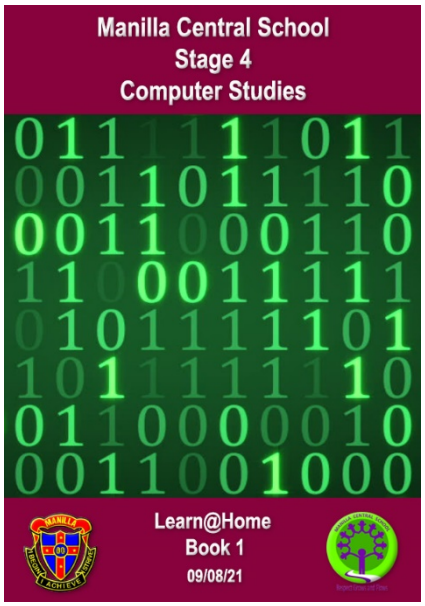
Manilla Central School
Stage 4
Computer Studies

Learn@Home
Book 1
09/08/21

Overview



Welcome to the Stage 4 Computer Studies learn@home lessons Book 1.

This booklet contains tasks that you can complete at home.

This Unit aims to develop your understanding of COMPUTER CODING AND PROGRAMMING.

All work will also be posted on Google Classroom.

- **Google Classroom code 7-8CS1 - vhtopmu**
- **Google Classroom code 7-8CSA - 3jjdkkm**

Work can be returned for marking and review in any of the following ways:

- 'turn in' as an attachment on Google Classroom under the booklet section
- Email to my email address
- Return with your learn@home pack for marking.

If attaching to Google Classroom:

- you could photograph your work with your phone and 'share' to *your* email address.
- Then download and attach when you submit on Google Classroom.

Remember your school email is **yourlogin.name@education.nsw.gov.au**

If attaching to an email to send to me:

- you could photograph your work with your phone and 'share' to *my* email address

I wish you all the best and hope to see you soon 😉

Mr James Galloway

Computer Studies

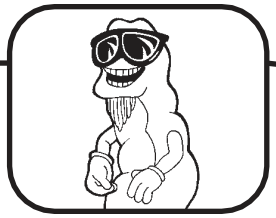
PS Feel free to email me on james.galloway@det.nsw.edu.au

First try Deciphering this code

Decipher means to convert a text written in code, or a coded signal into normal language.

Name _____

Date _____



Decoding Days

Use the code box to write the letters above the numbered spaces below.

Example: H E L L O

A	D	E	F	H	I	L	M	N	O	R	S	T	U	W	Y
⠁	⠙	⠑	⠋	⠓	⠊	⠇	⠍	⠝	⠕	⠗	⠎	⠞	⠥	⠺	⠽

1. _____ _____ _____ _____ _____ _____

2. _____ _____ _____ _____ _____ _____ _____

3. _____ _____ _____ _____ _____ _____

4. _____ _____ _____ _____ _____ _____

5. _____ _____ _____ _____ _____ _____ _____ _____ _____

6. _____ _____ _____ _____ _____ _____ _____ _____

7. _____ _____ _____ _____ _____ _____ _____ _____

Introduction to Coding and Programming. Part 1

Binary is a code that represents numbers using a series of 0s and 1s.
Codes are like a secret language that computers, apps and phones speak.

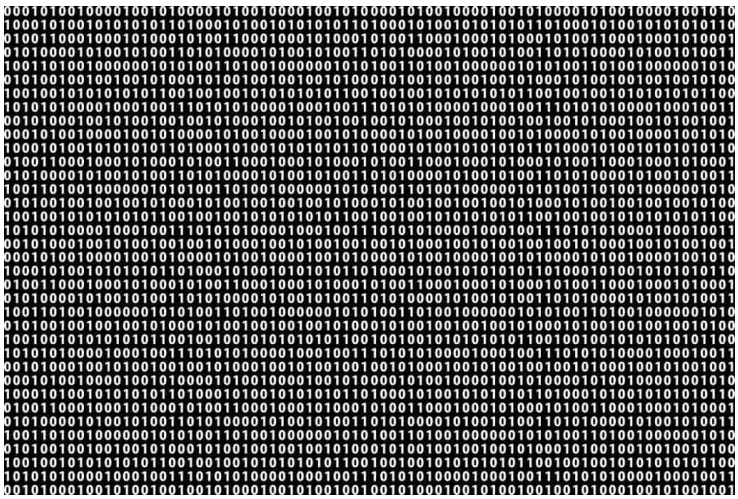
You may think the computer is the smartest thing in the world, but really computers are just super good at following incredibly detailed instructions.

We use binary code to tell our computers what we need from them.
In our first activity, we are going to be using Binary code to create a code of the alphabet.

What does binary mean?

The word binary comes from “Bi-” meaning two.
We see “bi-” in words such as “bicycle” because it has two wheels.

In binary coding, there are only two digits 0 and 1.
It’s hard to imagine that computers can break down all of their complex functions into simple strings of 0s and 1s!



What is a bit?

For example, 110100 is a Binary Number.
A “bit” is a single binary digit. Either ‘1’ or ‘0’. So……. The number 110100 has 6 bits.

All data in a modern digital computer is stored and transmitted as a series of zeros and ones. Everything from our apps, photos and computer programs is transmitted in a series of zeros and ones.

