

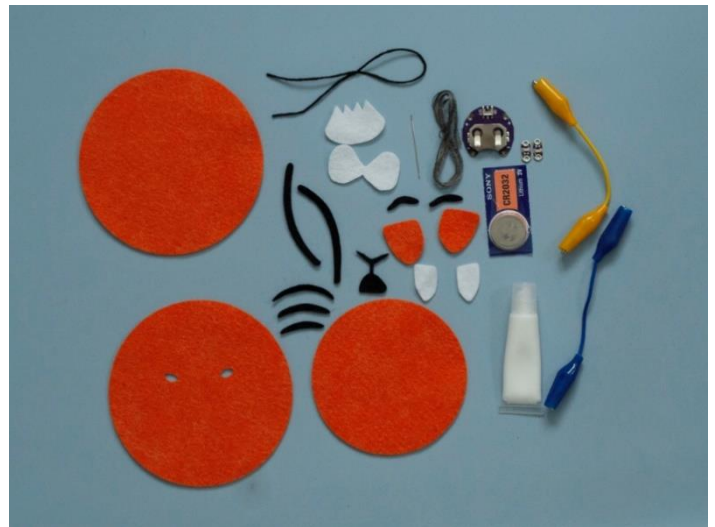
Hanging Tiger Kit Directions

The Hanging Tiger requires beginning sewing skills, including how to thread a needle, how to knot thread, and how to make a running stitch. The kit comes with everything you need to make the hanging tiger. It includes:

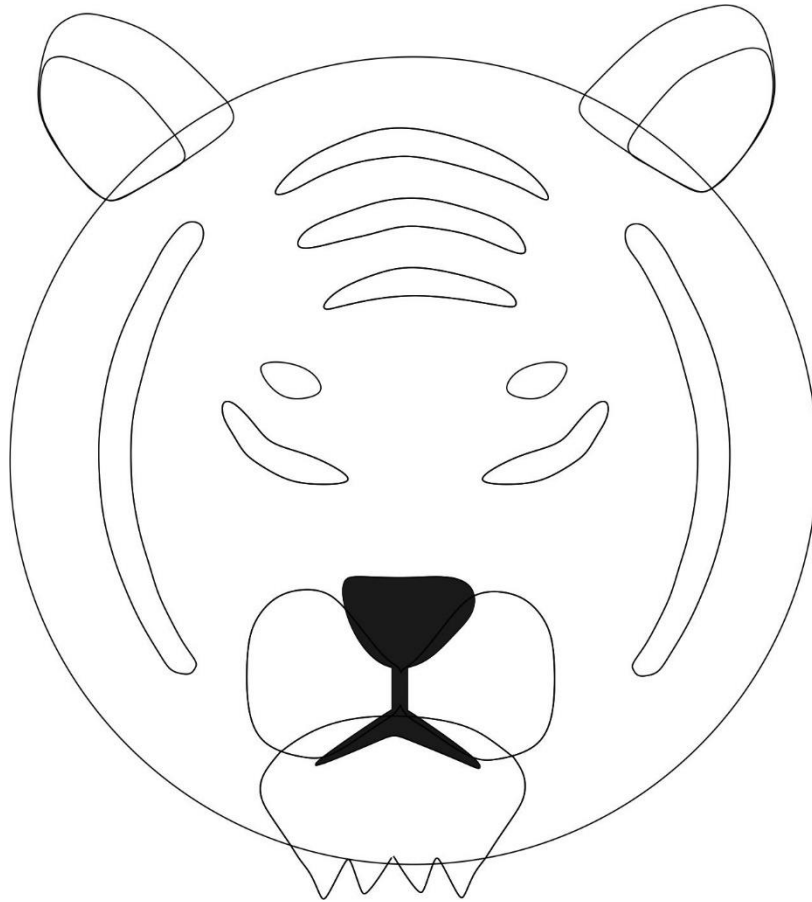
Time to complete: 45 minutes

Included in the kit:

