Resource Binder

Boats

|  |  |  |
| --- | --- | --- |
| **Know:** | **Want to Know:** | **Learned:** |
|  |  |  |

Research Record

|  |  |  |  |
| --- | --- | --- | --- |
| **#1:** | **#2:** | | **#3:** |
|  |  | |  |
| Other findings: | | Want to share: | |

General Boat Research Links

Why do ships Float by SciShow Kids:

<https://www.youtube.com/watch?v=CvWrkxzCiaY>

How do ships Float by Science Out Loud MIT+K12 Videos

<https://www.youtube.com/watch?v=pnIlE1xD-yM>

Buoyancy: What makes something float or sink? By Kids Want to Know

<https://www.youtube.com/watch?v=nMlXU97E-uQ>

**Boat Movement Research Links**

Technobrain 2015 Boat Race

[https://www.youtube.com/watch?v=cgdCmDt5gVs&spfreload=](https://www.youtube.com/watch?v=cgdCmDt5gVs&spfreload=10)

[10](https://www.youtube.com/watch?v=cgdCmDt5gVs&spfreload=10)

Homemade sailboat:

Rubber bank powered boat:

Rubber bank powered boat:

<https://www.youtube.com/watch?v=KnngK-jGfYo> <https://www.youtube.com/watch?v=Wy1RUskWxqk> https://[www.youtube.com/watch?v=USB-dHeWMiY](http://www.youtube.com/watch?v=USB-dHeWMiY)

Balloon boat:

How to make water boat without a motor:

<https://www.youtube.com/watch?v=tz-t_DXk6-c> <https://www.youtube.com/watch?v=RcrJvlreS84&t=3s>

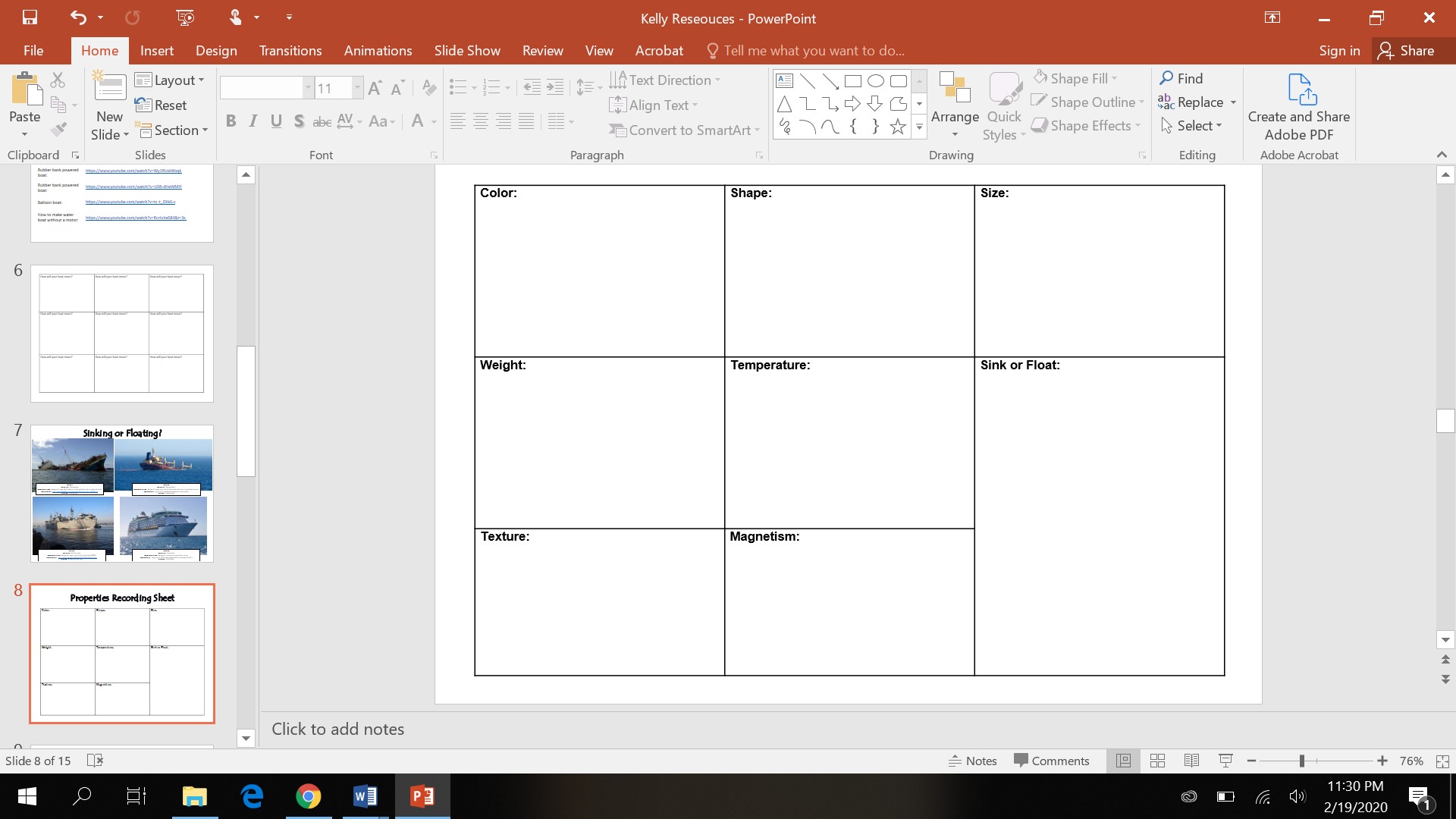
|  |  |  |
| --- | --- | --- |
| How will your boat move? | How will your boat move? | How will your boat move? |
| How will your boat move? | How will your boat move? | How will your boat move? |
| How will your boat move? | How will your boat move? | How will your boat move? |

