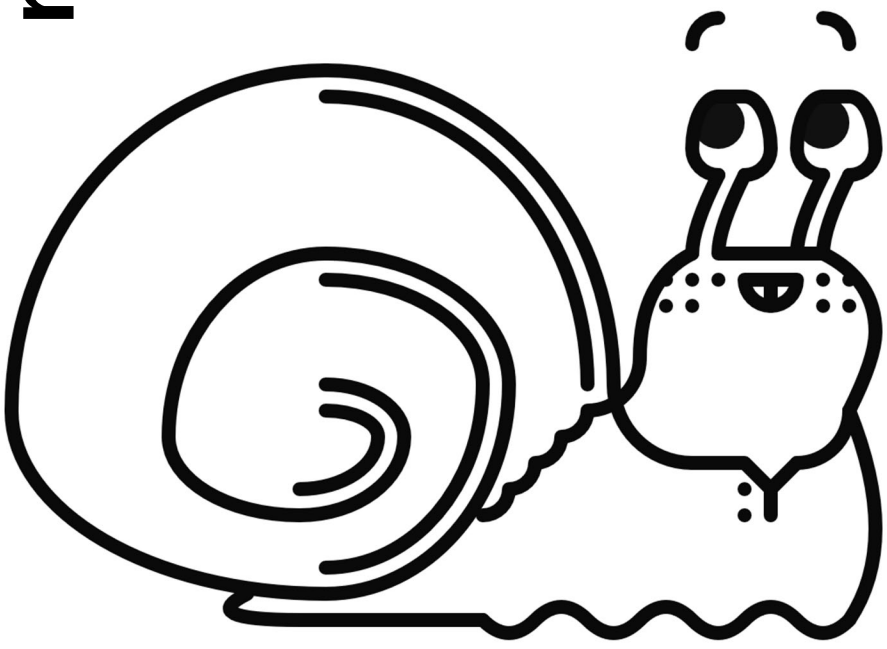
eureka snail mail

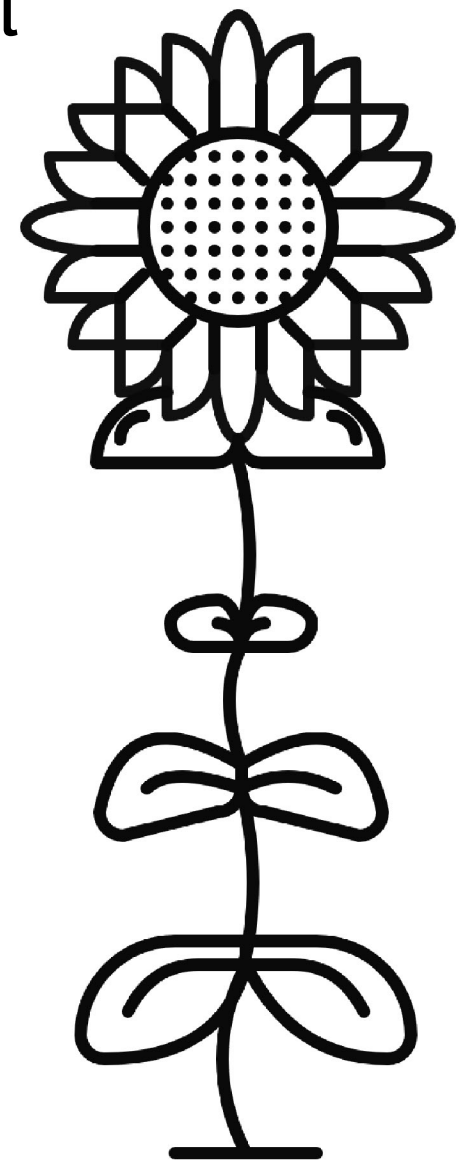
April showers bring May flowers, and we're bringing you a very floral snail mail! Inside this issue, we're going to teach you how to use bouquets as a secret language, how to use binary code to make art, and even how to sprout sunflower seeds and chart their growth!