- Felt cutouts
 - Larger orange circle
 - Smaller orange circle
 - Larger orange circle with eye cutouts
 - Two orange ears
 - Two white inner ears
 - White bow-tie shaped muzzle
 - White irregular shaped piece with serrated edge for chin
 - Black nose and mouth piece
 - Two long black stripes for cheeks
 - Three black graduated stripes for forehead
 - Two black under-eye stripes
- Glue – this is Aleene’s felt and foam glue and it is recommended for this kit
- Two yellow sewable LilyPad LEDs
- One 6-inch (15.24 cm) piece of black cord
- Conductive thread – 3 feet (1 m)
- Needle
- Coin cell battery holder with switch
- Coin cell battery
- Two alligator connectors for testing connections



Here is a layout of the finished tiger:



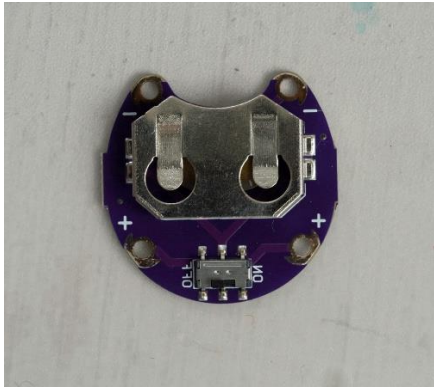
Notes before Starting:

Glue

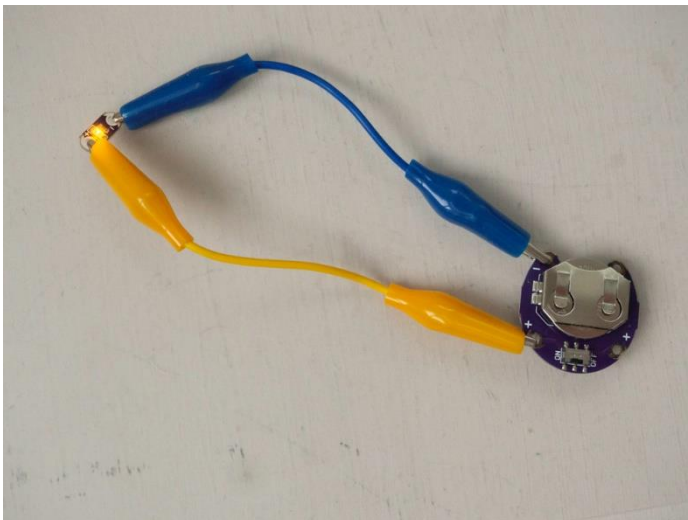
- The glue included in the kit is Aleene's felt and foam glue. It is the recommended glue for this kit because it works well with felt.
- Apply the glue by squeezing a little onto a paper scrap. Use one of the enclosed toothpicks to dip in the glue then spread on the felt. The glue dries very quickly so only squeeze out a little at a time, adding more as needed.
- Make sure to apply glue away from the other felt pieces to keep any drips from getting on to the face.

Battery Holder, LEDs, and Conductive Thread

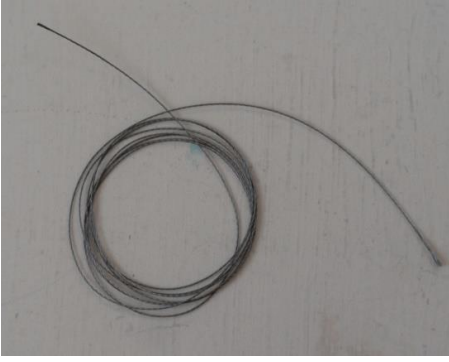
- The *battery holder* has two sets of positive/negative connection points. The plus and minus signs identify them. They show the direction of flow for the electric current, and to make the current flow properly, you *must* connect the positive connector on the holder to the positive connector on the LED using something that conducts electricity. The same is true for the negative connectors. For more on electric current, check out this video: <https://www.youtube.com/watch?v=kYwNj9uauJ4&t=34s>
- The battery holder has a spot for the battery and an on/off switch. The battery should be placed in the holder positive side up.



