

WHEEL AND AXLE SIMPLE MACHINE HOW TO BUILD A *Race Car*

Opinion and Narrative Writing

STEM Activities

Parent Letter

Assessment

Brainstorm

Posters

Reflect

Awards



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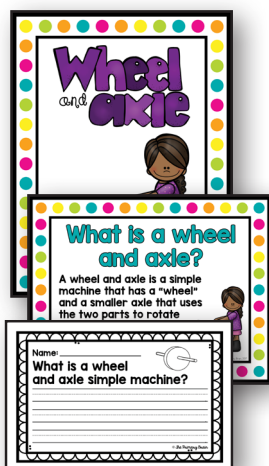
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TEACHER TIPS



Send parent letter before beginning unit to have all the materials you need on hand!



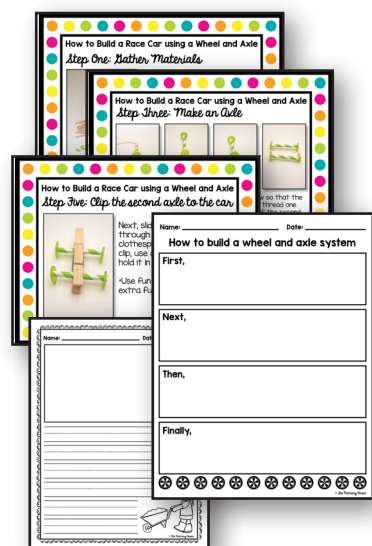
Introduce the Wheel and Axle Simple Machine

- Post the posters on the wall.
- Discuss how a wheel and axle system functions
- Discuss examples of this system: wheelbarrow, doorknob, car, bike, tractor, wagon
- Assess student understanding through the mini assessment



Brainstorming

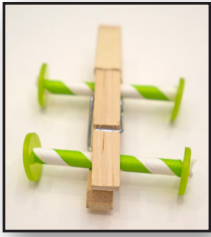
I pass out the materials that students will use prior to giving instructions on how to build the race car. Students can brainstorm how they will use these materials to build the race car. Students can also label the drawing with materials used.



How To Build a Wheel and Axle System

- Review six step posters with students to give ideas on how to build their race cars.
- Students complete how-to writing graphic organizer on how to build their wheel and axle system on their race cars.
- Final draft paper with and without photo box are included for final drafts.

TEACHER TIPS 2



STUDENTS BUILD THEIR RACE CARS!

Narrative Writing

Students complete a graphic organizer and then complete a narrative writing final draft.

Opinion Writing

Students complete an opinion writing graphic organizer and then complete a final draft.

Reflection

- Students complete a reflection about their wheel and axle race car system.
- Hold a class discussion about what worked, what didn't, what was difficult, what they enjoyed, etc.



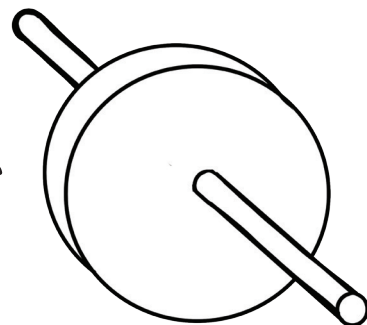
Awards

Give out awards for student effort. Multiple copies can be made if you would like to award additional students!

Help Us Build a Wheel and Axle

Parents,

We need your help! We are collecting materials to help us build a race car in class. We are learning about wheel and axle simple machines and we will be racing our race cars to learn how these machines work in the real world. These materials will be shared by the class, and will not be returned home. Each race car will be constructed using a "wheel" and axle system. We are in need of the following materials:



Identical buttons
Clothespins
Colored Straws
Skinny string
Glitter
Paint pens



Please send materials by _____

What is a wheel and axle?

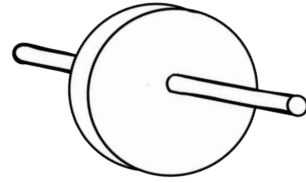
A wheel and axle is a simple machine that has a “wheel” and a smaller axle that uses the two parts to rotate together to transfer force from one part to the other.



