Leonardo da Vinci—Bringing Science to Art

Leonardo da Vinci believed an artist had to study nature to learn how the body is designed. He looked to see how muscles move together and how the body is connected. He wrote everything in his notebooks.

This sounds like a scientist, doesn’t it? Da Vinci was a scientist, but he was not an ordinary one. He was also an artist. He used his observations to help make his paintings and sculptures look realistic. His artworks, such as the painting *Mona Lisa*, are very famous, and people still study his notebooks today.

Da Vinci taught people to look at the world around them and to use what they saw. Combining science and art helped him create many great inventions and works of art. Because of this, Leonardo da Vinci is considered one of the most important artists of all time.
Main Idea and Details

1. What is the main idea of this article?

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2. List 2 details that support the main idea.

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Think and Draw like da Vinci

Materials:
- Pencils for sketching
- Erasers
- Drawing paper
- Small gadgets such as a pencil sharpener, wind-up toy, can opener, or toy car

Directions:
1. Choose the object you want to sketch. Look at it closely.
2. Ask yourself the following questions.
   - Does it have moving parts? How do they move?
   - How many parts are there?
   - How do the pieces of the object work together?
   - What is the purpose of the object?
3. Draw and label the object.
4. Move and draw the object from a different view. How is this drawing different from your first one?
Color and Beauty in Ice and Light

Ice—nothing but endless ice and snow. That is what NASA scientist Peter Wasilewski spends hours studying and observing. He travels to Antarctica to study ice. He has gone on several expeditions there.

Wasilewski began by making and studying ice crystals at home. He took photographs of them. Then he came up with the art form known as frizion. Frizion is short for “Frozen Vision.” Light is passed through layers of ice using special filters. Colors randomly spread across the ice, creating a fantastic work of art.

After much trial and error to get a unique design, Wasilewski photographs the frizions. The results are amazing! Beautiful colors and designs can be seen. Like snowflakes, no two frizions are alike.

Wasilewski used his scientific knowledge of ice, water, and light to create these new techniques for taking pictures. A new art form was born. Because of Peter Wasilewski, science has given the world of art a helping hand.
Write your answers on a separate sheet of paper.

Drawing Conclusions

1. How did Peter Wasilewski’s knowledge of science help him in his art?

1.  
2.  
3.  
4.  
5.  

Complete the Phrase

Use the words in the box to complete the phrases on the right.

Water
Antarctica
Science
Camera
Art
Light
Colors
Frizion
Ice
NASA
Water

1. where Wasilewski goes to study ice
2. _____ gives art a helping hand.
3. _____ passes through the ice.
4. _____ is short for Frozen Vision.
5. freezes and becomes ice
6. what you use to take photographs
7. _____ can be seen in the ice with polarized light.
8. Frizion is a new _____ form.
9. frozen water
10. Peter Wasilewski works for _____.
The Wonderful World of Color

Take red, mix it with blue, and you will make purple. Or mix blue and yellow to make green. Keep experimenting, and before long you will have a rainbow of colors.

That is what Sir Isaac Newton realized when he discovered that light has all the colors inside it. He learned that light could be split into colors when passed through a prism. A prism is a clear object that light can bounce around in. Newton was the first person to realize that a rainbow is actually light passing through many tiny prisms—raindrops.

The world would be very dull without color. Color provides beauty and variety, and it affects our emotions. Violet can be calming. Yellow is bright and cheery. There are warm colors like red, brown, and orange. There are cool colors like blue, green, and purple. Each color makes us feel differently.

This is why different people like different colors and why some artists use one color more than another. One major artist, Pablo Picasso, painted with different shades of the color blue in *Mother and Child*. Picasso used color to show a sad and lonely mood.
Cause and Effect

1. What causes a rainbow?

2. What effect can colors have on people?

3. What effect did Picasso hope for by using the color blue?

Create a Color Wheel

Materials:
- White cardstock
- Ruler
- Red, blue, and yellow poster paint
- Paint brush
- Small containers for mixing colors

Directions:
1. Draw a large circle on the piece of white card stock.
2. Using your ruler as a guide, separate the circle into a pie with 6 even parts.
3. Add the primary colors to your color wheel. Paint one section red. Skip the next section. Paint the next one blue. Skip another section and paint the next one yellow.
4. Now add the secondary colors. Mix a small amount of red and blue in a container to make purple. Paint the empty section between the red and blue sections purple.
5. Mix blue and yellow paint to make green. Paint the blank section between the blue and yellow sections green.
6. Mix yellow and red paint to make orange. Use this to paint the section between the yellow and red pieces.
7. Display your color wheel in your classroom. As an extra project, research and create a color wheel that has tertiary colors on it.
Optical Illusions

Is what we see always real? Can we be certain of our eyes? Or can our eyes be tricked? Optical illusions are fun. Some occur in nature, and others people create. A stick on a tree might actually be an insect when you look closely. A drawing of what looks like an open book may be a folded card.

Bridget Riley turns optical illusions into an art form called Op Art. When we see one of her paintings, it looks like a group of wavy black-and-white lines. Then, amazingly, they seem to fold over onto themselves. What is actually a flat painting suddenly looks 3-D.

Science helps us understand how our eyes work. German scientist Hermann von Helmholtz invented the ophthalmoscope. This simple machine let him examine inside the eye. He understood how light and objects could fool the eyes and brain.

Artists use science to help them create optical illusions to trick our eyes. Science actually becomes art when we look at Op Art. So remember, seeing isn’t always believing.
Write your answers on a separate sheet of paper.

**Summarizing**

1. Summarize how science and art work together in this article.

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**Viewing Optical Illusions**

**Materials:**
- Pictures of Bridget Riley’s paintings or other optical illusions
- Poster board

**Directions:**
1. Look at an optical illusion with a partner.
2. As you study the painting, write down your observations. Ask each other:
   - What do you see?
   - How do the shapes or lines create an illusion?
   - Does color make a difference?
3. Repeat the process with at least 2 more paintings or drawings.