

**Are Our Homes Built for Severe Weather?**

**Engineering Portfolio**

This portfolio belongs to:

## Severe Weather

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### Personal Weather Narrative: Prewriting

Can you think of a time when you experienced severe weather? What kind of weather did you experience? What did you feel like when you experienced it? Was it fun or scary?

In this activity, you will write a personal narrative about what happened and how you felt. A personal narrative is a true story that tells about something that happened to you.

Before you begin writing, use this graphic organizer to write down your ideas. Answer each question.

Questions	Your Answers
What kind of severe weather event have you experienced?	
Describe where you were and what was happening outside.	
What were your actions, thoughts and feelings during this weather event?	
Describe how the weather affected your plans for the day.	

## Severe Weather

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### Personal Weather Narrative: Composition

Now write your personal narrative. As you write, follow these rules and check off each item once you have completed it:

- Use descriptive details.
- Be clear about what happened first, next and last.
- Make it interesting for the reader!

**Severe Weather**

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**Alternative Weather Assignment**

If you have never experienced severe weather, think about how you might react if you experienced a hurricane, blizzard, tornado, heat wave or excessive rain.

Answer the questions in the graphic organizer to help you organize your ideas before writing your narrative.

<b>Questions</b>	<b>Your Answers</b>
<p>What kind of severe weather experience would you like to write about?</p>	
<p>Describe where you might be and what might be happening outside.</p>	
<p>What actions, thoughts and feelings might you have during this weather event?</p>	
<p>Describe how the weather might affect your plans for the day.</p>	

## Severe Weather

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### Alternative Weather Assignment: Composition

Now write your personal narrative about this imagined event. As you write, follow these rules and check off each item once you have completed it:

- Use descriptive details.
- Be clear about what might happen first, next and last.
- Make it interesting for the reader!

## **Weather Brainstorm**

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What do you know about weather? Use this page to help your STEM team brainstorm. Write a different idea about weather below. Two examples are shown. Keep adding new ideas as they relate to your previously listed ideas.

Here are some questions your team can think about to get started:

- What are some different types of weather?
- What do you think causes weather?
- What are the effects of different kinds of weather?

When you are done brainstorming, work with your team to answer the questions on the next page.

### **Weather**

Examples:

strong winds, fallen trees

thunderstorms, lightning

## **Weather Brainstorm**

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### **What Is Severe Weather?**

Now that you have gotten your brains warmed up, focus on a couple of specific questions. Answer the following questions with your team.

1. What is severe weather?

2. How would you categorize weather as "severe" or "not severe?"

## Weather Brainstorm

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### What Is Severe Weather? (continued)

Now go back online, and click on the link to watch the slideshow. Categorize each weather event in the photos you see as "severe" or "not severe" and explain why.

<b>Severe Weather</b>	<b>Not Severe Weather</b>



## Impacts of Severe Weather

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### Cause and Effect Chart

List different types of weather in the "cause" boxes, and list the corresponding impacts on homes in the "effect" boxes. Use the word bank to help you.

### Word Bank

blizzard	tornado	storm	heat wave	excessive rain	wind
temperature	flooding	hurricane	snow	strong	heavy
damage	break	unhealthy	hot	clogged gutters	

Cause	Effect

## Maryland Weather

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Use the information from the slideshow to complete the weather chart. Then answer the questions below the chart.

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Tornadoes</b>		10	20		3		8	10	4		15
<b>Days of Flooding</b>	0		0	2	0	0	1	0	5	7	1
<b>Major Snowstorms</b>	0		0	0	1	0	0		2	0	0
<b>Hurricanes/ Tropical Storms</b>	0	1		0	0	0		0	0	1	1
<b>Heat Waves</b>	6	2	2	5			5	3		5	6
<b>Total</b>											