Wheel and axle



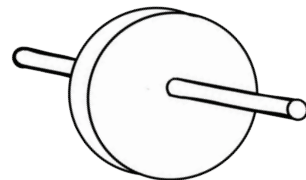
Name: _____



**What is a wheel
and axle simple machine?**

© The Primary Brain

Name: _____



**What is a wheel
and axle simple machine?**

© The Primary Brain

Name: _____

Date: _____

B R A I N S T O R M

How will you construct your race car?

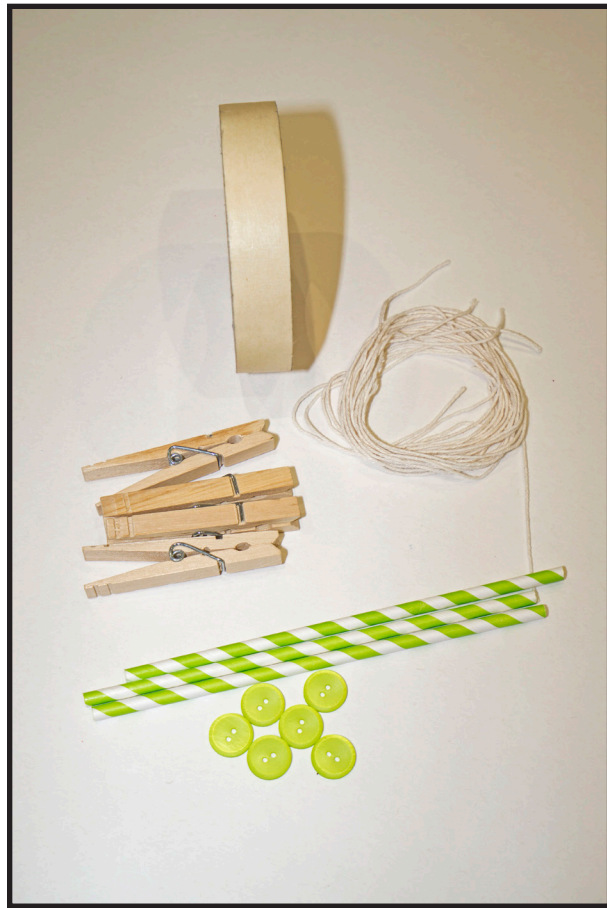
Draw a sketch of your race car

What materials will you need to use?



How to Build a Race Car using a Wheel and Axle

Step One: Gather Materials



- Clothespins
- Buttons: Four buttons per racecar must be the same diameter
- Twine, ribbon, or yarn that will fit through button hole
- Straws
- Tape: Washi tape is extra fun!

How to Build a Racecar using a Wheel and Axle

Step Two: Prepare the Wheel

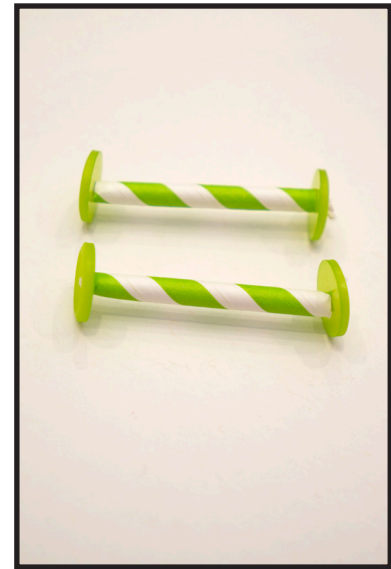
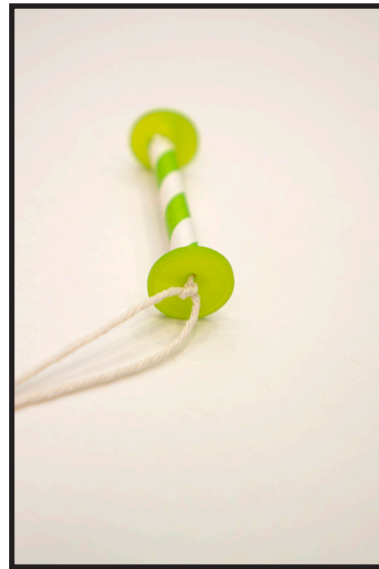
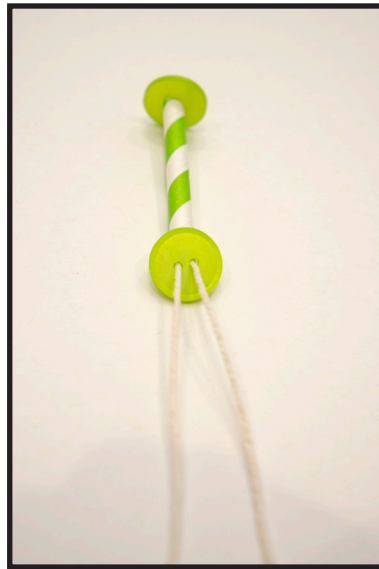
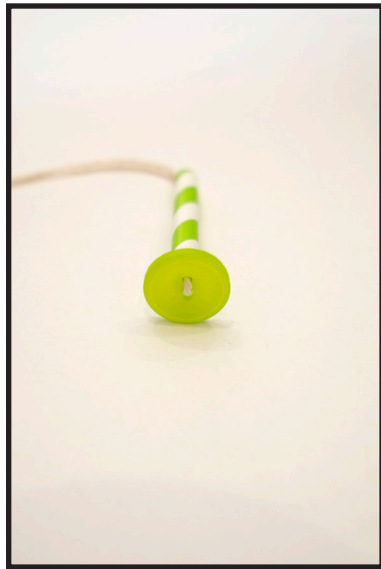


