

Can we cook while on the Moon?

While astronauts might have to bring just about everything with them when we establish a habitat on the Moon, one thing they won't need is solar energy. There may be no atmosphere, no climate nor weather on the Moon, but that DOES make it an ideal place to collect solar energy. Much of the Moon is exposed to sunlight constantly, except briefly during a rare lunar eclipse. If that energy could be harnessed, it could power almost everything in the lunar habitat...including that most important device that helps prepare delicious food – an oven!

THE CHALLENGE:

Your mission is to design and build a solar oven to cook your own S'mores with the materials provided. Your design constraints are:

1. The oven must have a “footprint” of no more than 40 cm x 40 cm.
2. In 5 minutes, the temperature inside the box must increase by 5°C.

SAFETY NOTE: Contents of solar oven can get very hot. Seek assistance from your teacher and use oven mitts, other protective gear or tools (i.e. tongs) when manipulating anything inside of your oven!



DESIGN challenge

To design and build a solar box cooker, and test it to see if it works well enough to make S'mores.

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ASK IMAGINE & PLAN

Place a piece of white paper and a piece of black construction paper outside in the sun or under a lamp. Place a thermometer on top of each piece of paper. Let it sit for 5 minutes.

Which piece of paper had a higher temperature? _____

Can using aluminum foil help your oven? How? _____

Using the answers above, design and label your solar oven.

solar oven

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Approved by: _____



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Experiment & Record

1. Using the materials provided, build your solar oven based on your design. Remember the goal is to capture heat in your oven to cook S'mores.
2. Place one S'more in the middle of the oven (1 graham cracker, 1 piece of chocolate, 1 marshmallow). Cover with plastic wrap and begin cooking.
3. Record the temperature every 30 seconds for ten and a half minutes. Record the temperature change in the table on the next page.