We're really excited to see what you make and grow with this month's issue! Share your creations with us using the hashtag **#projectsnailmail**

-The Snail Mail Team

may 2020 issue 2



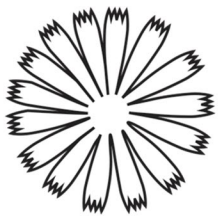


floriography

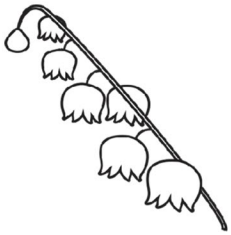
activity 1

You may know that giving a bouquet of flowers is a thoughtful way to show you care, but bouquets have been used to communicate a lot more than that! Back in Victorian England, a bouquet of flowers could mean many different things depending on the flowers used. Using a type of encryption called **floriography**, folks in Victorian times could send coded bouquet messages through the mail. You could wish someone good luck even if you're supposed to be cheering on their rival, or warn them of danger without putting yourself at risk!

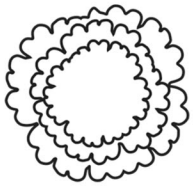
Here is a key of flowers and their meanings:



Chicory Flower
A Little



Lily-of-the-Valley
Happiness

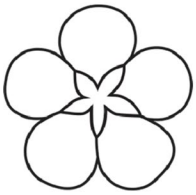


Carnation
(solid color) Yes
(stripes) No

Sweet Pea
Goodbye

Lobelia
Poison, Danger

Violet
(blue) Watch for..
(white) Let's take a chance



Geranium
(yellow) Surprise
(white) I expect a meeting
(pink) True Friendship
(pink stripes) Clever
(red) I'm Sorry
(purple) Do you remember?

