

# Princesses Can Fix It!

Tracy Marchini

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## Activity Guide

The castle is crawling with wayward alligators, and the clueless king doesn't know how to fix it. Lila, Margaret, and Harriet have lots of ideas, but their father won't listen! According to him, the Princesses should be focusing on proper pursuits like drawing, jewelry, and music. When the three girls start falling asleep during the day, the Prince decides to investigate . . .

What he discovers is that the three princesses are gathering at night to use their knowledge of the six simple machines to invent an ingenious alligator removal contraption in their secret workshop.

This STEAM-focused take on the classic fairy tale *The Twelve Dancing Princesses* includes fun illustrations bursting with hilarious detail (and alligators), zany characters, and three inspiring princesses who know that they have what it takes to save the day.

**Tracy Marchini** has worked in many areas of the children's book industry including as a freelance editor and a children's book reviewer, and currently as a literary agent and author. She received her MFA in writing for children from Simmons College, and is the author of *Chicken Wants a Nap* (which received a starred review from Kirkus).

**Julia Christians** studied communications design at the University of Art in Brunswick, focusing on illustration, and works as a full-time illustrator. She lives with her husband, kids, and a pack of dogs in the small town in the Harz Mountains, Germany where she grew up.

# Six Simple Machines Scavenger Hunt!



Most complex machines are actually made using a variety of the six simple machines! Simple machines change the amount of force needed to do the same job, making it easier to lift, move, or push objects. The six simple machines are outlined below – can you find examples of each in your house, school or playground?

- ☐ **LEVER** – A lever is a bar or board that is placed on a supporting point called a fulcrum. By pushing on one end, you can lift much more weight or mass on the other. Some boats are steered by a lever called a tiller. When you pull the tiller to the left, the boat goes to the right and vice versa! You can also find levers on the moon – early lunar rovers were steered with tillers.
- ☐ **WHEEL AND AXEL** – The wheel was an important invention for carrying items across large distances. When an axel was added to the wheel, it made it possible for civilizations to invent carriages, wagons, buggies – all sorts of transportation devices! You'll even find a wheel and axel out on the water – a ship's wheel is what steers some ships!
- ☐ **PULLEY** – Pulleys use ropes, belts, chains or cables on wheels to move or lift objects. Pulleys can either be used alone (like in a well) or in multiples (where many pulleys are linked together). Compound pulleys can be found in elevators and cranes.
- ☐ **WEDGE** – A wedge is wide at the top and thins out towards the bottom. Wedges are used to push things apart (like an ax does) or pull things together (like a nail). You'll find lots of wedges in your kitchen, and even on you right now! A zipper is a type of wedge.
- ☐ **INCLINED PLANE** – Inclined planes (also known as ramps) are large surfaces that slope downwards. Every time you go sledding or bike down a sloping road, you're gliding down a large inclined plane!
- ☐ **SCREW** – You might think a screw would only be found in your toolbox, but there are many other screw machines in your home! Screw machines can be found on a car's gas tank cap and in a ball point pen. If you've ever walked up or down a circular staircase, you've also been in a screw!

lever (see saw, video game joystick, light switch); wheel and axel (a doorknob, the tires on a bike, pizza cutter); pulley (flag pole, bicycle chain, clothesline, window blinds); wedge (fork, knife, push pin, shovel, end of a lightbulb, drill)

# Which Princess Are You?

Answer the questions below and keep track of how many As, Bs and Cs you mark, and then check the answer key to see which of the *Princesses Can Fix It!* princesses you're the most like!

👑 You're most likely to...

- a.) draw something new
- b.) compose some new music
- c.) build something new

👑 It's most important for you to...

- a.) be creative and lead
- b.) be kind and empathetic
- c.) be honest and accurate

👑 Alligators are...

- a.) interested in cupcakes
- b.) not great at making friends
- c.) too heavy to lift alone

👑 Your favorite color is...

- a.) yellow
- b.) pink
- c.) blue

👑 The first thing you should do to fix a problem is...

- a.) make a list of possible solutions
- b.) ask for help from a friend
- c.) gather all the information you need first



# Which Princess Are You? - Quiz Results



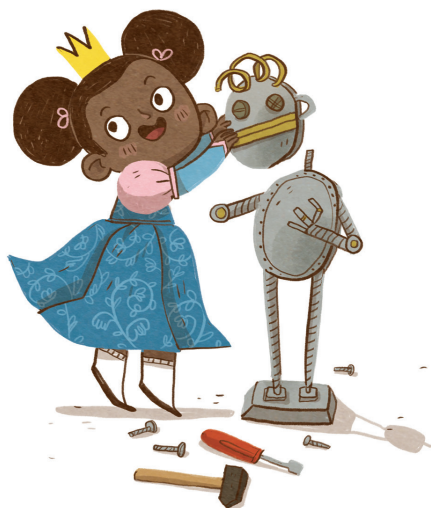
## *Mostly A's: Princess Margaret*

You're creative and people look to you as a leader. You may not have all the answers, but you usually have some interesting ideas and are great at getting things done.



## *Mostly B's: Princess Harriet*

You're kind and value your friendships. In solving a problem, you make a great team member because you can listen as well as share your own ideas.



## *Mostly C's: Princess Lila*

You're curious and will consider all the information you have (and even seek out more) before you give an answer. You are a great friend because people know that you will be honest with them.

# Design Your Very Own Construction Helmet!

Print this page and use your favorite colors, glitter, and stickers to decorate your helmet.



# Build Your Own Alligator Machine!

Can you design a complex machine that uses all six of the simple machines to get this alligator back into the moat?