- The LED connections can be tested using the enclosed alligator connectors. You can check that the battery, battery holder, and LEDs work before you start the tiger by attaching one alligator clip to the positive connector on an LED and one of the positive connectors on the battery holder.
- Do the same with the other alligator clip and the negative connectors.
- Make sure the battery is in the holder, positive side up, and the on/off switch has been moved to 'on'.



- *Conductive thread* is used to make the electrical connections. It is made of stainless steel fibers and is harder to work with than standard sewing thread. It frays more and tangles easily, but it is great for making wearable electronics.
- For each LED, you will have one thread making the positive connection and one making the negative connection. Be careful to keep the stitches for each connection from touching other seams because this will cause a short circuit and your light won't work.



Step 1: Glue ears

- Note that the outer edges of the tiger's ears are more curved than the inner edges. You can match the ear pieces to the drawing above to get the orientation.
- Place the orange ear pieces on a flat surface, right side up.
- Place the white ear pieces on top of the orange, lining up the outer and lower edges.
- Flip over one of the white pieces, spread glue on it, then turn the piece back over onto the orange piece and press in place.
- Repeat with the other ear.



Step 2: Mark the LED locations

- The battery holder and the lights are all sewn to the inner (smaller) circle. You will need to mark the eye locations on the smaller circle to place the LEDs correctly.
- Center the smaller circle on top of the bigger plain circle. Place the circle with eye cutouts on top.
- Use a fabric marker or a pen to mark the inner circle where it shows through the holes in the top layer.
- Pull the layers apart.



Step 3: Glue the markings on the face

- Position the chin fur and muzzle, overlapping them a little with the muzzle on top. Note where the muzzle overlaps, then turn the muzzle over and put a little glue on those spots. Turn it back over, carefully line it up on the chin and press it in place.

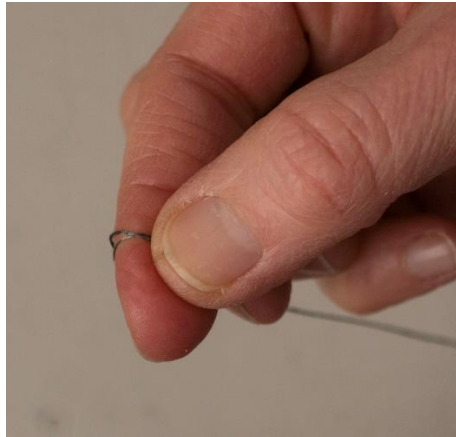
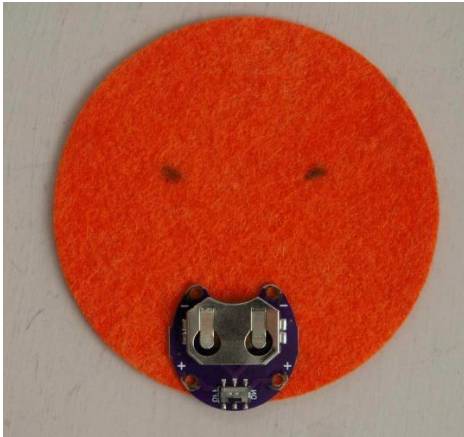


- Position all the features where you want them. You can use the diagram above to match the pieces.
- Working one piece at a time starting with the muzzle/chin combination remove a piece from the tiger face, turn it over, apply glue then carefully press the piece in place. Continue with each piece until complete. Set the face aside to dry.

