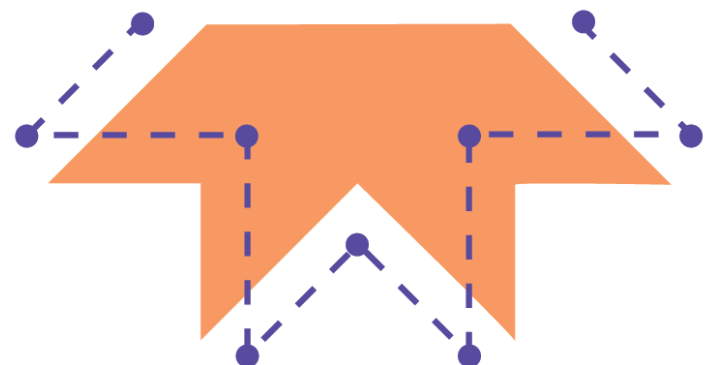# TECH*style* TALES

Make. Learn. Share.

Explore technology with your family! Learn about circuitry, e-textiles, and programming together—use old and new technology to bring your stories to life.

_____

name

HIGHLINE PUBLIC SCHOOLS
A path to success for every student!

OpenSTEM RESEARCH

W

NSF

PACIFIC SCIENCE CENTER

INSTITUTE for Science + Math EDUCATION

The Seattle Public Library

TechStyle Tales Schedule

DAY 1: WHAT DO CIRCUITS HAVE TO DO WITH ME?
Get to know each other

DAY 2: LET'S ALL PLAY ON THE CIRCUIT PLAYGROUND

DAY 3: INPUTS, OUTPUTS & SEWN CIRCUITS

DAY 4: INPUT IDEAS, OUTPUT INNOVATIONS

DAY 5: CELEBRATE OUR LEARNING!
Share your stories, what you learned, and celebrate your community!

more resources

Questions? Talk to us!
https://techtales.online/contact/

Sparkfun
https://learn.sparkfun.com/tutorials/lilypad-basics-e-sewing

Sew Electric!
http://sewelectric.org/

Make Code
https://learn.adafruit.com/adafruit-circuit-playground-express/makecode
https://makecode.adafruit.com/examples

Circuit Playground Express
Video from Hackster.io
https://www.youtube.com/watch?v=JpjpGAfAkuU

Diagram images from Sparkfun and Sew Electric

I am an Electrical Engineer

Curious · Problem-solver · Diagrammer · Careful · Technician

I am a Storyteller

Historian · Interviewer · Teacher · Speaker

I am a Researcher

Question-asker · Photographer · Curious

I am an Artist

Observant · Creative · Storyteller · Expressive · Maker

I am a Computer Scientist

Creative Problem-Solver · Coder · Persistent · Logical

I am a Sewist

Creative · Maker · Persistent · Playful · Systems Thinker
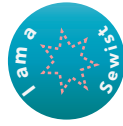

Every workshop day will have four sections:

1. SHARING

2. STORYTELLING

3. EXPLORING

4. ACKNOWLEDGING

There will always be food, and you can always take breaks if you need to.

I am an Electrical Engineer

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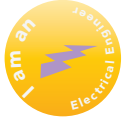
things to remember

Computer login:

_____

_____

Backpack number:

_____

Notes:

_____

_____

_____
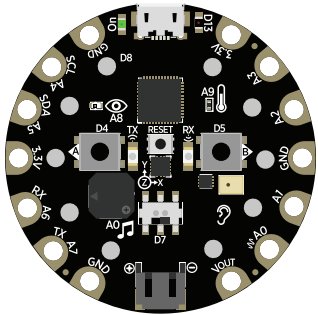
_____

E-TEXTILES KIT
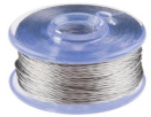
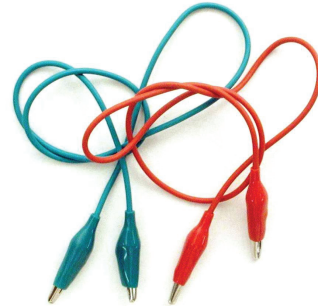Conductive thread

Sewable LEDs
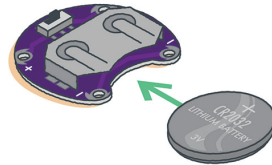
Coin Cell battery and holder