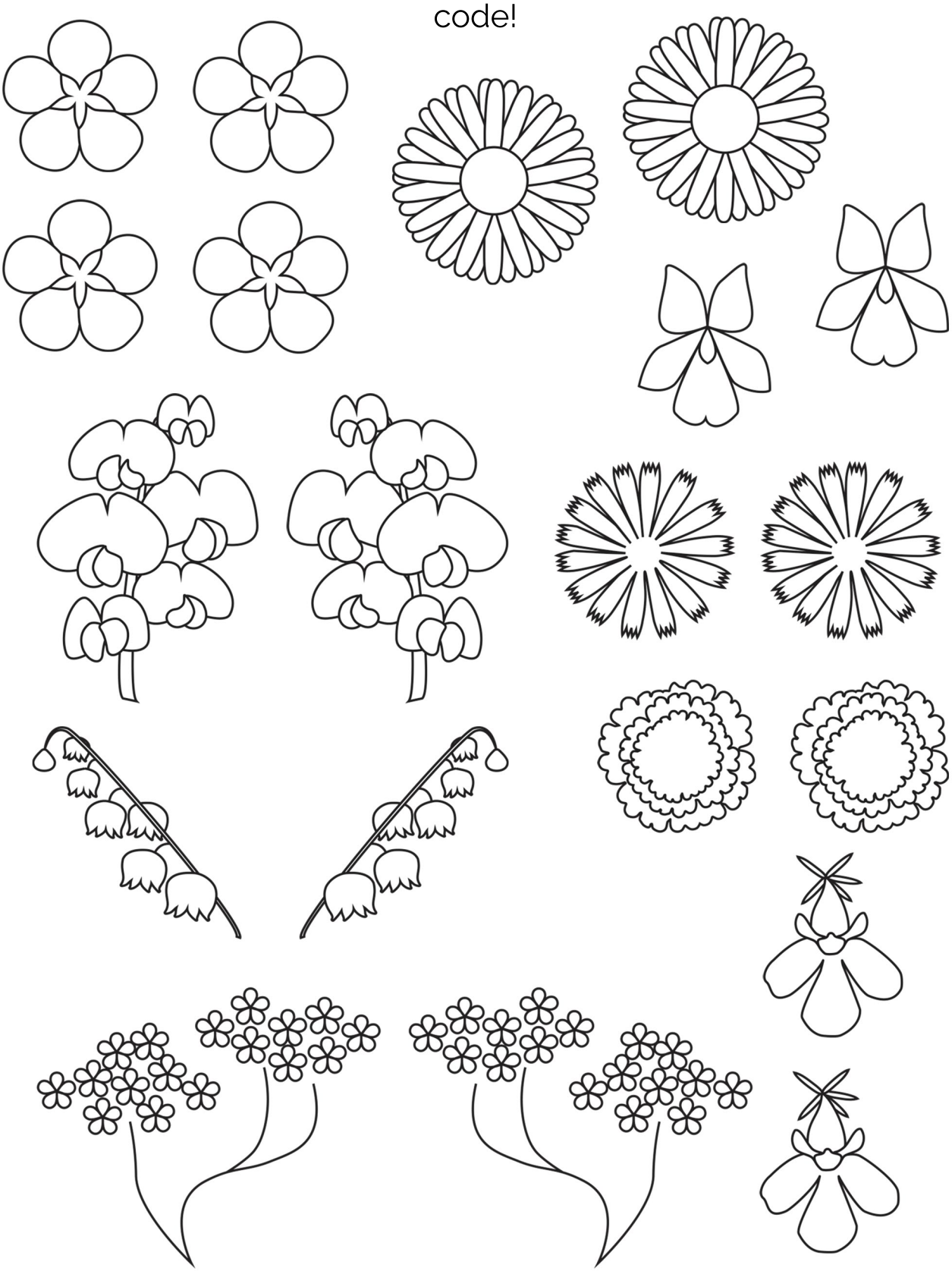
Aster
Love

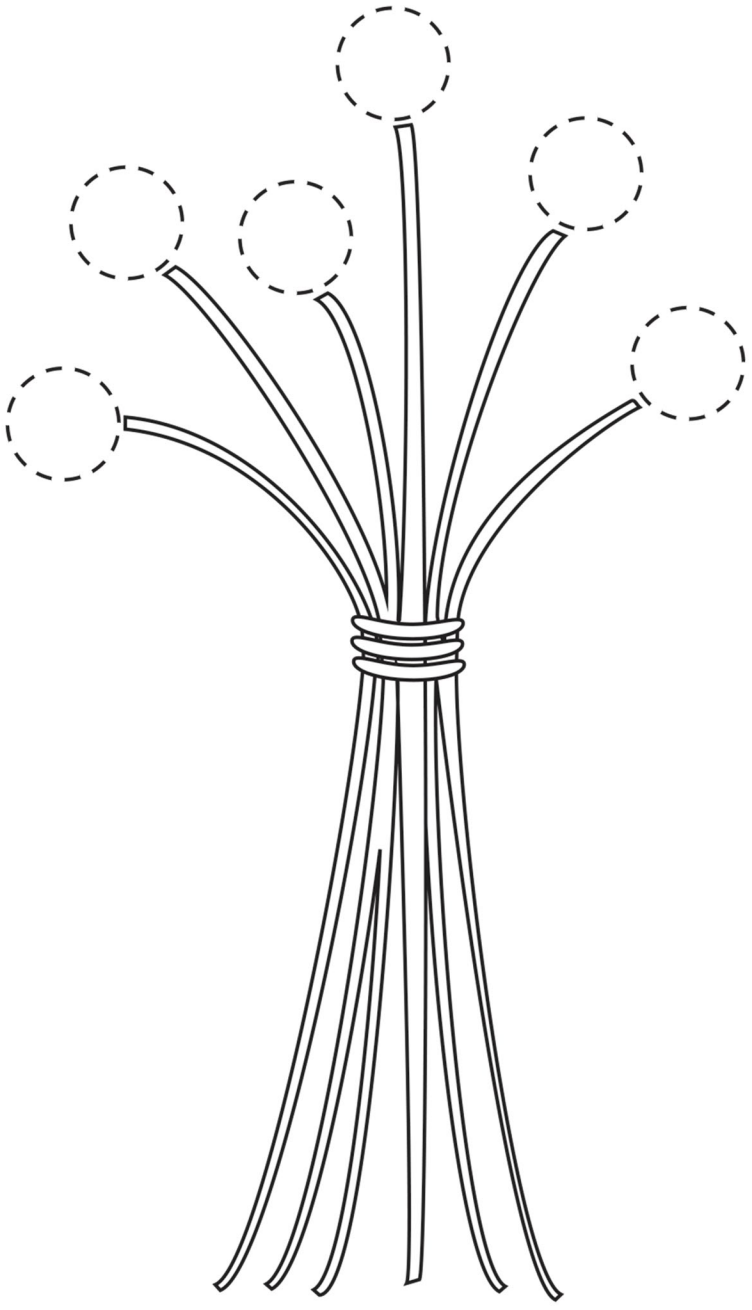
Queen Anne's Lace
Safety

floriography

Color and cut around these flowers to assemble into a bouquet on the next page! Glue or tape the flowers to the bouquet stems. You can use the key on the previous page to make a coded bouquet, or you can come up with your own flower code!

activity 1





binary images

Binary means “something having two parts”. For computers, those two parts are 1’s and 0’s called binary code. Computers turn all types of data into binary code through a process called encoding. Encoding is changing data from one form to another, such as turning a picture into 1s and 0s. Decoding is returning the encoded data to its original form.
We are going to explore using a binary code to encode pictures! Since we’re using binary code, we only have two options. For pictures, our binary system is going to be made up of white squares and black squares. With only these two options we are going to encode pictures into numbers, decode numbers into pictures and create our own examples!

activity 2

Looking at the picture to the right, we can see that there are only two colors.