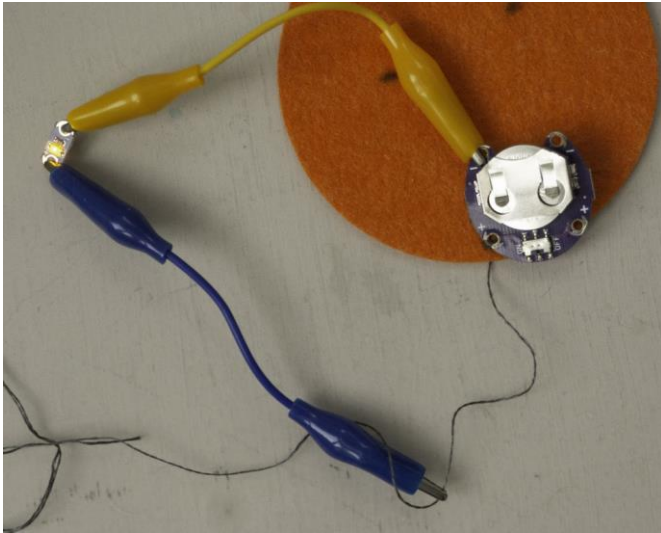
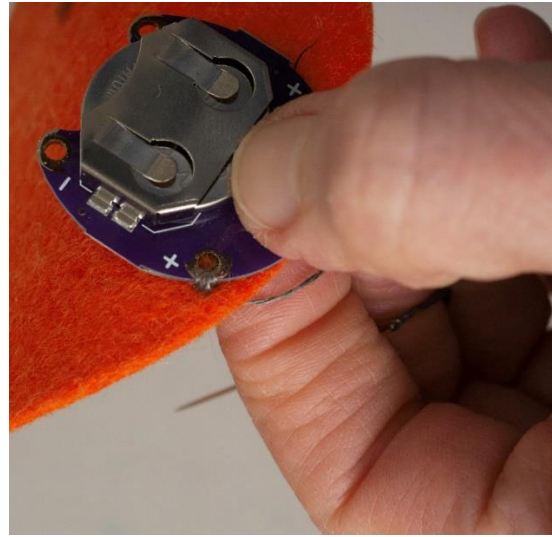
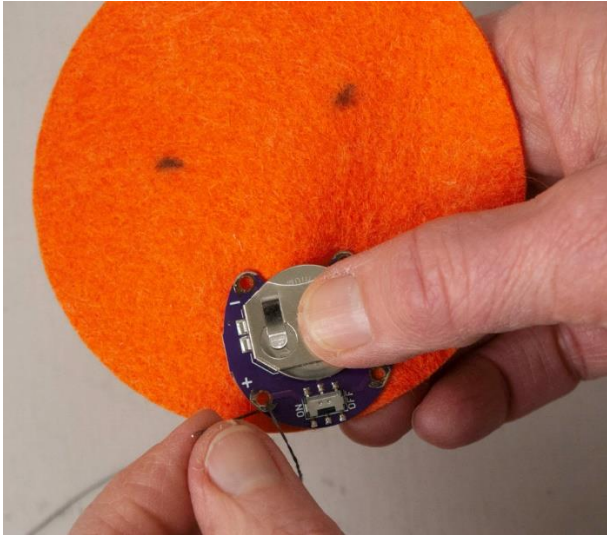