Sewing needles
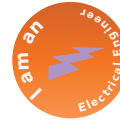
Adafruit Circuit Playground Express

Alligator clips

Micro USB cord

AA Battery holder

For more information, go to
https://learn.sparkfun.com/tutorials/lilypad-basics-e-sewing
and
https://learn.adafruit.com/adafruit-circuit-playground-express/overview

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badges

	Curious	Problem-solver	Diagrammer	Careful	Technician
I am an Electrical Engineer					

	Historian	Interviewer	Teacher	Speaker
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SEWING TIPS

Using a needle threader
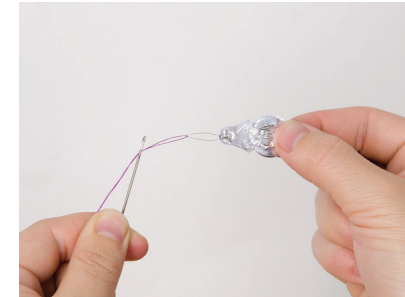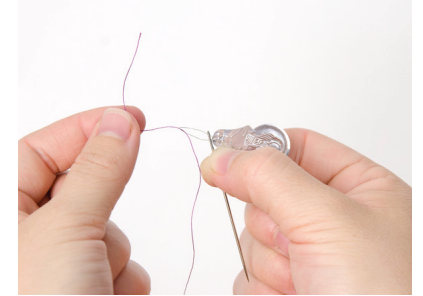
Running Stitch
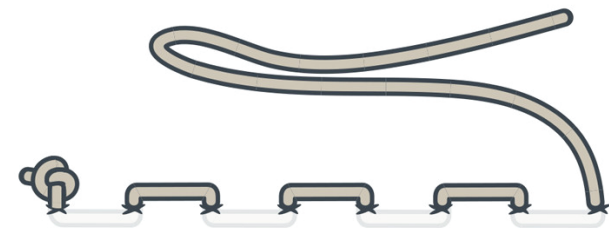
sheet 1

Each family will be making a project based
on a place that is important to them

Where are some places that are important to your family?

Think about different places:

Where is your family from?

Where do you like to go together?

Where is your home?

Where do you gather with family or friends?

Where does a meaningful story take place?

Is there a room, building, or natural space that is special?

final presentation

Discuss:

How you want to share your story as a family? Do you want to act it out, or have everyone take turns telling a part of the story?

About your project:

• What are you most proud of?

_____

• What was challenging?

_____

• How did you overcome the challenge?

_____

• How did you help each other?

_____

Write or draw your ideas:

sheet 2

Choose one place that is important to your family:

What makes this place important to you?
What is your **experience** in that place?

What do you *smell* there?

What do you **hear** there?

How do you **feel** there?

What do you **see** there?

What do you **do** when you're there?
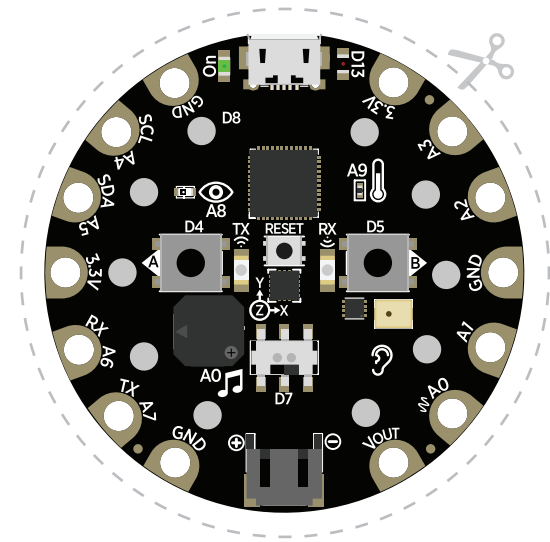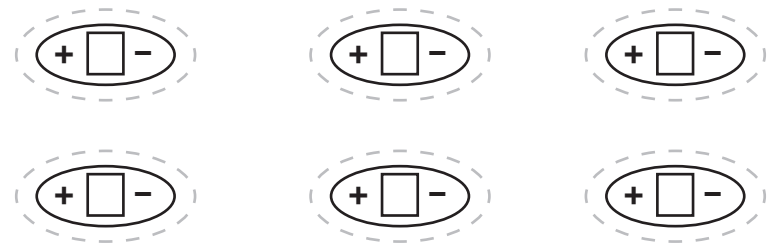
Circuit Playground Touch Sensor Pins