Thread string through each button hole so that both ends of the string come out the back of the button.

Cut two pieces of straw into 2 inch pieces.

How to Build a Race Car using a Wheel and Axle

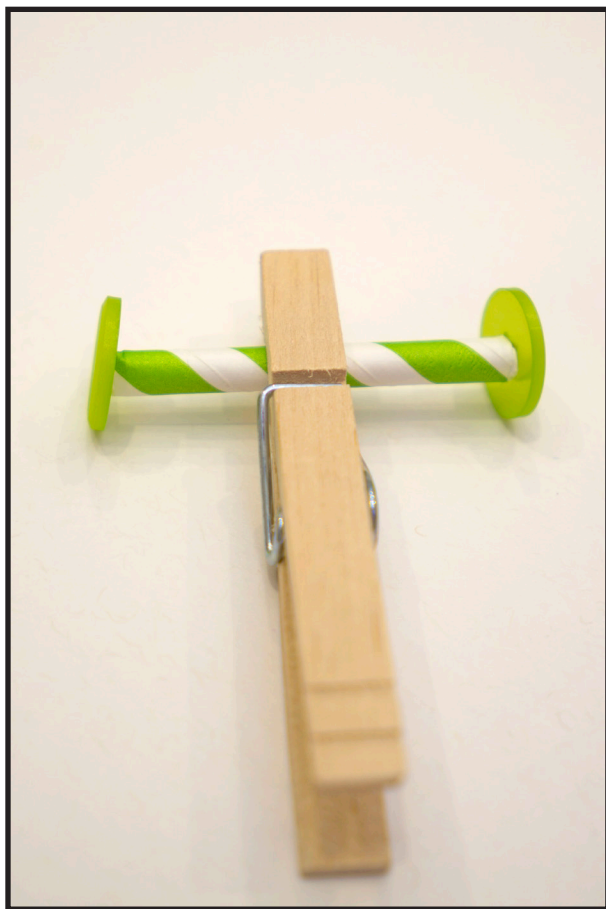
Step Three: Make an Axle



Thread both pieces of string through the straw so that the button is stuck on one side of the straw. Then, thread one piece of string from the straw through each of the second button holes. Tie a knot and cut off the excess string. Repeat the entire process to make a second axle.

