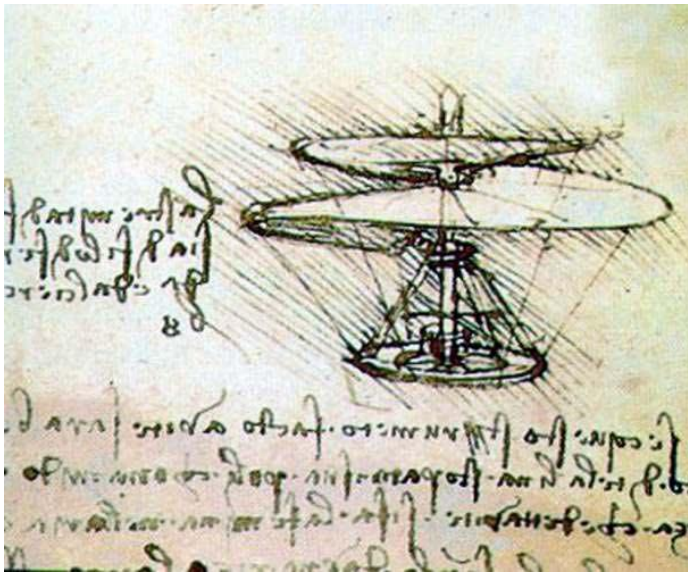
Art Masterpiece: "Leonardo's Inventions" Leonardo da Vinci



Key Words:

- **Shape:**
- **Simulated Three Dimensional Shape**- shapes that have the illusion of three dimensions by using perspective techniques
- **Geometric Shape**- squares, circles, rhombus, triangle, parallelogram, etc…
- **Organic Shape**- irregular free-formed shapes using curves that might resemble living organisms
- **Mirror Script**-technique of writing backwards, requiring the use of a mirror to decipher the text

Grade: 6th

Activity: Sketch an Invention from Leonard's Notebook, Write in Mirror Script, and Create a "Lost Invention Page" Using an Antiquing Technique

Meet the Artist:

The baby's mother rushed out to the yard, waving her arms. A hawk was perched on her child's cradle. "Shoo!" she cried. The bird lifted its wings and flew off. For a moment she thought it would grasp the baby in its claws to carry him away over the hills, but the child was safe. When she reached down to pick him up, he was following the hawk's flight with his eyes and smiling.

The child, Leonardo, was born on April 15, 1452, in a mountainous region of Italy called Tuscany, near the small village of Vinci. His mother, Caterina, was a young peasant woman, beautiful and poor. His father, Ser Piero, was an ambitious young man from a wealthy family, who was just beginning his career as a notary. Leonardo's parents did not marry each other. As a baby, Leonardo stayed with his mother. When he was almost two years old he was taken from her home and raised on his father's estate.

After his father remarried, it was decided that Leonardo would remain in Vinci, there he would be raised by his grandparents and his uncle Francesco. Uncle Francesco was only sixteen

years older than Leonardo. Though he was young, he ran the family estate, supervised the work in the fields, where they raised olives, grapes, and wheat. Leonardo adored his uncle and followed him everywhere. It seemed to Leonardo that Francesco knew everything.

As the boy and his uncle tramped through the vineyards and fields, Francesco taught Leonardo the names and uses of plants and herbs, the signs of approaching weather, and the habits of the wild animals that lived in the hills around Vinci. Francesco never tired of the curious boy's constant questions. "Tell me", Leonardo would say, "where the river begins." "Tell me what makes lightning." "Tell me what happens to the caterpillar inside its cocoon". The local priest taught Leonardo how to read and write and how to use an abacus, but that was the only education Leonardo received. Instead, he spent many of his days wandering the countryside and studying nature.

He explored the rocky crevasses of the hills around Vinci. He climbed along the banks of the river Arno and behind the crashing waterfalls. He walked through the fields of red poppies and blue cornflowers. He would jump on the bare back of one of his grandfather's horses and ride furiously down the dusty roads. Sometimes he would lay for hours beneath a tree, watching leaves move against the blue sky. He envied the birds as they soared over the hills and vineyards.