Step 4: Sew the battery holder and LEDs

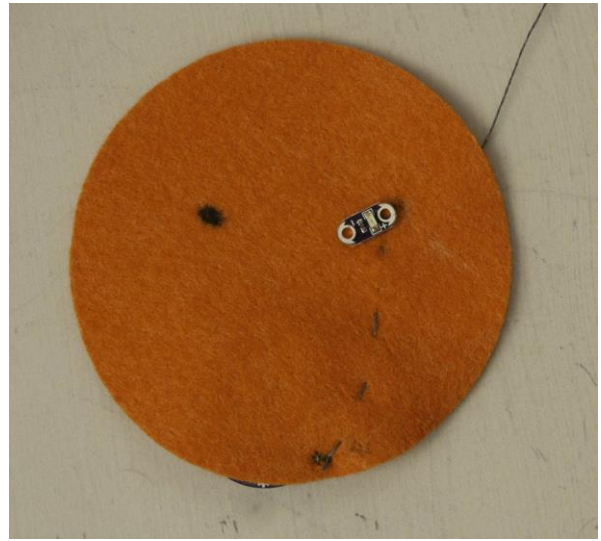
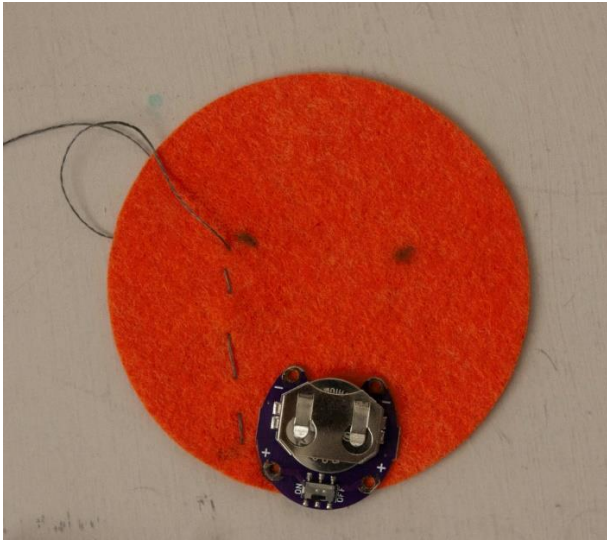
- Note that the battery holder goes on the back side of the inner circle. This is done to keep the bulk of the battery out of sight.
- To place the battery holder, lay the inner orange circle flat, back side up. If the eye marks don't show through, you can use your pen to mark their location. Center the holder between the eye marks with the switch slightly off the lower edge of the circle.
- Cut a piece of conductive thread about 18 inches (46 cm) long. Thread your needle and knot one end of the thread by wrapping it around your index finger then rolling it off with your thumb.



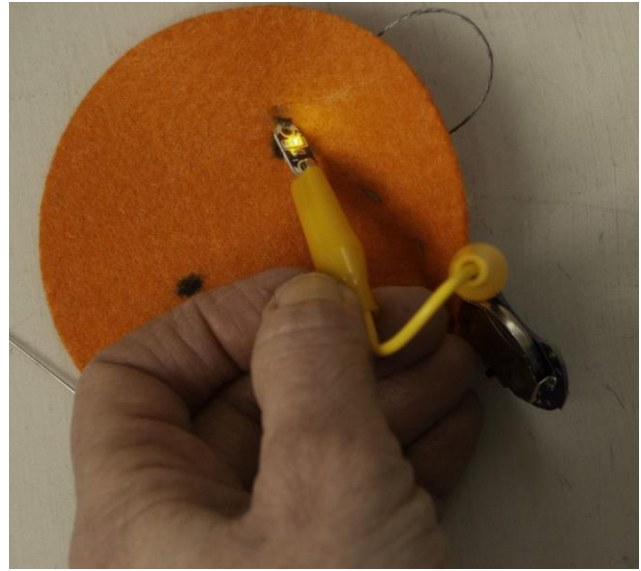
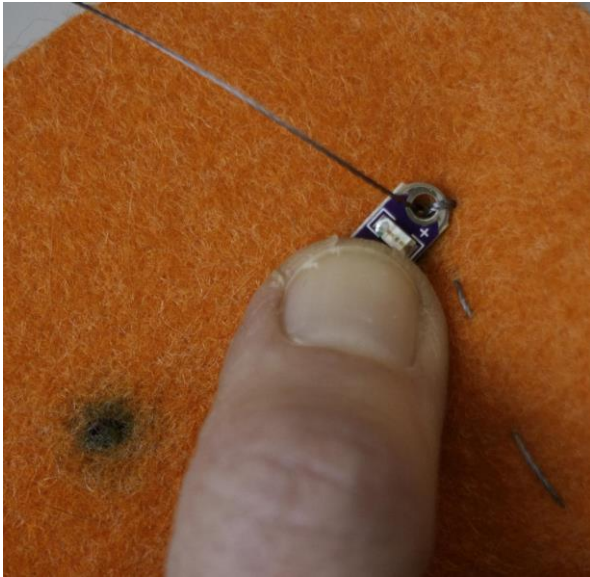
- We will start by connecting the LED for the right eye to the battery. This means that we will start on the *left* side of the battery holder as it faces you.
- Tack down the positive connection on the left side. To do this, pull your needle through the felt and the hole for the positive connection. Push the needle back through the felt at the outer edge of the hole, making sure that the thread contacts the metal surface on the edge of the connection point.
- Check to make sure your thread didn't tangle.
- Pull the needle back up through the hole and then back down on the outer edge 4 or 5 more times to make a strong connection. Keep an eye on your stitches to make sure the thread doesn't tangle.
- Test the connection by attaching using one of the alligator connectors: Clip one clip to the thread and the other clip on to the *positive* side of an LED. Attach the other alligator connector to the negative connections on the battery holder and on the LED. Make sure the battery is in and the switch is on. If it doesn't light up, sew a few more stitches and test again.