To encode this picture we need to represent the data in binary code. This means using 1s and 0s to represent our squares. 1 is going to represent our black square and 0 is going to represent our white square.

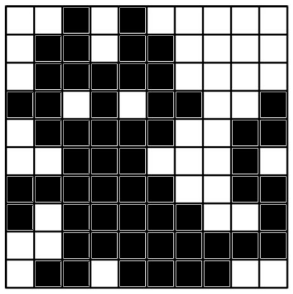
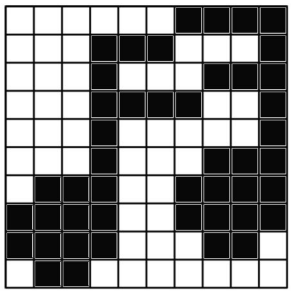
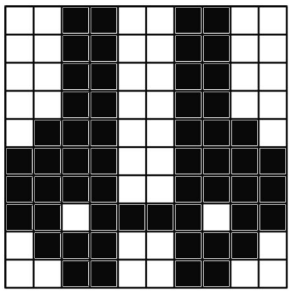
Using 1’s and 0’s we can encode the picture as so:

To decode our 1s and 0s we would run the process in reverse and change each 1 to a black square and each 0 to a white square.

binary images

Use the encoding examples below to encode the pictures!

Fill in the blank grid below each picture with the 1's and 0's that match the white squares and black squares to encode it

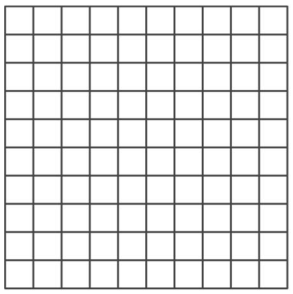
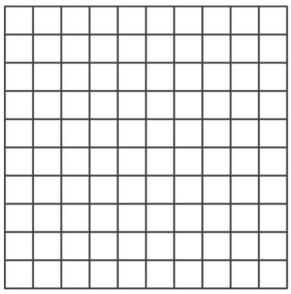
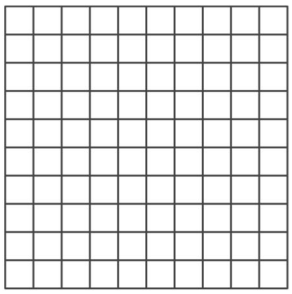
activity 2

. With the decoding examples decode the 0s and 1s back into a picture. Using the grids below fill in each square with a 1 and leave each square with a 0 blank to decode the data back to a picture.

0	0	1	1	1	1	0	0	0	0
0	1	1	0	1	1	1	0	0	0
1	1	1	1	0	1	1	1	0	0
1	1	1	1	0	1	1	1	0	0
1	1	1	1	1	0	1	1	0	0
1	1	1	1	0	1	1	0	0	0
1	1	1	1	1	1	1	0	1	0
1	1	1	1	1	1	0	0	0	1
0	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	0

0	0	1	0	0	0	0	1	0	0
0	0	0	1	0	0	1	0	0	0
1	1	1	1	1	1	1	1	1	1
1	0	1	1	0	0	0	0	1	1
1	1	1	0	0	0	0	0	0	1
1	0	1	0	0	0	0	0	0	1
1	1	1	0	0	0	0	0	0	1
1	1	1	1	0	0	0	0	1	1
1	1	1	1	1	1	1	1	1	1
0	1	0	0	0	0	0	0	1	0