He found everything interesting and everything he saw made him want to know more. He took paper and chalk with him on his walks to make sketches of all he saw. He studied the movements of birds and animals, the way the trees and plants grew, the rocks he found in the riverbeds, the light on the fields, and the shadows of the dense forests.

Leonardo's simple life in the country came to an end after his grandfather died and his Uncle Francesco married. His family decided he didn't belong in Vinci anymore and they agreed he should move in with his father and his new wife. At fourteen, he packed his few belongings and left the countryside for Florence.

It was here that he was apprenticed to an art master, Verrocchio. One day when Verrocchio allowed Leonardo to add angels to a painting he was preparing for a wealthy patron, it is said that upon viewing the lifelike angels and their delicate wings, he threw down his own paint brushed exclaiming never to paint again!

He was Polymath-a person whose expertise spans a significant number of subject areas. Da Vinci's included; painter, architect, musician, mathematician, engineer, inventor sculptor, anatomist, geologist, cartographer, botanist, and writer. He could write with both his right and left hands, which we call "ambidextrous". He wrote his notes backwards with his left hand. Those who read Italian can hold them up to a mirror and read them. It took people years to figure this out. Nearly 7,000 pages of his notes still exist today. He died at the age of 67 while working for the King of France.

* Now, ask students to choose an invention card and think of a possible use for it. If they can, have them give the invention a name. Tell them to let their imaginations run wild & not to worry about whether or not it could be possible in our century (like time travel). Remind students that in the 1400's, air travel was unheard of!

Project: Sketch an invention, write how it works, and create a lost notebook page

Supplies Needed:

Advance Preparation: The day before class

- Tagboard - cut 9" x 12"
- White Tissue Paper – cut 9" x 12"
- Glue Wash- 50% Glue, 50%Water

Remaining supplies:

- Invention cards
- Foam brushes – 2 per table, or 6 at a Glue-Wash Station
- Mirrors- 2 per table
- Pencils
- Rulers
- Protractors- 2 per table
- Black Ball Point Pens- 4 per table
- Colored Chalk- Brown and Yellow only
- Hairspray- to set chalk (optional, if time allows)

Process

This lesson has three components: sketching the invention design, mirror writing their inventions use/purpose, and antiquing the "notebook" page.

Invention Design:

- Have students write their name on the back of their paper with black pen, then have them tear along the outer edge to create a rough edge…tearing as little off as possible.
- Instruct students to **sketch** their invention, by observing the details on the invention card they chose. **This sketch should be on the upper 2/3 portion of the tagboard, the other bottom 1/3 of the tagboard needs to remain blank, for the mirror writing activity later.** Once the design is sketched, they will need to trace over it again with pencil so that it shows through, after the 'antiquing' process.

Mirror Writing:

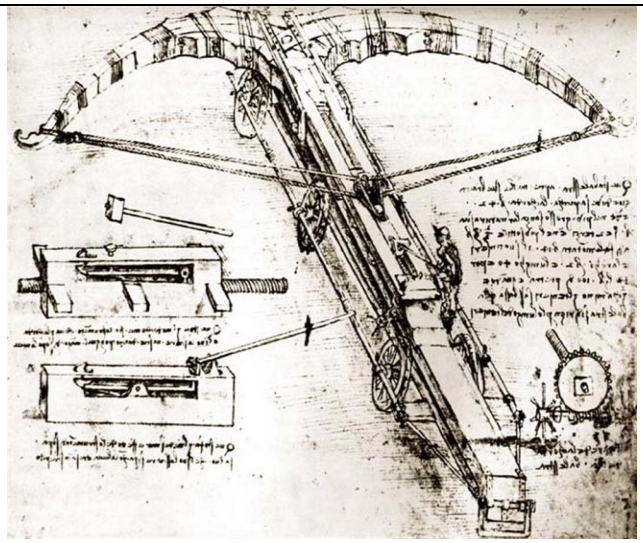
- Line up the tissue paper, centering it on the tagboard, students should be able to see their design through it. While holding it in place, instruct students to **gently write a description of how their invention works on the bottom portion of the tissue paper** with a black ball point pen. The writing should fit in the bottom space which was left blank when creating their design. Flip the tissue over, so it is face-down, the writing is now shown in mirror script (backwards).