- Using a running stitch, sew up to the *outer* side of the eye mark, stopping below the mark itself. The needle should be on the battery side.
- Lay the circle on a flat surface, battery side down. Place one of the LEDs on the right eye mark, positive side facing the right outer edge of the circle.
- Place the top circle piece over the inner circle and make sure the light is lined up with the hole. Adjust as necessary then, keeping the LED in place, remove the top circle.

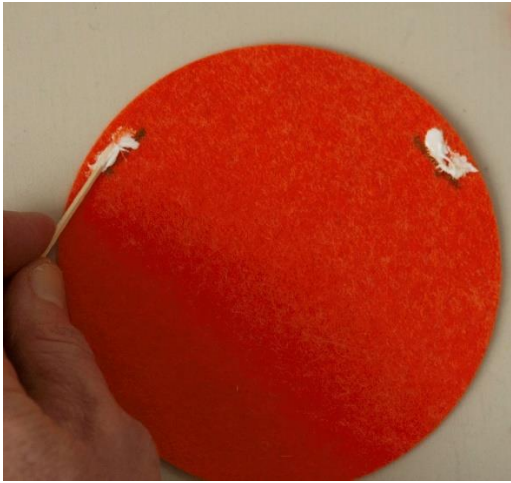


- Hold the LED in place and push the needle through the felt and through the positive connection hole of the LED.
- Tack the LED by sewing through the hole 4 or 5 times to make a good connection.
- Test the connection by attaching an alligator connector to the negative connection points. If the light works, knot the thread and cut it. If not, sew through the hole a few more times and retest.
- Repeat the process for the negative connection *making sure to keep your stitches away from the positive circuit. If the threads touch you will create a short circuit*: Knot the end of the thread; tack down the negative connection point on the left side of the battery holder; sew a running stitch to below the right side of the eye-mark; turn it over and check placement; tack down the negative side of the LED; test by turning the battery pack on and verifying that it lights up; cut the thread after you get the light working.
- Repeat the entire process for the left eye, testing after each connection is sewn to ensure good contact.



Step 5: Add the ears and the hanger

- Place the solid circle for the back of the tiger on a flat surface. Lay the ears on top, white edge to the outside. Overlap the bottom of the ears about $\frac{1}{4}$ inch or 6 mm. Place the face over the top to help align the ears, then remove the face and mark the locations of the bottom of the ears with a pen or pencil. Remove the earw, apply glue, and press the ears back in place.
- Fold the 6-inch piece of cord in half and place it on the top of the circle midway between the eyes. Place it so that the loop is hanging over the top by about one inch (2.5 cm). Put a little glue on the tails and press in place.



Step 6: Put the circles together to finish the tiger

- With the tiger back piece on a flat surface, hanger loop facing upward, place the center piece with all the electronics on the tiger back piece, battery side down, eyes toward the top.
- Place the face on top and line everything up.
- Once it is all aligned, take the face off and glue the inner circle in place by lifting the edge in one spot and smearing a little glue with the toothpick. Lift another area, smear glue and press. Continue doing this all the way around.



- Lay the tiger face on a flat surface, face features down. Smear glue along the edge of the *upper half of the circle only*. This will keep the battery pack accessible so the battery can be replaced.
- Flip it over, align the eye holes over the LEDs and press into place.
- Let the tiger dry thoroughly before using.