MakeCode

https://makecode.adafruit.com/
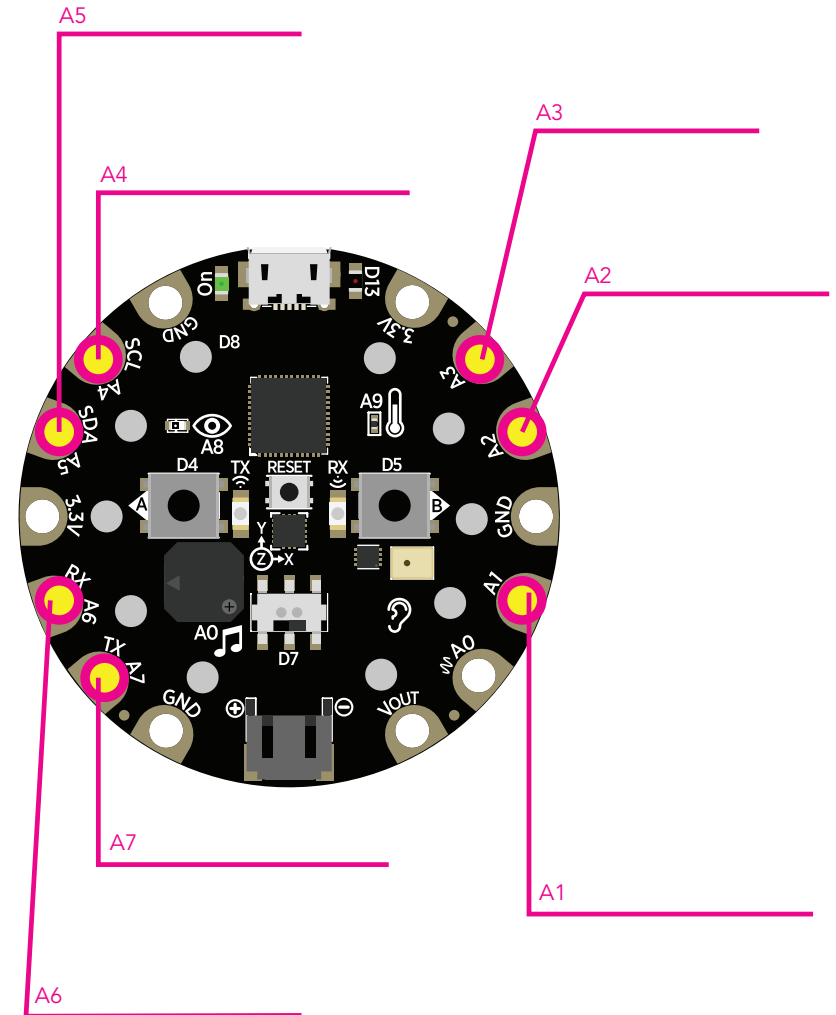
Write or draw your ideas

sheet 3

Select a few images that you want to include in your e-textiles project

options

Fill in the color LED you're going to use and tape it down where you want your light

example diagram

We want to have a light turn on in the window of the home when the cloud is touched. We're going to put a lizard on the pink mountain that flashes red when the Circuit Playground (CPX) is shaken. Maybe the sun will change color like a sunrise, or flash white like lightning. We'll use the neopixels on CPX for that.

Do you want to tell one story with your project, or do you want to make a collection of memories?

Who wants to make each part?

Who wants to try out something new?
Is there something you want to learn or practice?

Who wants to do diagramming?
Programming?
Sewing?
What else?

