



# Sew It Up

Have you ever had your favorite stuffed animal's stuffing start to come out? Channel your inner veterinarian as you practice four different suture types to stitch them back up! Determine which stitch will work best for a particular cut: interrupted, mattress, continuous, or lock.

## TEKS:

SCI 2.2A: The student is expected to ask questions about organisms, objects, and events during observations and investigations.

SCI 7.7B: The student is expected to demonstrate and illustrate forces that affect motion in organisms such as emergence of seedlings, turgor pressure, geotropism, and circulation of blood.

## Materials:

- Cardstock
- Girlstart suture template cards (attached below)
- Hole punch
- 4 2-foot-long pieces of yarn
- Scissors

## How To:

1. Print the Girlstart suture template cards on cardstock and cut them out.
2. Use a hole punch to make holes at the indicated spots on the template cards. This will make it easier to use yarn during the activity.
3. Cut four pieces of yarn to 2 feet long each.
4. Follow the instructions below to learn how to sew different types of stitches for common sutures.

### *Interrupted Suture*

The interrupted stitch is one of the most common wound closure techniques, especially for closure of skin. The stitch is made by a series of individual stitches that are identical. This stitch is used for precise and strong closure because the individual stitches increase the suture's tensile strength. It also allows for the stitches to be removed without hurting the closure or other stitches.

1. Start by inserting your yarn down through hole #1, leaving 2-3 inches of the yarn above the hole.
2. Bring the yarn up in hole #2 and use the 2-3 inches you left in hole #1 to tie a knot over hole #2.

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3. Cut the extra yarn.
4. Repeat steps 1-3 for the remaining stitches along your card.

### *Mattress Suture*

Mattress stitches are useful because they are versatile! This stitch can be performed in multiple directions across a wound. The mattress stitch is mostly used for deeper wounds because it can secure more layers of skin. The stitch also helps avoid tension in the skin, so it is used after many surgical procedures.

1. Start by inserting your yarn downwards into hole #1, leaving 2-3 inches of the yarn above the hole.
2. Bring the yarn up in hole #2.
3. Now insert the yarn downwards on the same side in hole #3.
4. Lastly, bring the yarn up through hole #4.
5. Using the 2-3 inches of yarn you have left in hole #1, tie a knot with the extra yarn from hole #4.
6. Cut the extra yarn.
7. Repeat steps 1-6 for the remaining stitches along your card.

### *Continuous Suture*

The continuous stitch is considered the easiest and fastest of all the stitches. It is often used for more minor incisions that occur on more flexible skin areas. The stitch is made with one long stitch that is uninterrupted which helps the stitch spread its tension evenly across the entire suture.

1. Start by inserting your yarn downwards into hole #1, leaving 2-3 inches of yarn above the hole.
2. Bring the yarn up in hole #2 and use the 2-3 inches you left in hole #1 to tie a knot over hole #2.
3. Continue your stitch across the card and put your yarn down through hole #3. **DO NOT CUT THE YARN!**
4. Bring your yarn up through hole #4 and continue going down through the odd numbered holes and up through the even numbered holes until you reach the end of the suture card.
5. Bring your yarn up through hole #12 and tie a knot over hole #11.
6. Cut the extra yarn.

### *Lock Suture*

The lock stitch is the most common suture used during/after surgical procedures for incisions in skin and in internal organs. The stitch is a continuous stitch where every new stitch is passed through a previous stitch to increase the strength of the closure. The biggest advantage of the lock stitch is that its reversible because it creates identical shapes on each side of the stitch.

1. Start by inserting your yarn down into hole #1, leaving 2-3 inches of yarn above the hole.
2. Bring the yarn up through hole #2 and use the 2-3 inches you left in hole #1 to tie a knot over hole #2.
3. Continue your stitch across the card and put your yarn down through hole #3, leaving a few inches of slack. **DO NOT CUT THE YARN!**
4. Bring your yarn up through hole #4.
5. Thread underneath the piece of yarn between holes #2 and #3 where the slack was left.
6. Gently pull out the slack and thread down to hole #5.
7. Repeat steps 3-6 for the remaining holes. Be sure you are threading down through the odd-numbered holes and up through the even-numbered holes to the end of the suture card.
8. Bring your yarn up through hole #12 and loop it through the slack. Carefully, pull out the slack and tie a knot.
9. Cut the extra yarn.