Antiquing Process:

- Take the tissue paper and crumble it up into a ball, now gently smooth it out and set aside.
- Using the glue-wash, paint the entire surface of the tagboard with the wash. This should be a light wash, avoid saturating the tagboard.
- Line up the tissue paper with the bottom of the tagboard making sure the writing is in the reserved blank 1/3 bottom space of the tagboard. **Place the wrinkled tissue paper FACE DOWN** on the glue surface and gently pat down to adhere to the tagboard. Use a mirror to decipher your, or a friends, descriptions!
- Using the side of a brown or yellow colored chalk, **gently rub** the wrinkled tissue (from top edge to bottom edge) to emphasize the wrinkles, giving it a "weathered" look.
- Carefully tear off the excess tissue paper that overlaps the edge of the tagboard.
- (Adult) Spray with hairspray to set chalk. (optional)

Example of "Leonardo's Notebook" Project

Invention Cards



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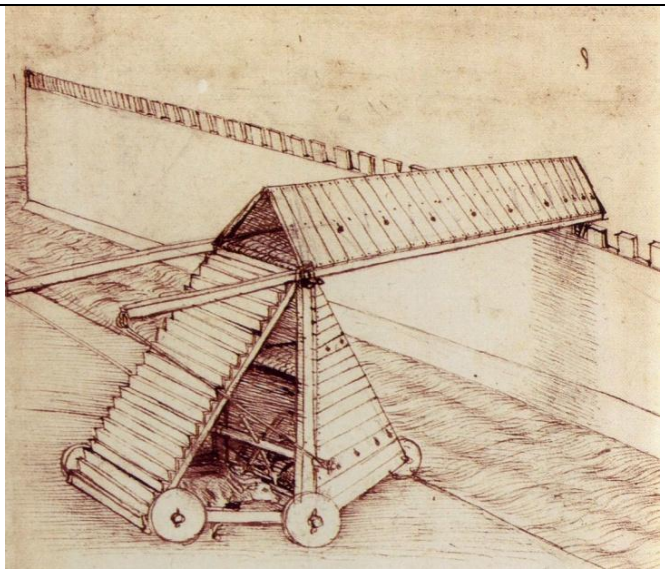

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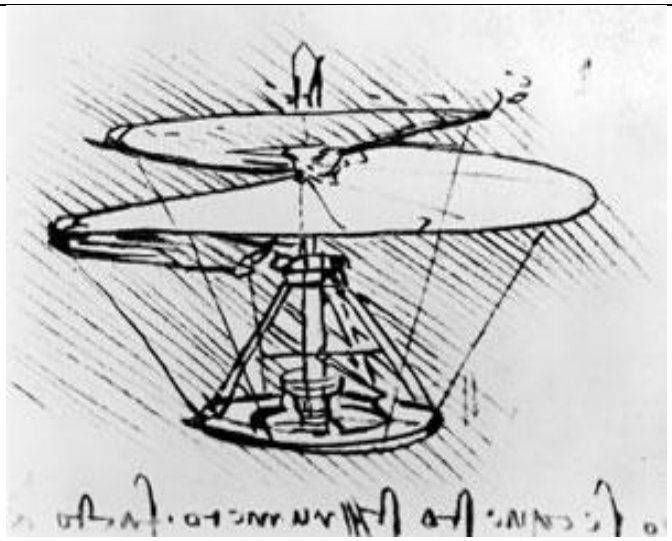