How to Build a Race Car using a Wheel and Axle

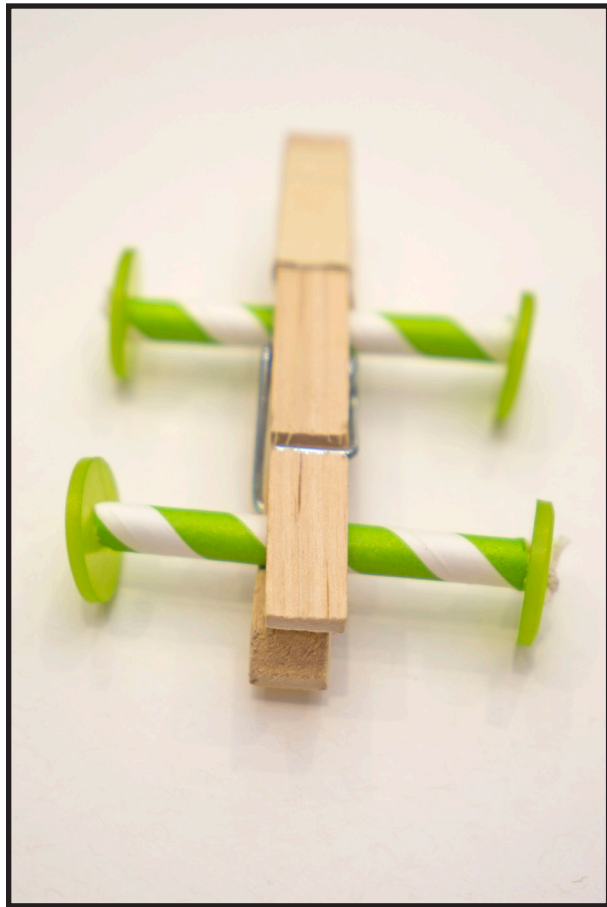
Step Four: Clip the axle to the car



To complete the first axle, clip the straw onto the clothespin.

How to Build a Race Car using a Wheel and Axle

Step Five: Clip the second axle to the car

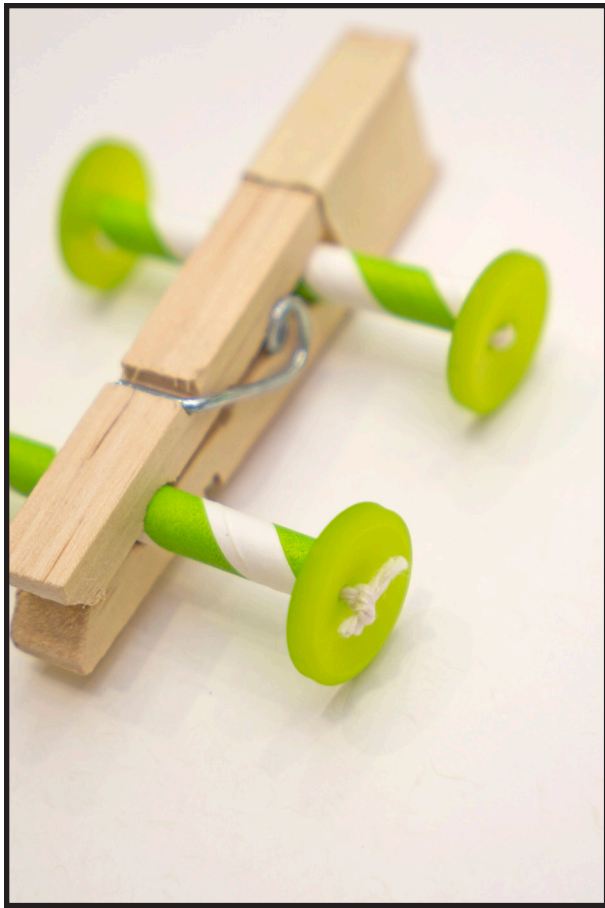


Next, slide the second straw through the top of the clothespin. Since it will not clip, use a piece of tape to hold it in place.

*Use fun washi tape for extra fun!

How to Build a Race Car using a Wheel and Axle

Step Six: Decorate your race car



That's it! Your race car is complete! For extra fun, add some fun decorations to your race car.