Now, the next time your favorite stuffed animal is torn or has a hole, you have several different stitch options to help put it back together!

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## STEM Explanation:

Sutures are essential skills for anyone in the medical field, including veterinarians. Sutures, also known as “stitches”, are what veterinarians use to help animal’s skin heal after there’s been a deep cut or after the animal has undergone surgery. It is important for medical professionals to suture to prevent infection or scarring and allow the area to return to normal function. When the skin is stitched together with the suture, the wound is closed, and the healing process speeds up drastically. Platelets in the blood will begin to clot, or stick, together to keep the blood and fluids from leaving through the wound. Underneath this, new skin cells begin to multiply to make a new layer of skin and the blood vessels that were damaged are repaired.

There are many different types of cuts that doctors and veterinarians diagnose and treat. Lacerations are the medical name for a cut, or simple breaks in the skin. They normally have ragged, uneven edges like accidentally cutting yourself on glass and need stitches if the cut is deep. Abrasions, like scraping a knee, are not as serious as other wounds so they don’t require stitches. Incisions are wounds that doctors intentionally make during surgery. They are like lacerations but have very smooth edges and need stitches to heal. Puncture wounds occur when something pierces down into the skin. Depending on how big the object is that made the puncture wound, it can be hard to differentiate from a laceration and could require stitches as well. If the item that made the puncture is still imbedded, it is called an impaled object. Avulsions are torn sections of skin that are anywhere from 75-100% removed from the surrounding skin, and often cannot be sutured. Veterinarians and doctors look at all these different injuries and need to decide if their patient needs a suture. They study the depth of the wound, width of the wound, and location of the wound to determine if the patient requires stitches to heal faster.

## Career Connection:

*Veterinarians* diagnose, treat, and prevent injuries and illnesses that can occur in animals. Some work with small domestic animals, like dogs and cats, while others work with large livestock, like cows and horses. They often work in private clinics or animal hospitals, depending on the patients that they treat.

## Resource:

<https://www.woundcarecenters.org/article/wound-therapies/sutures-stitches-and-staples>

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## Girlstart Suture Template Cards

1 ☆ ↓      2 ○ ↑  
*Tie Here!*

3 ○ ↓      4 ○ ↑

5 ○ ↓      6 ○ ↑

7 ○ ↓      8 ○ ↑

9 ○ ↓      10 ○ ↑

11 ○ ↓      12 ○ ↑  
*Tie Here!*

**Continuous Suture**

1 ☆ ↓    Cut and Tie    2 ○ ↑

1 ☆ ↓    Cut and Tie    2 ○ ↑

1 ☆ ↓    Cut and Tie    2 ○ ↑

1 ☆ ↓    Cut and Tie    2 ○ ↑

1 ☆ ↓    Cut and Tie    2 ○ ↑

1 ☆ ↓    Cut and Tie    2 ○ ↑

**Interrupted Suture**

1 ☆ ↓      2 ○ ↑  
*Tie Here!*

3 ○ ↓      4 ○ ↑

5 ○ ↓      6 ○ ↑

7 ○ ↓      8 ○ ↑

9 ○ ↓      10 ○ ↑

11 ○ ↓      12 ○ ↑

**Lock Suture**

1 ☆ ↓    4 ○ ↑    3 ☆ ↓    2 ○ ↑  
*Cut and Tie!*

1 ☆ ↓    4 ○ ↑    3 ☆ ↓    2 ○ ↑  
*Cut and Tie!*

1 ☆ ↓    4 ○ ↑    3 ☆ ↓    2 ○ ↑  
*Cut and Tie!*

1 ☆ ↓    4 ○ ↑    3 ☆ ↓    2 ○ ↑  
*Cut and Tie!*

1 ☆ ↓    4 ○ ↑    3 ☆ ↓    2 ○ ↑  
*Cut and Tie!*

1 ☆ ↓    4 ○ ↑    3 ☆ ↓    2 ○ ↑  
*Cut and Tie!*

**Mattress Suture**

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