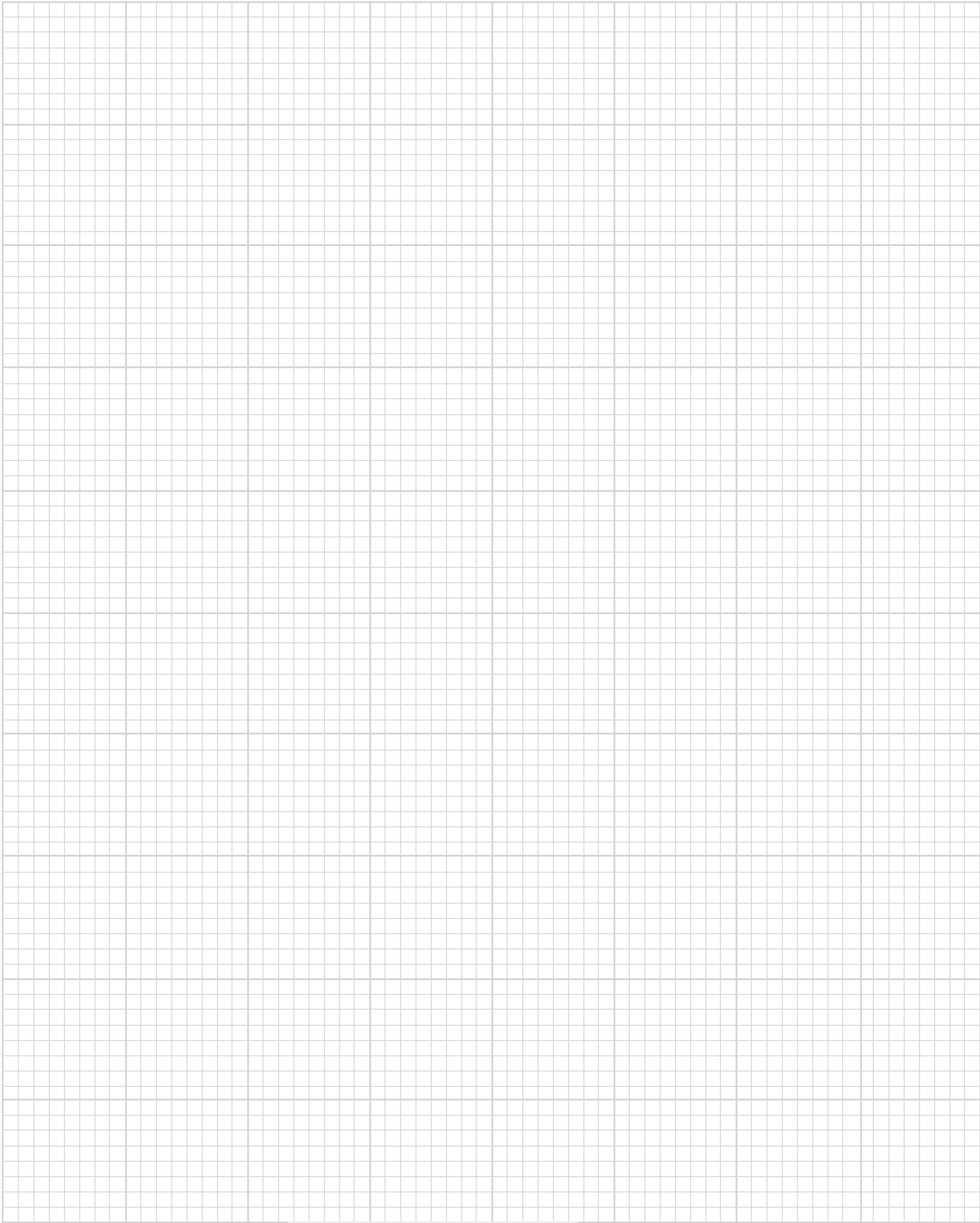
Solar Oven Data Table

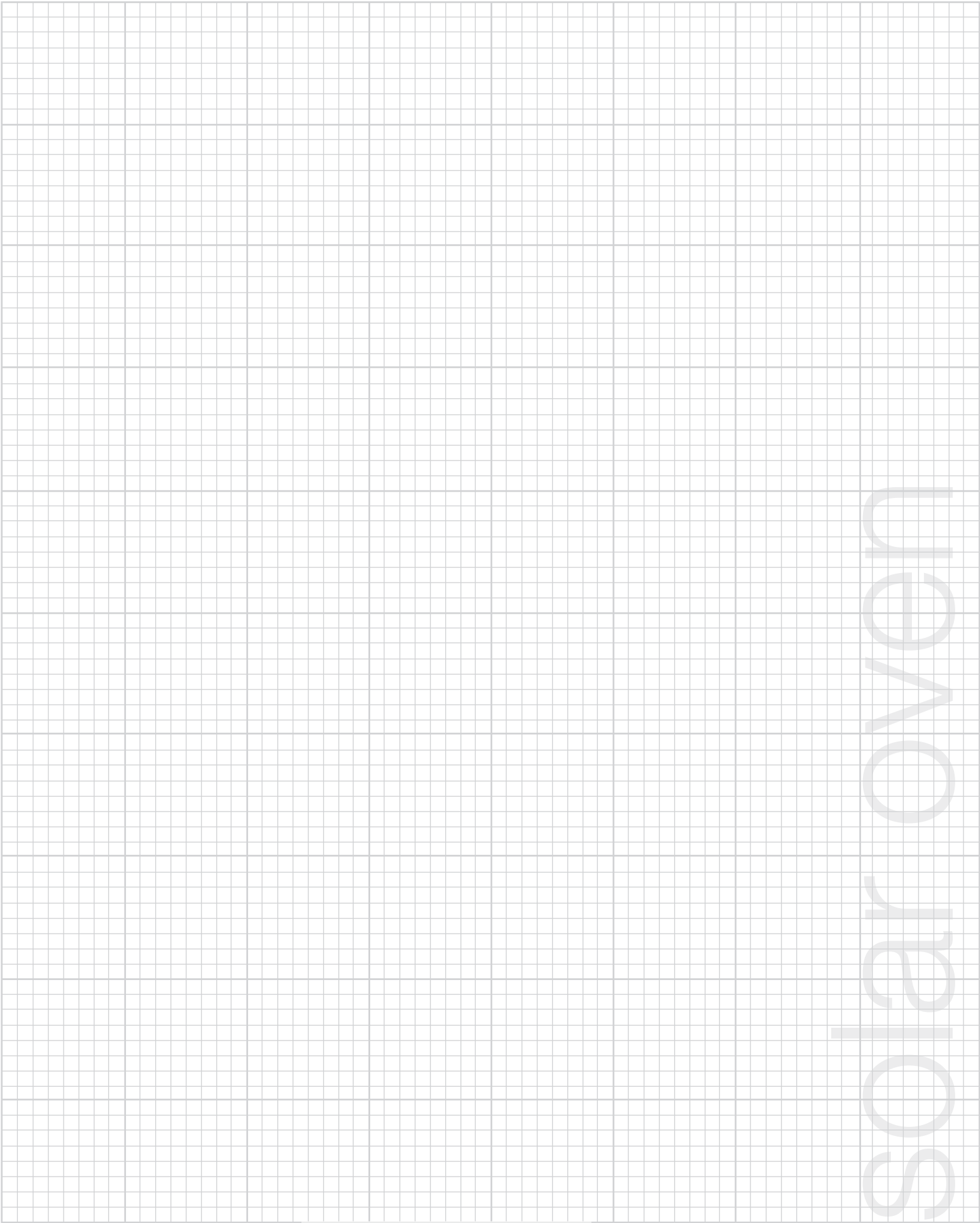
Time Min:sec	Oven Temperature °C
0:00	
1:00	
2:00	
3:00	
4:00	
5:00	

Did your S'more melt? YES OR NO

If the answer is no, discuss with your team how to improve your solar oven. Make the changes on your drawing.

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