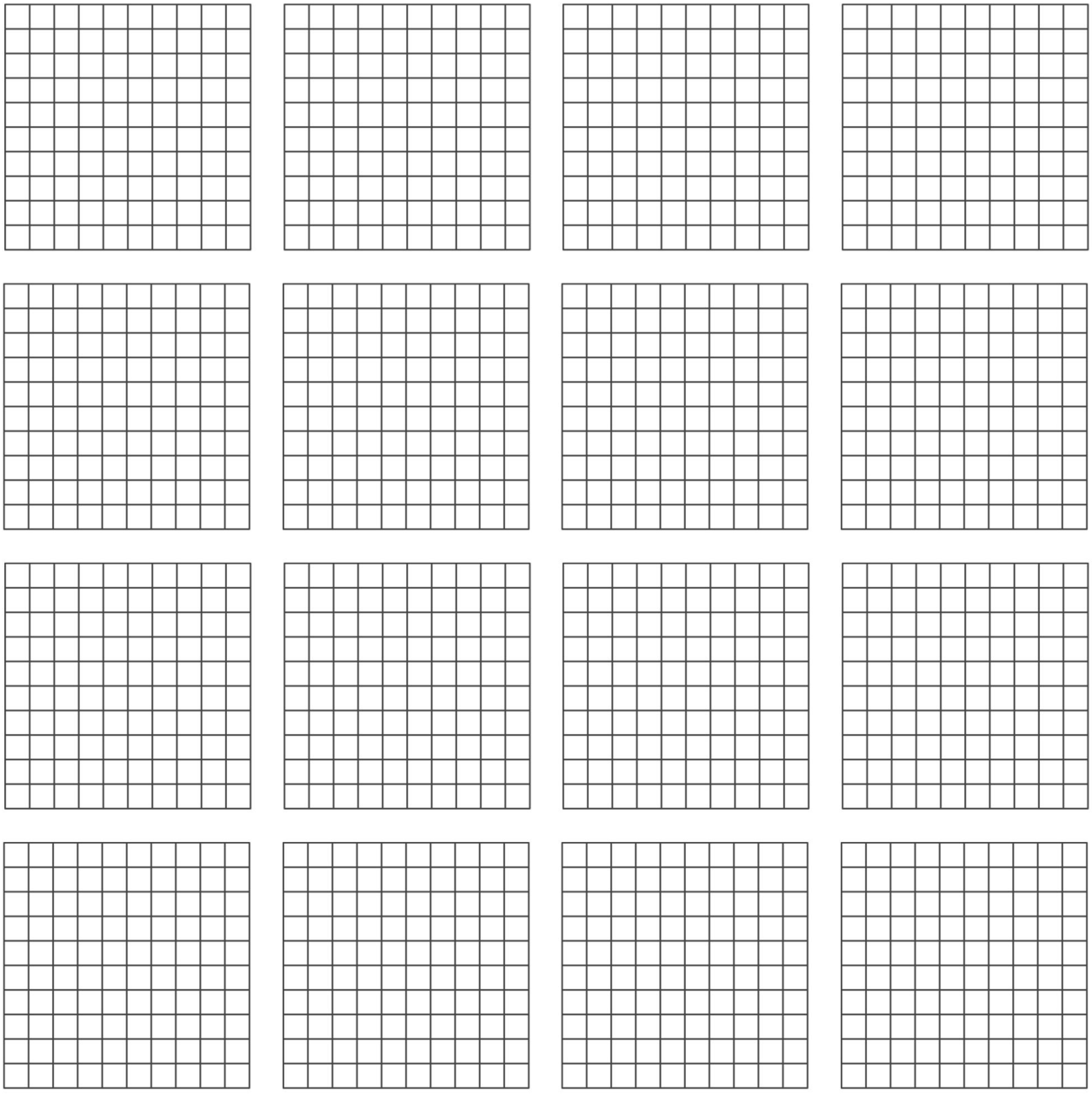
0	0	1	0	1	0	1	0	0	0
0	0	1	0	1	0	1	0	0	0
0	0	0	0	0	0	0	0	0	0
0	1	1	1	1	1	1	1	0	0
0	1	1	0	1	1	1	1	1	1
0	1	1	0	1	1	1	1	0	1
0	1	1	1	1	1	1	1	1	0
0	1	1	1	1	1	1	1	0	0
1	0	1	1	1	1	1	0	0	1
0	1	1	1	1	1	1	1	1	0

binary images

For more detailed pictures with different colors, we need to use a more advanced system than binary to encode them. Use the grids below to continue practicing with binary, or get creative and make an image with different colors to create your own encoding system! You can use numbers, letters, symbols or anything you want! To work even larger, use a sheet of graph paper.