Name: _____ Date: _____

How to build a wheel and axle system

First,


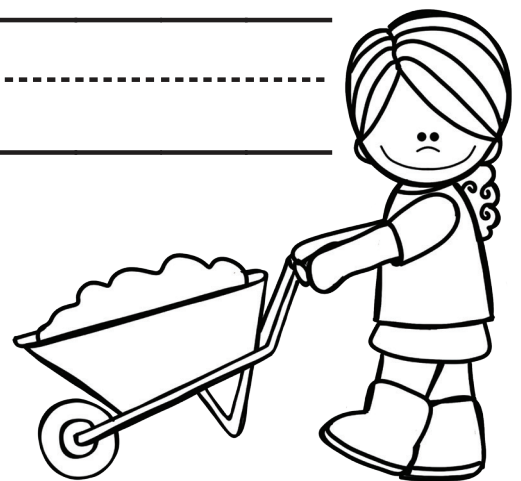
Next,

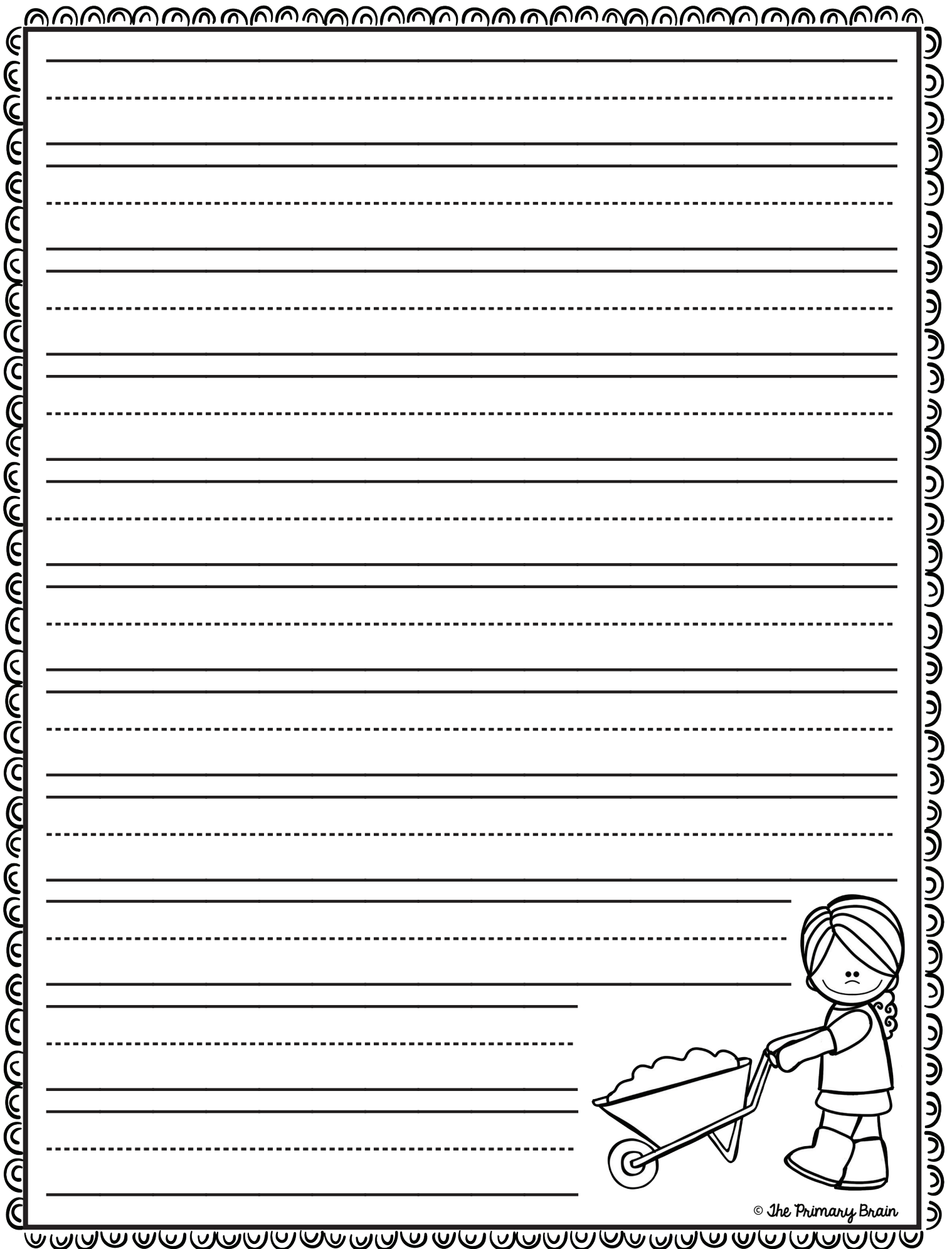
Then,

Finally,



Name: _____ **Date:** _____

A black and white line drawing of a girl with pigtails pushing a wheelbarrow full of leaves. The background consists of several sets of horizontal lines for handwriting practice, each set including a solid top line, a dashed middle line, and a solid bottom line.