*Data courtesy of Maryland State Climatologist Office*

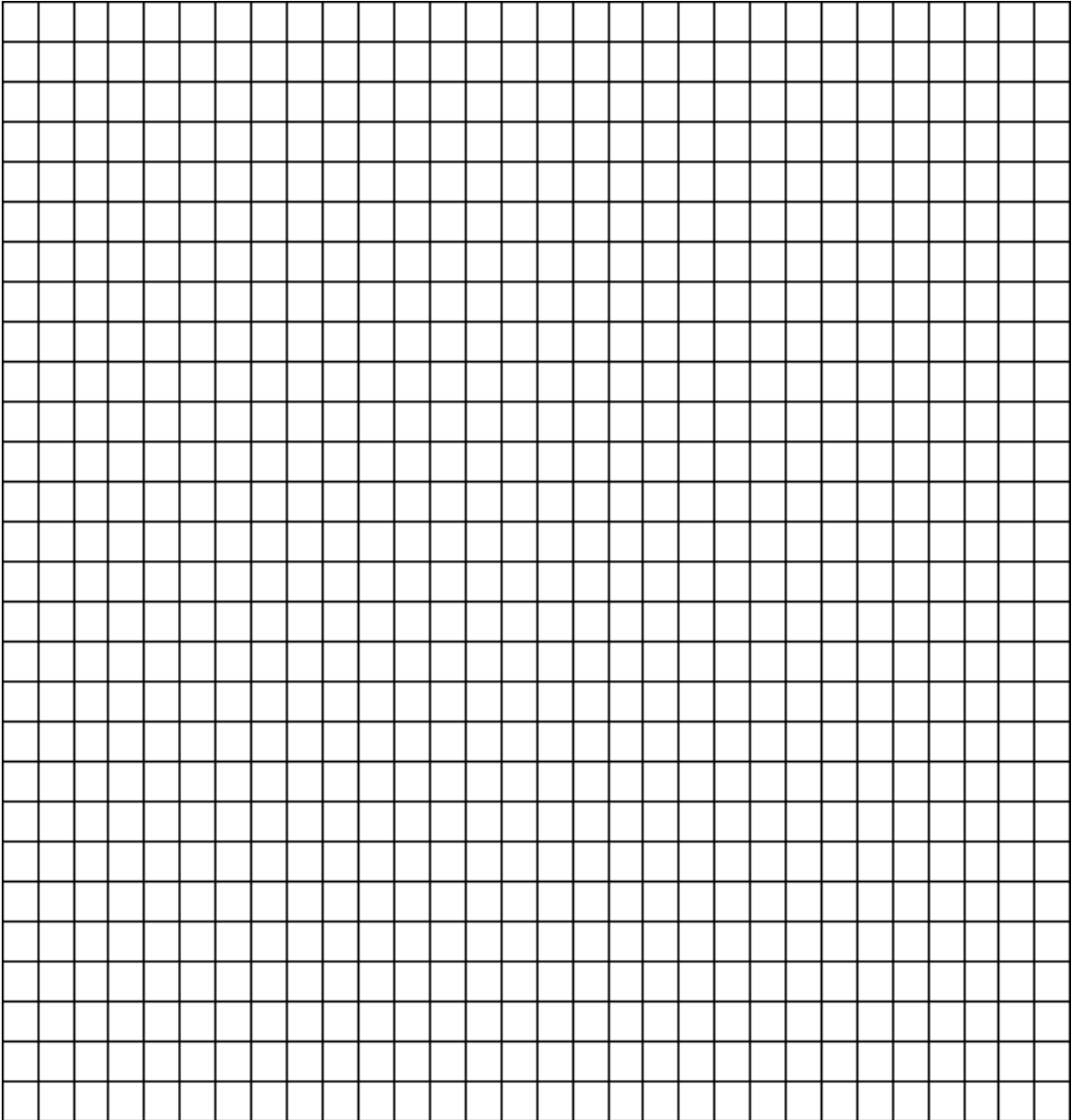
1. What patterns or trends do you see in Maryland's weather from 2002-2012?

2. Are there any new questions you have after looking at this data?

### Graphing Maryland Weather

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Choose one severe weather event from your table and create a bar graph showing how often it occurred every year from 2002-2012.





## Protecting Homes From Severe Weather

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How can people protect their homes from different types of severe weather? As you watch the slideshow, take notes below.

<b>Weatherproofing Tool or Action</b>	<b>Protects Against</b>
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

## Protect a Home

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### Engineering Design Process

How can we protect our homes from damage caused by severe weather? Use the engineering design process outlined below to help your STEM team come up with a solution to this problem.

1. **Problem:** Homes need to be protected from severe weather.

Choose the type of home you would like to protect from severe weather. Write it down below.



Mobile Home



Townhome



Single Family Home



Apartment

Type of home:

2. **Research and Brainstorm:** Work with your STEM team to brainstorm answers to the following questions:

- What kind of severe weather does Maryland get?
- How can I weatherproof my home to protect it from these types of weather?
- What materials can I use?

With your team, choose the type of severe weather you would like to protect your home from and write it below.

Type of severe weather:

## Protect a Home

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### Engineering Design Process (continued)

3. **Think:** Choose a solution. What weatherproofing options are the best choices to protect your home?

Write them below.

4. **Design:** Return to the website and go to the Weatherproof Your Home page. Use the Weatherproofing Tool to design a solution by selecting the appropriate weatherproofing materials for the type of home and weather condition you have chosen.

5. **Test:** Test your design. Click the "Test" button and see what happens. Was your house damaged by the weather? Record your answer and any observations below.

## Protect a Home

### Engineering Design Process (continued)

6. **Solution:** What happened to your home? If your home did not sustain severe weather damage, congratulations! You have successfully protected it from severe weather. If your home did sustain significant weather damage, go back to the Weatherproofing Tool, make modifications and test again.

8. **Present:** Share your ideas. When all of the groups are done, share your team's solution with your class.



## Final Project

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Pick one of the following assignments and write your response on the following pages.

1. Develop a guide for families who live in Maryland. In the guide, write down your advice about what families should do to weatherproof their homes.
2. Sandra is a third-grade student who recently moved from Alaska to Maryland. Right after she moved, she and her family experienced heavy rain, heavy wind, and flood and hurricane warnings. She is nervous about Maryland's severe weather. Write a letter to Sandra explaining what the impact of a hurricane could be like, and give her some advice about what she and her family can do to protect their home.
3. Write a letter to home builders encouraging them to use weatherproofing materials that will keep homeowners safe from severe weather conditions.

## **Pre-Planning Outline**

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## Final Project

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## Final Project

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