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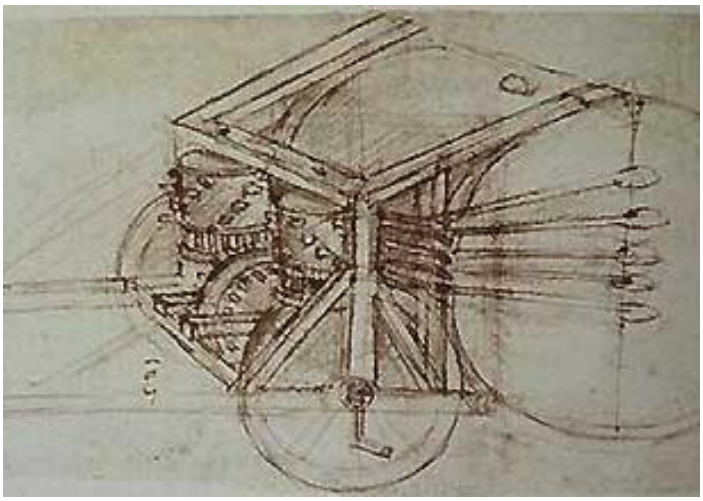

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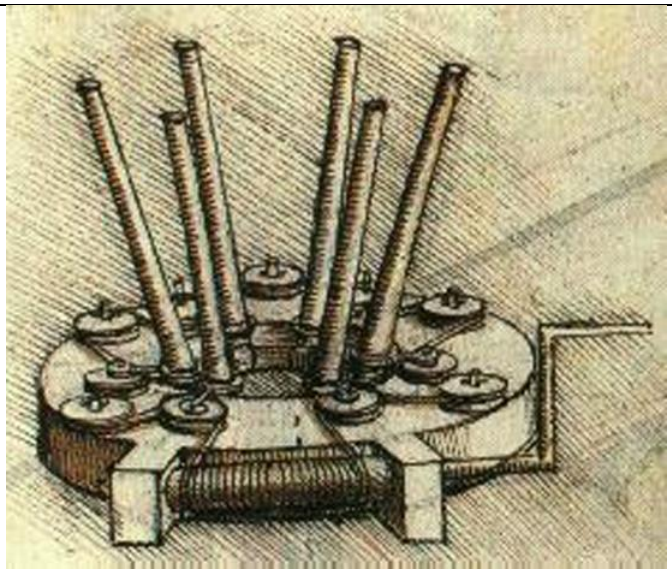

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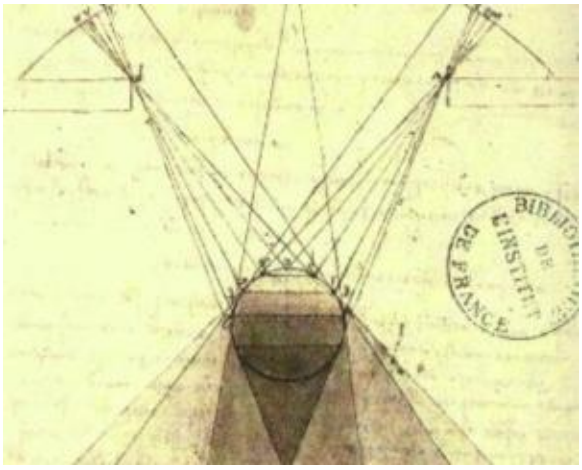
Invention Cards



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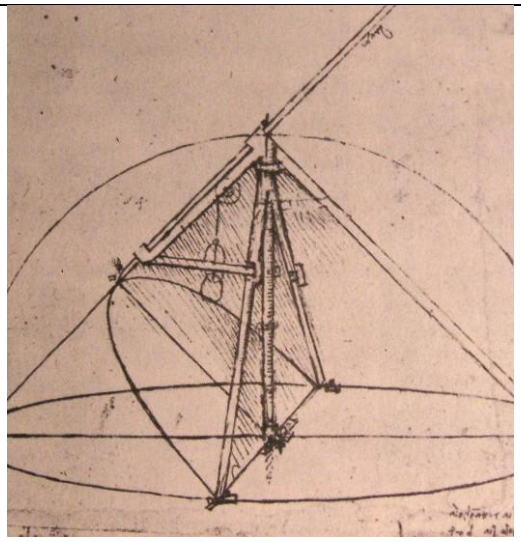