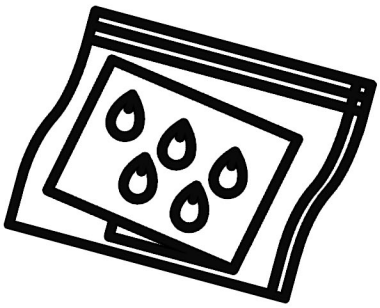
activity 2

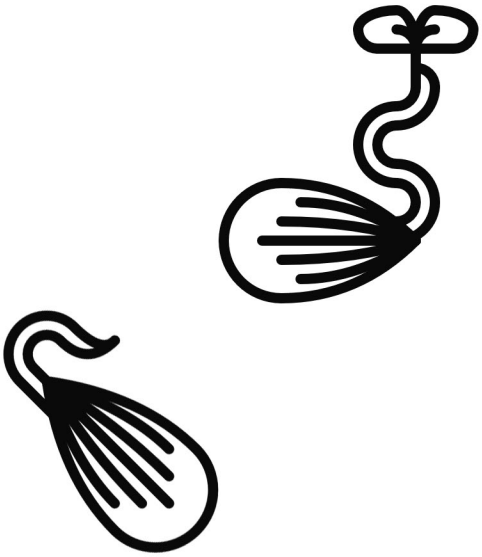


how to sprout sunflowers

activity 3

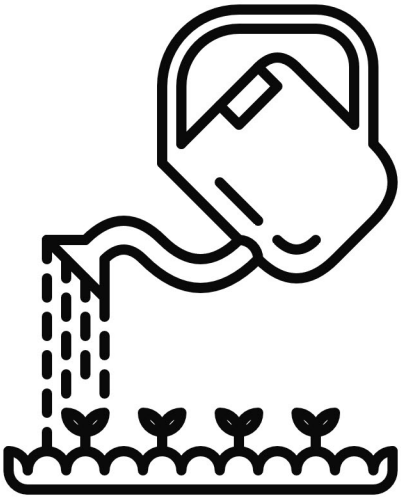
1. Your sunflower seed needs water, air, and sunlight to grow. Put a wet paper towel in a lunch baggie, then place the seed on the paper towel. Leave the baggie unsealed and place it on a window or windowsill. It should sprout after 2-3 days.

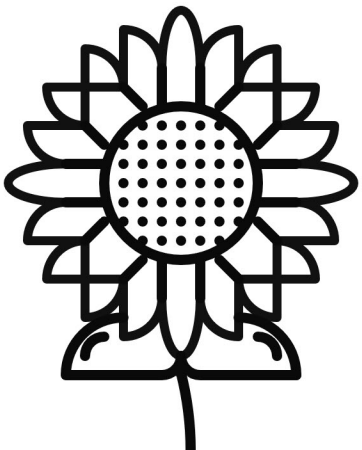




2. Once your sprout has roots you can put it in dirt. Sunflowers are super tall and sturdy plants! They like to have a lot of space to stretch out. If you want to grow your sunflower outside, pick a spot in your yard with at least a square foot of space. If you put it in a pot, make sure it's at least a foot deep and that the soil drains well: the pot should have a hole, or you can put pebbles in the bottom.

3. Let the soil mostly dry out before you water it again, probably once a week or so. Sunflowers need a lot of water, but if the dirt stays wet the roots won't be healthy.
After the flower blooms it will make new sunflower seeds that you can plant or eat! The petals will fall off and the seeds will be loose when they're ready to harvest.





Fun fact A sunflower in Germany grew over 30 feet tall!

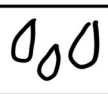
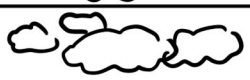
seed journal