TOUCH CHANGES WORKSHOP LIGHT

LIGHT COMES ON IN WINDOW

LIZARD FLASHES ON SHAKE
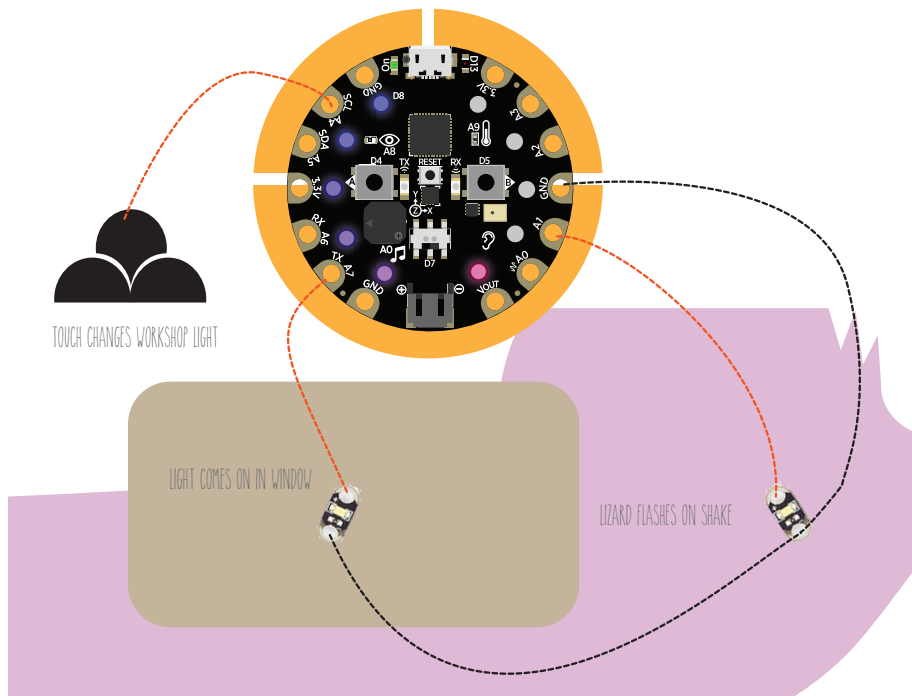
The LEDs we sew can all share the same connection to ground (GND, or –).

−   +

DIAGRAM YOUR PIECE!

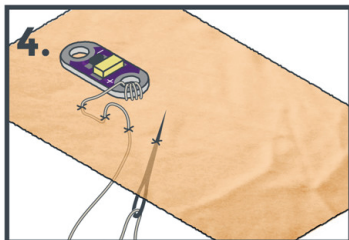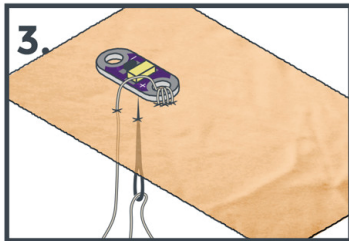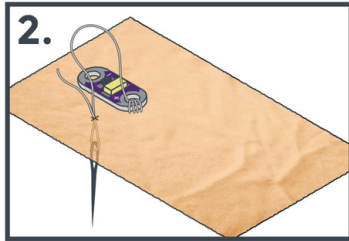**Label your diagram in whatever way makes the most sense to you.**

E-TEXTILE SEWING TIPS

Draw your connections with marker or chalk on your cloth before sewing

Tying a Starter Knot

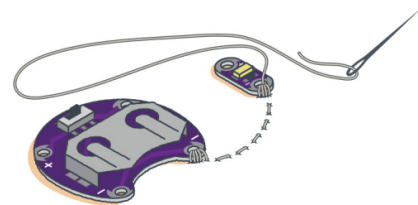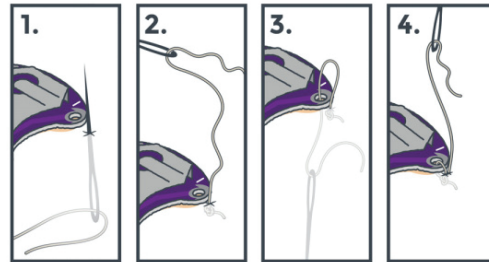**1.**

2.

3.

4.

5.

6.

