Aeronautics Cross-Stitch Activity

Activity Overview

With this fun art-inspired project combined with a bit of nostalgia, let's get stitching with this cross-stitch pattern that features one of the computer-generated schlieren images of the X-59.

STEPS

1. **Read your cross-stitch chart**
   The grid on a cross-stitch chart corresponds to the grid created by the weave of the fabric, and each colored square on the chart represents a cross stitch. The symbols in the squares tell you which color of floss to use. Use the chart legend to map the symbols to the floss colors.

2. **Center the fabric**
   It is often recommended to start with the middle of the design and work your way outwards. Find the center of the cross-stitch fabric (or linen), then center and secure it in the embroidery hoop or frame.

3. **Prepare the thread**
   Choose the color of thread to work with and cut it to about 18 inches in length. Anything longer could create knots as you stitch, so this is the recommended length. Typically done with a round-end tapestry needle, floss the thread through the eye of the needle matching the ends of the thread forcing the needle in the middle to create two strands for the stitching

4. **Making a row of cross stitches**
   Cross stitch is generally worked in rows going from left to right. Start from the back side of

Materials:
- Cross-stitch fabric or linen
- Embroidery hoop or frame
- Round-end tapestry needle
- Thimble (optional)
- Cross-stitch floss in various colors (see chart for suggested colors)

the fabric, bring the needle up through a hole toward the front of the fabric. Leave about an inch of thread at the back creating a tail that will be covered with your stitches as you work on your pattern.

Next, pass your needle through a hole diagonally across from where you started

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to make a slanted half cross stitch (/). When starting a new thread, hold on to the tail at the back of the fabric so it doesn't slip through.

Start the second half cross stitch by bringing the needle back up through the hole that is directly below the one you last used. Flip your fabric over to the back and make sure the thread tail will be trapped by the stitch.

Continue making the row of half stitches, then return on the same row to make half stitches in the opposite direction creating an "X".

5. **Ending the thread**
   On the back side of the fabric, pass the needle under at least three completed stitches to secure the thread and trim the remaining thread.

Background Information

Quesst Mission and the X-59

The X-59 is NASA's quiet supersonic research aircraft that will demonstrate supersonic flight without the loud boom that comes with it. As a part of the Quesst mission, the X-59 is designed to travel over select communities to gather data from the public about their perception of the noise generated by the X-59. A schlieren image helps NASA engineers see shockwaves that come from aircraft such as the X-59.

In the schlieren image, the dark areas represent the shockwaves that form when objects fly faster than the speed of sound and the bright areas are expansion waveforms created when low pressure expands around a curved surface. The weaker shocks come from the lower surface of the aircraft, helping to confirm that quieter sonic thumps would be heard on the ground.

Symbol	Number	Name
◊	ANC 2	White
✚	ANC 235	Charcoal Grey - Medium
♣	ANC 236	Charcoal Grey - Dark
m	ANC 274	Blue Mist - Light
♡	ANC 397	Grey - Light
□	ANC 398	Grey
●	ANC 399	Grey - Medium|Light
☆	ANC 400	Grey - Medium
◁	ANC 403	Black
◢	ANC 848	Blue Mist
×	ANC 977	Sea Blue - Medium
▽	ANC 1031	Antique Blue - Ultra Light
=	ANC 1037	Sea Blue - Very Light
°	ANC 1088	Taupe - Very Dark
■	ANC 8581	Stone Grey
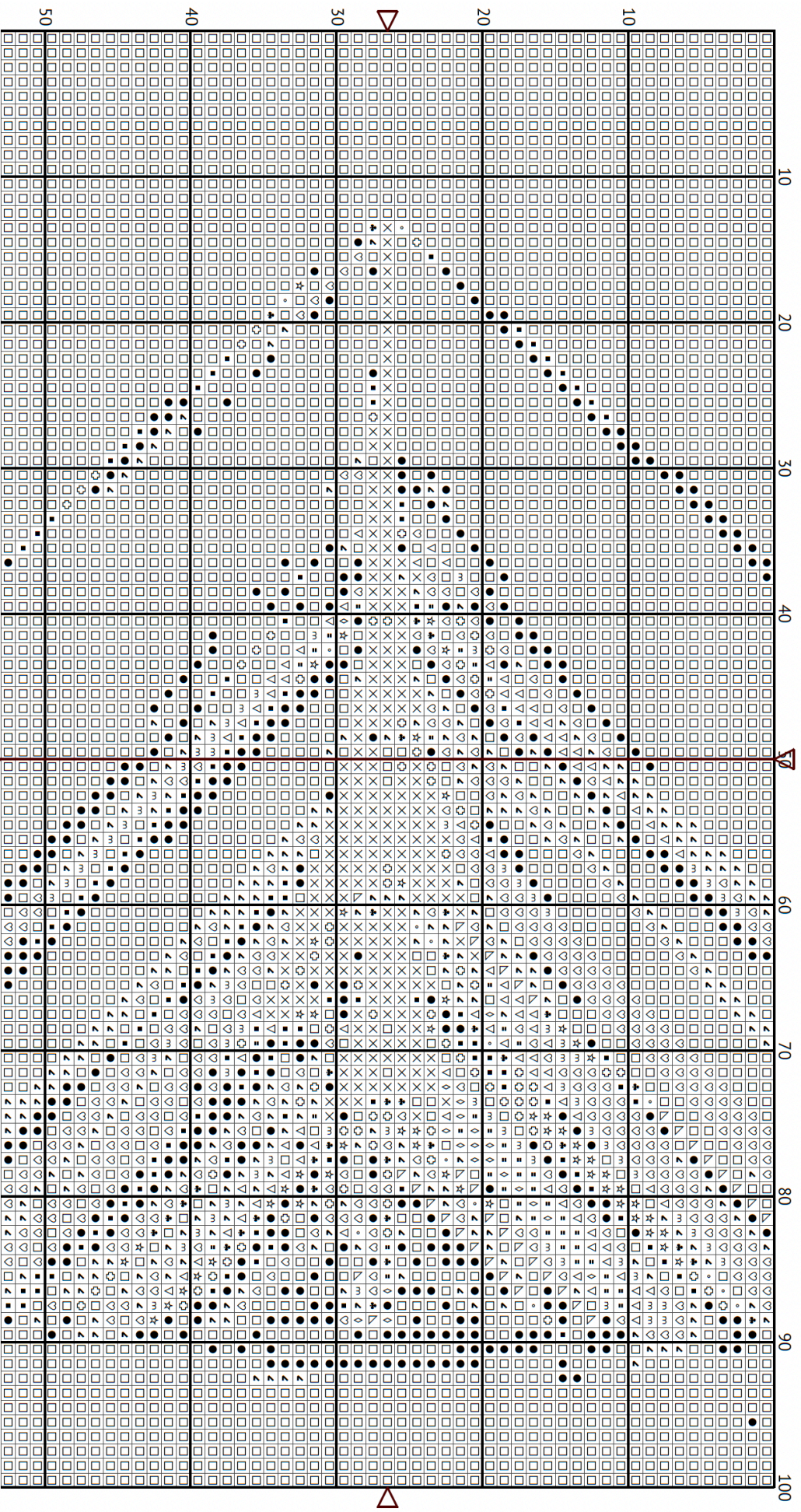
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