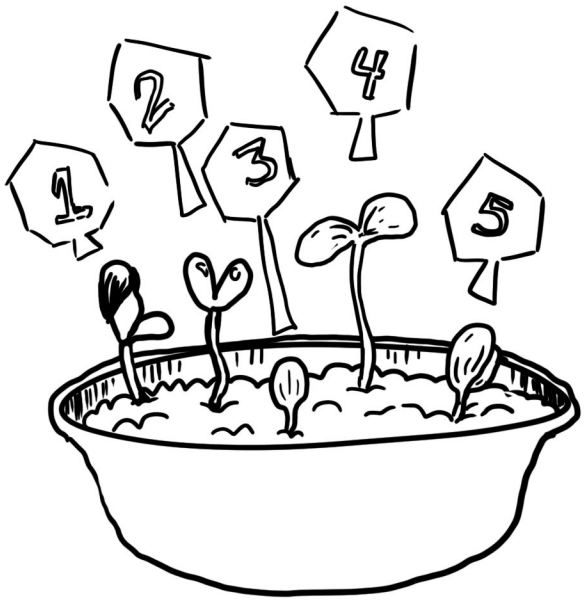
activity 3

It's fun to keep a journal of your plant's growth! As your seeds begin to sprout, you can collect data and chart their progress! The bottom half of this page is an example entry. Every day of the week, we marked the weather to show how much sunlight the seeds were getting and if we watered them or not. At the end of the week I drew a picture of all the progress the seedlings made!

You don't need to use our journal template, you can get creative and come up with your own format for charting plant data!

Week 3

Weather	Water
	
	
	
	
	
	



