



Scientific Sketching

Sketching is a skill everyone can practice! Scientists make sketches to notice details and changes, record observations, and make connections—not necessarily to make art. Try these fun techniques to hone your observation skills and make your own scientific sketches. You may surprise yourself with what you can create.

Materials

Paper

Pencil (or pen)

Object to sketch (this can be a household item like a salt shaker, or even your non-dominant hand)

Sea star page printout (page 4)

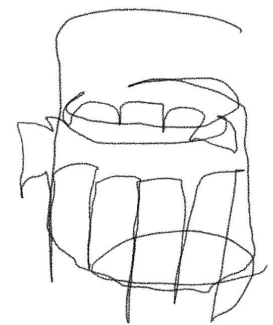
Optional: internet access

Optional: ruler

Optional: timer

Directions

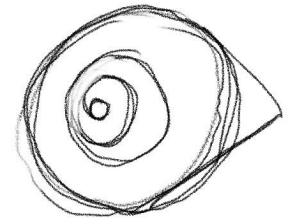
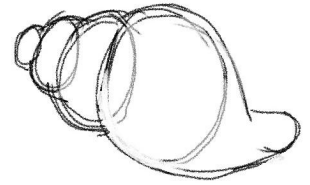
1. **Blind Contour Drawing:** Household Object
 - a. This warm up will help you focus on drawing what you see, instead of what you think is there. There are only two rules: don't lift your pencil from the paper, and don't look at your drawing until you're finished!
 - b. **Choose** a household object that you'd like to draw.
Try to choose something that is smaller than a piece of paper.
 - c. **Look at your object and draw**, keeping the pencil tip on the paper.
Try to capture the outline of the object and the most important details. Your drawing will probably look strange or funny, but this exercise helps connect your eyes to your drawing hand.
 - d. **Optional:** Set a timer for 5 minutes while you draw.



*Blind contour of
a cup*

2. Shape Drawing: Tide Pool Creature

- a. **With an adult's permission to go online, choose** one of these 3D models of tide pool creatures, and find an angle that you like: [Ochre Star](#), [sea snail](#), [Pink Abalone](#), [Gaper clam](#), [Red sea urchin](#). (Or select another household object).
- b. Before you start sketching, try to **blur** your vision a little, and identify some shapes in the object. For example, a triangle at the tip of a sea star's arm, or an oval for a swirl of a shell.
- c. **Sketch** your object using the simple shapes you see. You can look at your paper, but remember to look at your object before adding to your drawing.



3. Observing Variation: Sea star printout

- a. **Print** out page 4. Challenge a friend or family member to join you for this activity.
- b. **Secretly choose** one specimen. All the images are of the same species, the Ochre Star, but individuals might look a little different. This could be because of their genes, or their environment. For example, an orange sea star might pass on its orange color to its offspring. Or, a sea star that has access to more food might grow bigger.
- c. **Sketch** your specimen. Try starting with simple shapes, then adding in details. Can you show the texture? Is there something unique about your specimen?
- d. **Challenge:** When you are satisfied with your sketch, trade papers with a friend or family member, and see if you can identify their chosen specimen.
- e. **How did it go?** What changes could you make to your sketch to make identifying your specimen easier?
- f. **Optional:** Make any changes to your sketch and try the challenge again.

4. Extension: Your choice

- a. Now that you have some practice, choose another 3D model to sketch, or bring your sketching materials to a tide pool or a place with living things (plants or animals or mushrooms) near where you live.
- b. **Choose** a specimen to sketch using the techniques you've practiced. Start with shapes

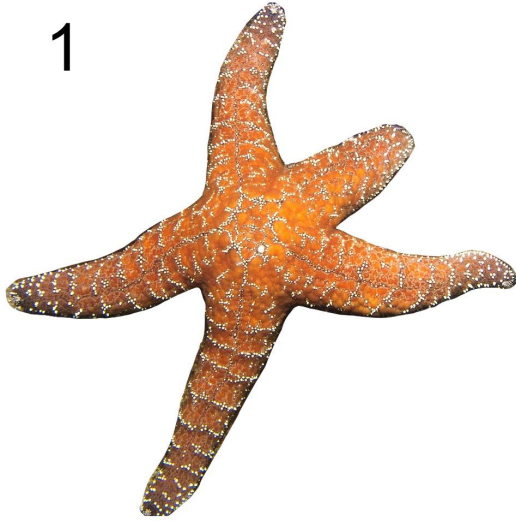


and outlines, then fill in details. If you'd like, sketch a close-up of your favorite detail on your specimen, like a flower on a plant, or a pattern on a shell.

- c. **Label** the details you notice. Which features could help you identify this specimen?
- d. **Measure** your specimen with a ruler, or compare its size to your hand or your pencil. How big are its different features? For example, maybe the smallest swirl of a shell is the size of your eraser.
- e. **Title** your illustration, and be sure to add your signature.

Created a scientific illustration that you're proud of? Send us a photo of your creation at scienceathome@calacademy.org

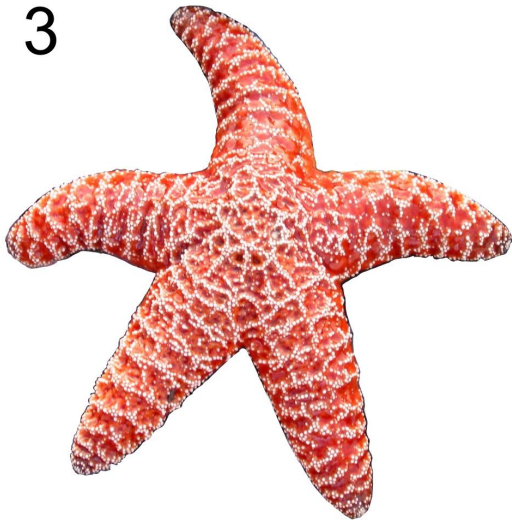
1



2



3



4



Image credits: (1) "[Ocre Star](#)" by Ed Bierman [CC-BY 2.0](#) (2) "[Pisaster ochraceus \(purple sea star or ochre sea star\)](#)" by Jerry Kirkhart [CC-BY 2.0](#) (3) "[Sea Star at low tide](#)" by Peter Kaminski [CC-BY 2.0](#) (4) "[May2005_o80.jpg](#)" by Jonathan Kellenberg [CC-BY 2.0](#)