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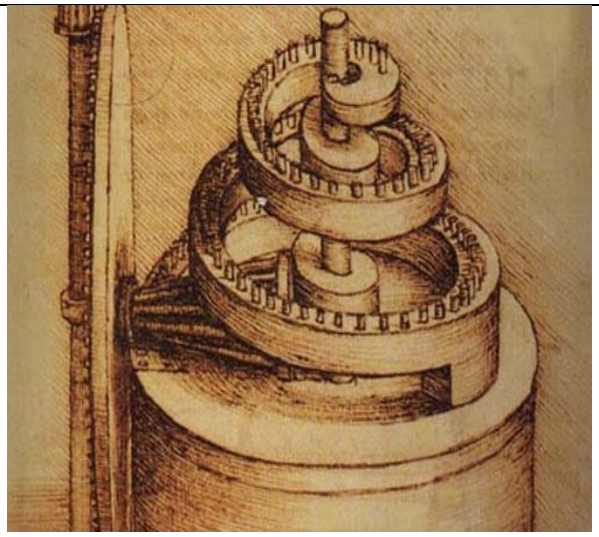

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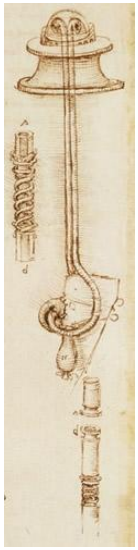

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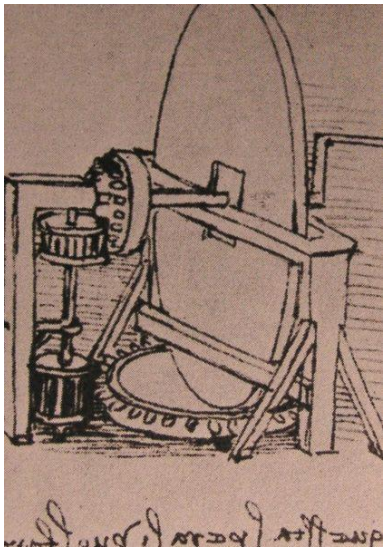

12

Leonardo Di Vinci's Quotes – To be copied on the back of invention cards

"I have been impressed with the urgency of doing. Knowing is not enough; we must apply. Being willing is not enough; we must do." -Leonardo da Vinci	"For once you have tasted flight you will walk the earth with your eyes turned skywards, for there you have been and there you will long to return." -Leonardo da Vinci
"Painting is poetry that is seen rather than felt, and poetry is painting that is felt rather than seen." - Leonardo da Vinci	"It had long since come to my attention that people of accomplishment rarely sat back and let things happen to them. They went out and happened to things." - Leonardo da Vinci
"One can have no smaller or greater Mastery, than mastery of oneself." - Leonardo da Vinci	"The noblest pleasure is the joy of understanding." - Leonardo da Vinci

"Make your work to be in keeping with your purpose" - Leonardo da Vinci	"There are three classes of people: those who see. Those who see when they are shown. Those who do not see." - Leonardo da Vinci
"Principles for the Development of a Complete Mind: Study the science of art. Study the art of science. Develop your senses- especially learn how to see. Realize that everything connects to everything else." - Leonardo da Vinci	"Where the spirit does not work with the hand, there is no art." - Leonardo da Vinci
"All our knowledge has its origin in our perceptions" - Leonardo da Vinci	"…The height of a man's success is gauged by his self-mastery…" - Leonardo da Vinci

Leonardo da Vinci's Inventions:
Key For Invention Cards

1. Giant Crossbow
2. Machine for Storming Walls
3. Ornithoptor Flying Machine
4. Automatic Drum Machine
5. Stretching Device for a Barrel Spring
6. "Armoured" Car
7. Study of the Graduation of Shadows on Spheres
8. Parabolic Compass
9. Viola Organista
10. Spring Device
11. Floating Air Device for Diving
12. Device for Grinding Convex Lenses