My plants

Week 1

Weather	Water

My plants

Week 2

Weather	Water

My plants

Week 3

Weather	Water

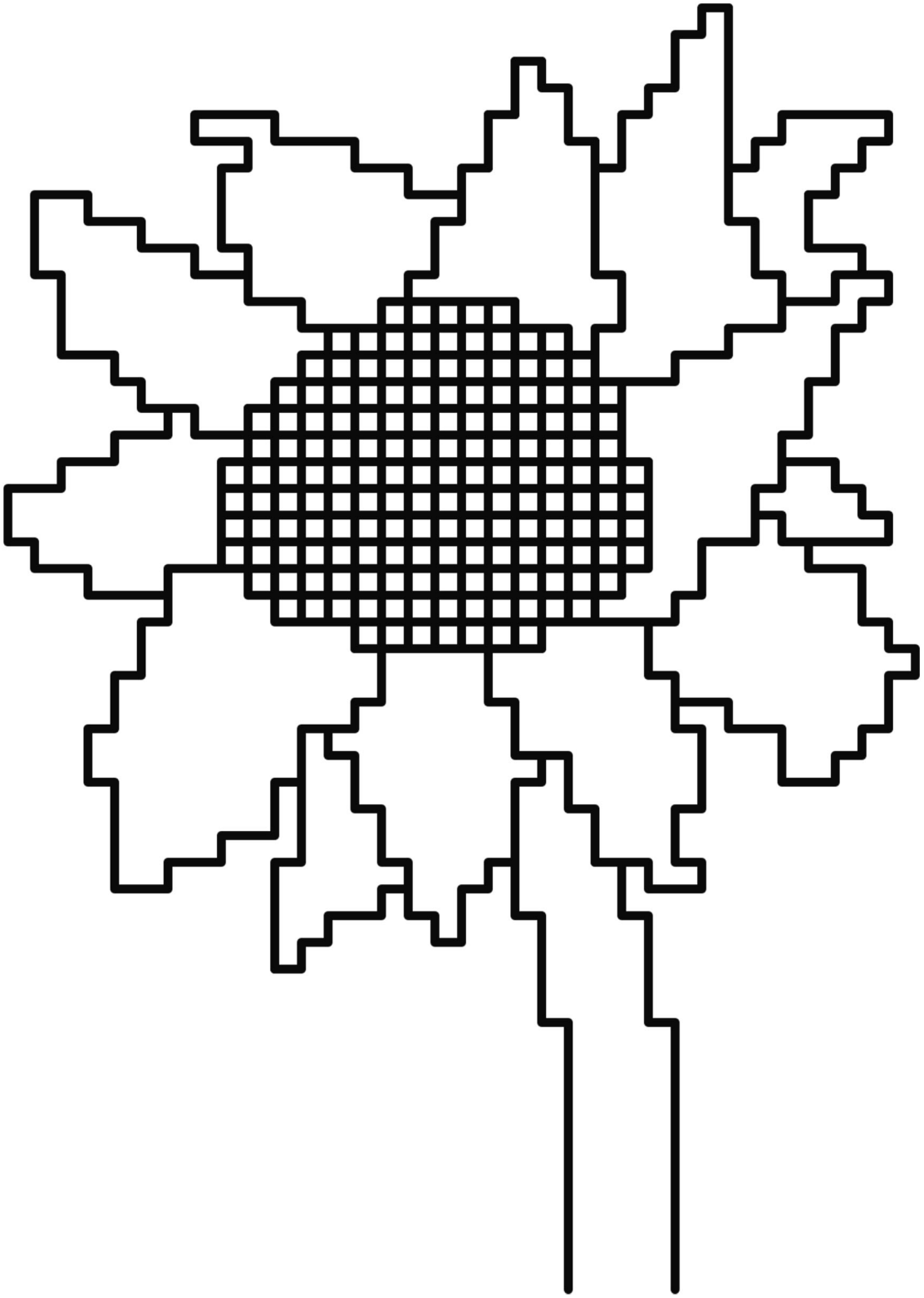
My plants

Week 4

Weather	Water

My plants

coloring page



resources

computer science classes and learning
adafruit - adafruit.com
hour of code - hourofcode.org
micro:bit - microbit.org

art & design
earsketch - earsketch.gatech.edu
gb studio - gbstudio.dev
makecode - makecode.com
piskelapp - piskelapp.com
scratch - scratch.mit.edu

educational games
lightbot - lightbot.com/flash.html

dear-data is an inspiring postcard pen pal project based around gathering and sharing data! Check it out at dear-data.com/theproject

thank you to **sneed's nursery** who helped provide the seeds in this issue!
sneedsnursery.com

codeVA
learn more about what we do at codevirginia.org

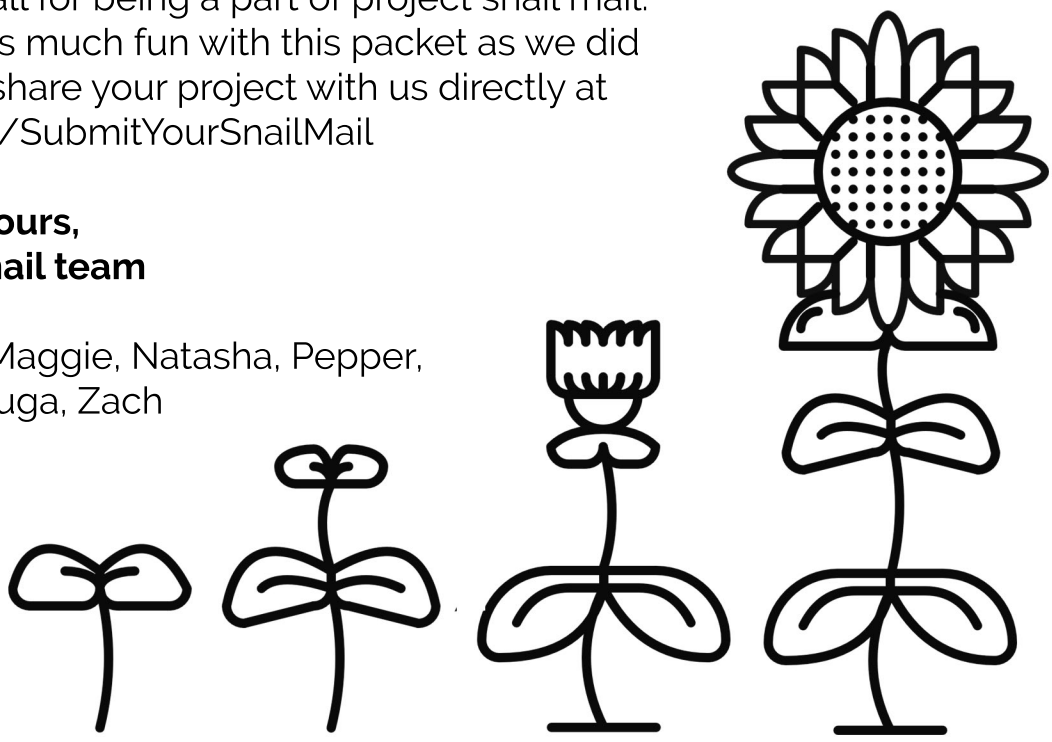
Enjoying Snail Mail?
Learn more about how we do it at
CodeVA.info/ProjectSnailMail

thank you!

Thank you all for being a part of project snail mail. If you had as much fun with this packet as we did creating it, share your project with us directly at codeva.info/SubmitYourSnailMail

Sincerely yours,
The snail mail team

CJ, Elaine, Maggie, Natasha, Pepper, Thomas, Wuga, Zach



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