to simplify or solve a problem faced by the Pixar team.

ART

________________________________________

________________________________________

________________________________________

TECHNOLOGY

________________________________________

________________________________________

________________________________________

SCIENCE

________________________________________

________________________________________

________________________________________

MATH

________________________________________

________________________________________

________________________________________

COMPUTER SCIENCE

________________________________________

________________________________________

________________________________________

CREATIVITY

________________________________________

________________________________________

________________________________________

Which of these areas could you contribute to on a Pixar film? How?

___________________________________________________________________________________________

____________________________________________________________________________________________

____________________________________________________________________________________________


Name: __________________________________________________________________________

The making of Pixar films involves the collaboration of many different people with unique roles. Check out each exhibition area and look for a video describing someone's job at Pixar.

Choose 2 careers represented in the Pixar exhibition and answer the following questions:

<table>
<thead>
<tr>
<th>Career 1</th>
<th>Career 2</th>
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<tbody>
<tr>
<td>Job Title: __________________________</td>
<td>__________________________</td>
</tr>
<tr>
<td>What does this person do in his or her job making Pixar films?</td>
<td>What does this person do in his or her job making Pixar films?</td>
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<td>__________________________________</td>
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<tr>
<td>What skills are required for this person to do his or her job at Pixar?</td>
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<tr>
<td>Do you think you would like this job? Why or why not?</td>
<td>Do you think you would like this job? Why or why not?</td>
</tr>
<tr>
<td>__________________________________</td>
<td>__________________________________</td>
</tr>
</tbody>
</table>

Which jobs interest or surprise you? Why?
________________________________________________________________________________
________________________________________________________________________________