PULL TIGHT

PULL TIGHT
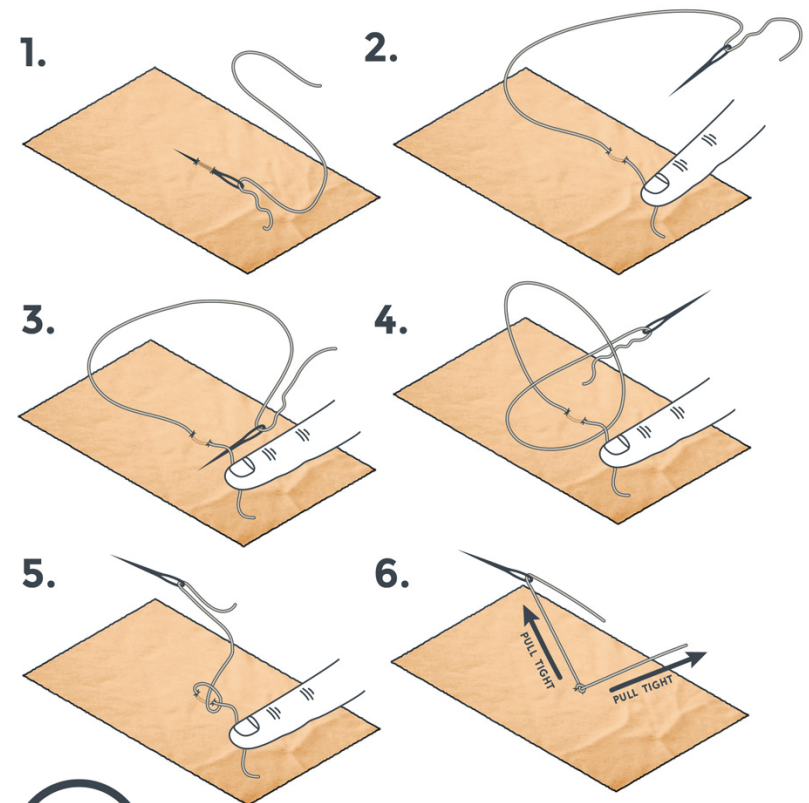
Repeat, making a few more loops through the fabric before trimming the loose tail.

Sewing from an LED

1.

2.

3.

4.

5.
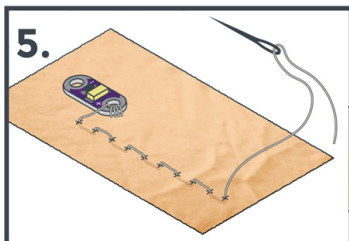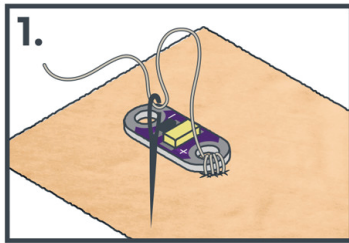
Sewing from the battery pack

1.

2.

3.

4.

5.

Repeat to make three to four loops.

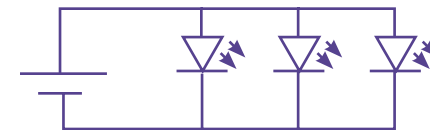⚠️ Don't cut your thread yet. You'll need it to connect the next piece.
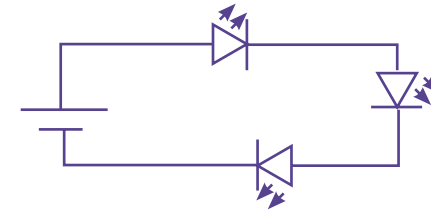
Electricity flows through the circuit from the battery through **all** components before returning to the battery.

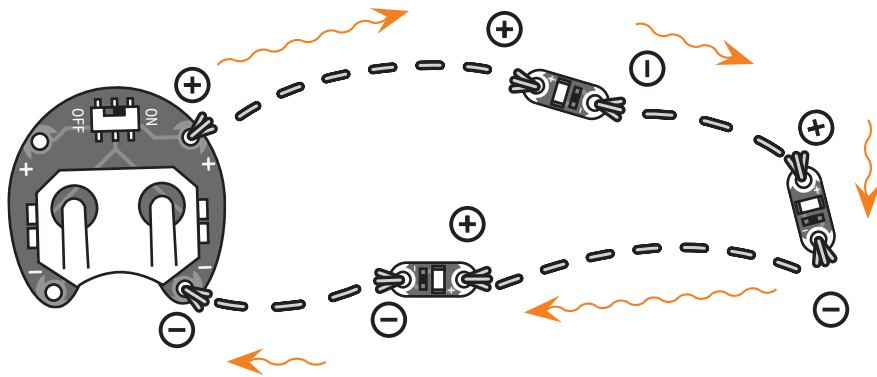You will probably notice the lights getting dim or not lighting up!

Electricity flows from the battery through **each** component and back to the battery, creating three circuits in parallel.