••
Name: _____

How to Race a Race Car

First,

Next,

Then,

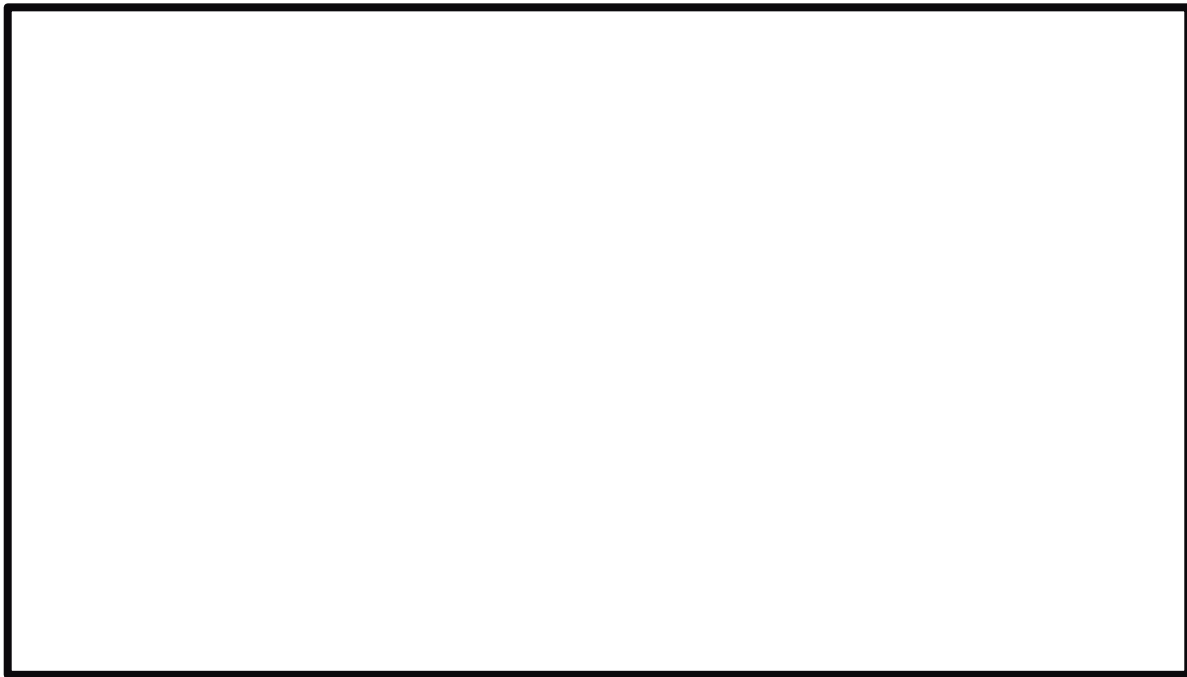
Finally,

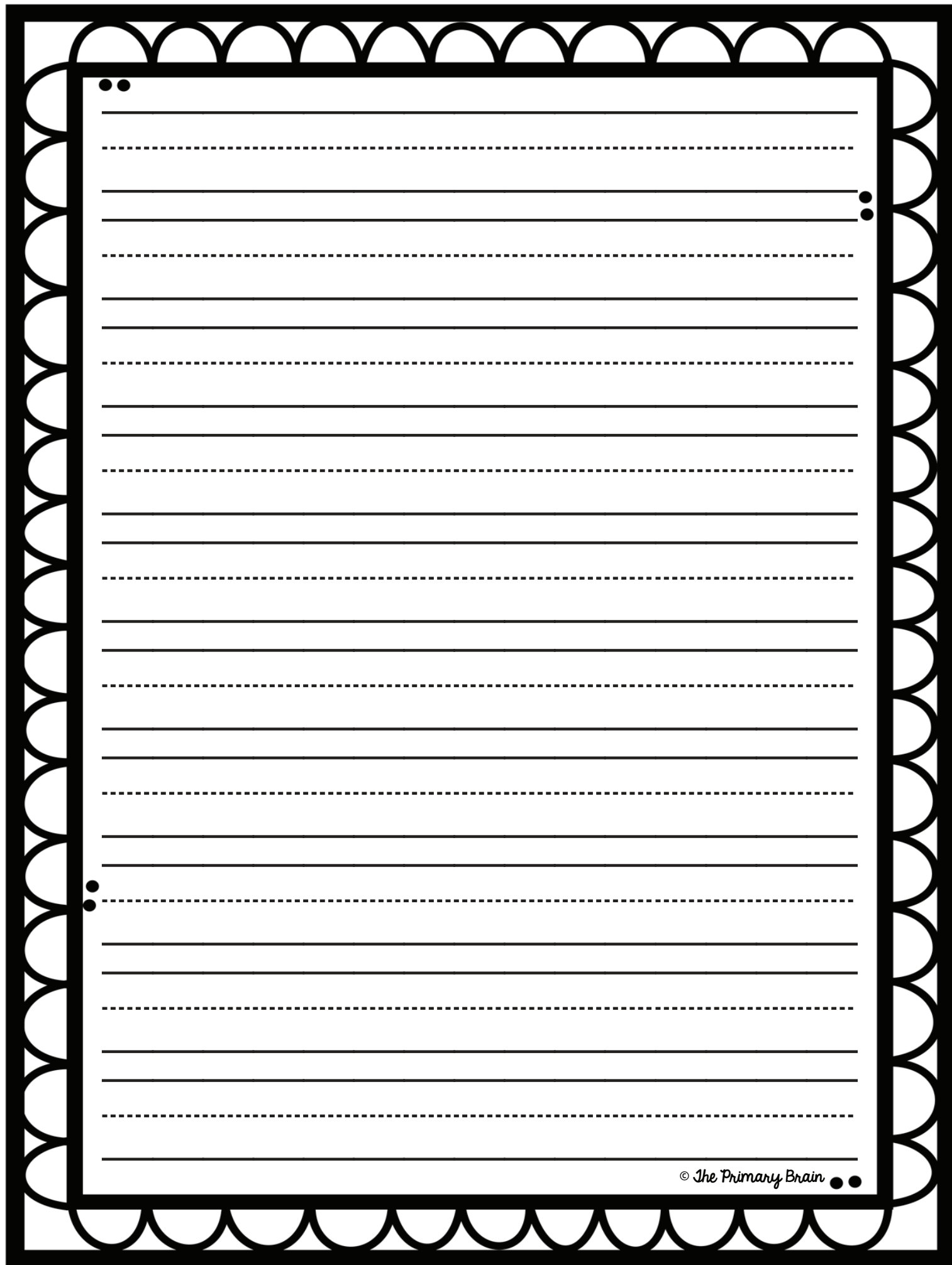
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Name: _____ Date: _____

MY RACE CAR

:





••

_____••

••

Name: _____

The Best Thing About My Race Car

My opinion is: _____

Reason 1:

Reason 2:

Reason 3:

Reason 4:

In Conclusion: _____

Name: _____ Date: _____

REFLECTION

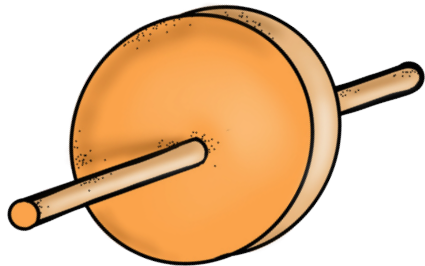
Was your wheel and axle successful?

Draw a sketch of your finished product

Was your race car able to drive down a ramp?



Best Wheel and Axle Design Award



Fanciest Race Car Award



Most
Creative
Race Car
Award



Most
Unique
Race Car
Award



Most
Colorful
Race Car
Award



Best
Effort
Award



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