Sinking or Floating?





Properties Recording Sheet



Clay Investigation

Property:

Procedure:

Observations:

Conclusion:

|  |  |  |
| --- | --- | --- |
| Materials for boat: | Materials for Boat: | Materials for boat: |
| Materials for boat: | Materials for boat: | Materials for boat: |
| Materials for boat: | Materials for boat: | Materials for boat: |

Question Cards for *The Most Magnificent Thing*

|  |  |  |  |
| --- | --- | --- | --- |
| Before: Look at the cover. What can you observe? | Before: What do you predict the most magnificent thing will be? | During: What steps has the girl taken so far as an engineer? | During: How does the girl react when she doesn’t succeed the first time? |
| During: Look closely at the illustrations. How has the girl’s expression changed? Why do you think the illustrator choose to show that? | During: Can you think of a  time you failed the first time? | During: Examine the verbs the author is choosing. What do they tell us about how the girl feels? | During: How did the girl discover how to make the most magnificent thing? Have you ever learned from your own mistakes? |
| During: Look at the speech bubbles in the illustrations. What do the other people think of her “failed” inventions? | After: What is the theme, or moral message, of this story? How can we apply that to our boat designs? | After: What other stories have we read that have a similar moral message? |  |

Cost of Materials

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item** | **Price** |  | **Item** | **Bulk Price** |
| wood plank (balsa) | $50.00 | 10 corks | $10.00 |
| Styrofoam block | $50.00 | 4 water bottles | $30.00 |
| cube of modeling clay | $50.00 | 10 rubber bands | $5.00 |
| cork | $2.00 | 10 popsicle sticks | $5.00 |
| water bottle | $10.00 |  | |
| rubber band | $1.00 |
| popsicle stick | $1.00 |
| wood stick (balsa) | $5.00 |
| fabric (1 meter) | $5.00 |
| fan rental | $10.00 |
| balloon | $10.00 |
| plastic cup | $1.00 |
| twine (30 cm) | $10.00 |
| plastic wrap | $10.00 |
| aluminum foil | $10.00 |
| duct tape | $10.00 |
| clear tape | $5.00 |

Budget Approval Form

|  |  |
| --- | --- |
| **Item** | **Price** |
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|  |
| --- |
| Total Price: |
| Engineer signature: |
| Engineer signature: |
| Principal Investigator (teacher) signature: |

Rubric

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 5 | 4 | 3 | 2 |
| Description of properties | The student can describe the boat’s size, shape, color, weight, texture, and sink or float, with measurements when appropriate. | The student can describe 5 of the properties accurately and with measurements when appropriate. | The student can describe 3 of the properties accurately and with appropriate measurements. | The student can describe 2 of the properties with or without the appropriate measurements. |
| Boat design | The student chose materials that were in budget and made a boat that floated and could reach their destination or they had a plan to fix their design. | The student chose materials that were in budget and made a boat that floated. Their boat did not reach their destination and they did not have a plan to fix their design. | The student only met 1 of the requirements. | The students did not meet the requirements. |
| Teamwork | The student listened to their partner’s ideas and contributed their own ideas. They made decisions together. | The student wanted to use their own ideas and had difficulty accepting their partner’s ideas. | The student wanted to use their own ideas and did not accept their partner’s ideas. | The student did not work with their partner. |
| Sharing findings | The student prepared a presentation that included the materials they used and why, what went well, and what they would do next time. | The student prepared a presentation that only answers two of the three questions. | The student prepared a presentation that only answers one of the three questions. | The student did prepare for their presentation. |
| Self- Assessment | The student completed their self- assessment. |  |  | The student did not  complete the self- assessment |

Self-Assessment