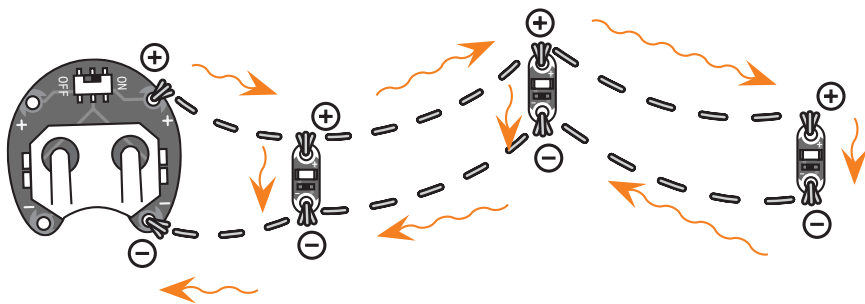Each light gets its power directly from the battery, so they will probably all be bright!
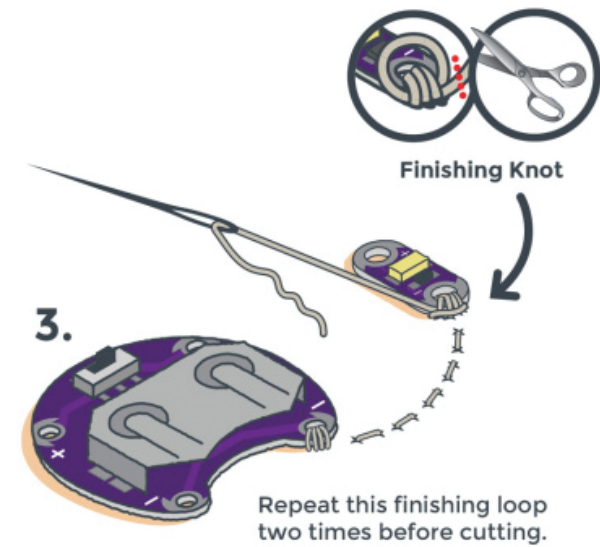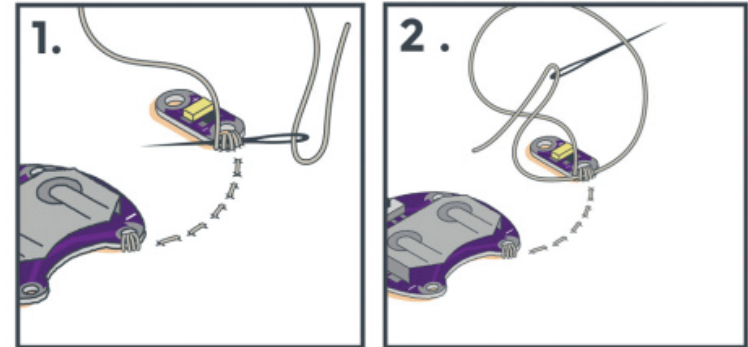
Types of Circuits

SERIES

PARALLEL

Finishing Knot

3.

Repeat this finishing loop
two times before cutting.

Current Flow

ON/OFF Switch

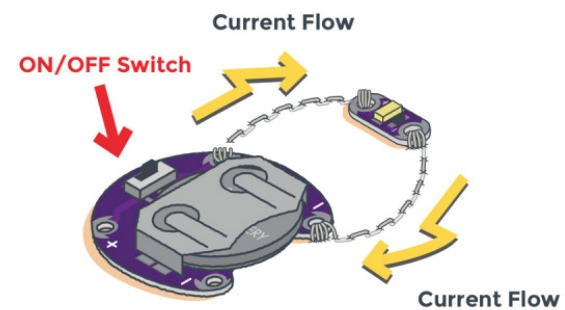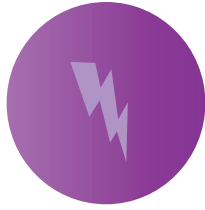**Current Flow**

Sewing a
circuit

WHAT IS A SHORT CIRCUIT?

In short, it is an unwanted or unintentional path that current can take which bypasses the routes you actually want it to take.

In this case, it usually means the current is going right back to the battery and skips the component (LED).

For more help:

http://sewelectric.org/troubleshooting/electrical-problems/

troubleshooting

CHECK FOR SHORT CIRCUITS

KNOT TAIL IS TOUCHING

OVERLAPPING STITCHES

THREAD IS TOUCHING ANOTHER PART OF BOARD

STITCHING ACROSS A COMPONENT