Introduction to Coding and Programming. Part 2

1

Binary Code

Questions to switch on your thinking…

- What is a “code” usually used for?
- What does the prefix “bi” mean?

2

Binary Code

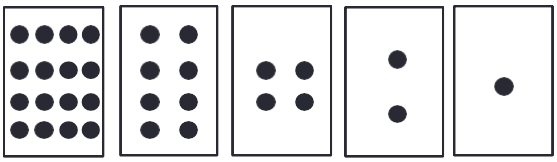
- A binary code can represent writing.
- Binary code is also the language that tells a computer what to do or to follow an instruction.
- Also can be known as “Computer Programming Language”
- Each instruction or letter of our alphabet can be written by just using combinations of just the numbers 0 and 1!

Devices that use Binary Code today

- Computers
- Tablets
- Smart Phones
- CDs
- DVDs
- Mobile Phone Calls
- Long Distance Phone Calls

3

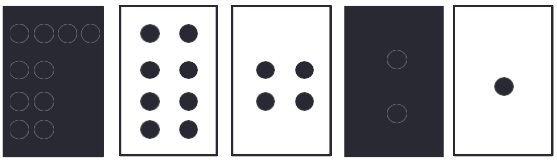
How to use Binary Code to represent numbers



- Using these cards above you can create any number from 0 to 31
- When laying the binary codes out they must always be in this order.
- Biggest (16) on the left through to the smallest (1) on the right.

4

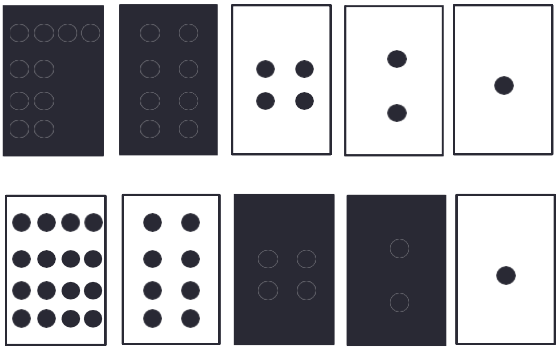
How to make a number



- By flipping cards over you leave only a certain amount ofdots exposed.
- These cards are showing the number 13. 8+4+1

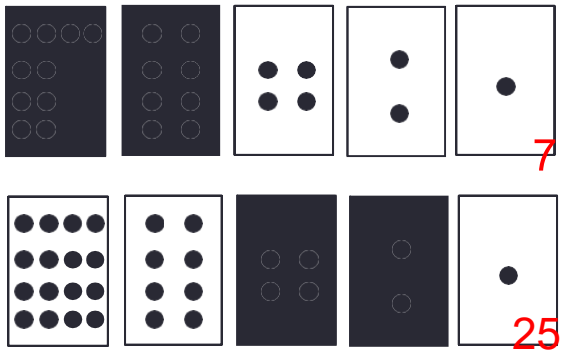
5

Have a go at guessing these two numbers…



6

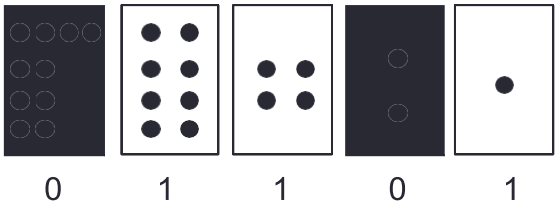
Have a go at guessing these two numbers…



7

How to write it using 0 & 1 Binary Code

here are our binary cards from the number 13 before

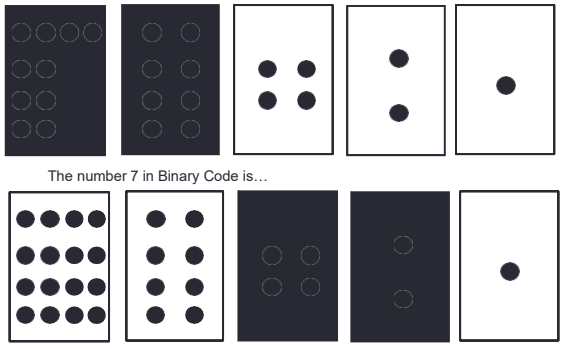


0 1 1 0 1

- A card that is face down is considered a 0
- A card that you can see its dots is a 1
- The Binary Code for 13 is 01101

8

Here are the cards from before, what are they in Binary Code?



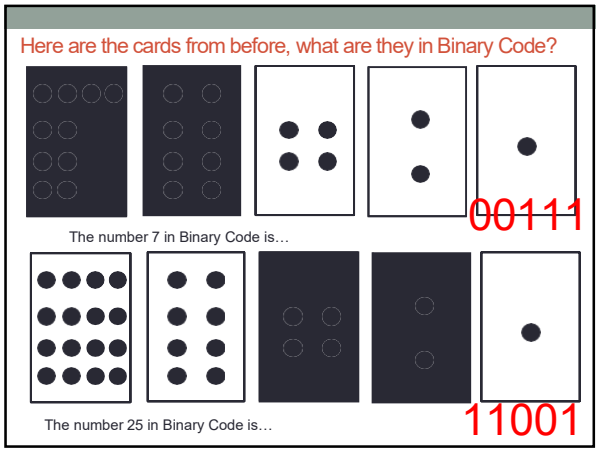
The number 7 in Binary Code is…

The number 25 in Binary Code is…

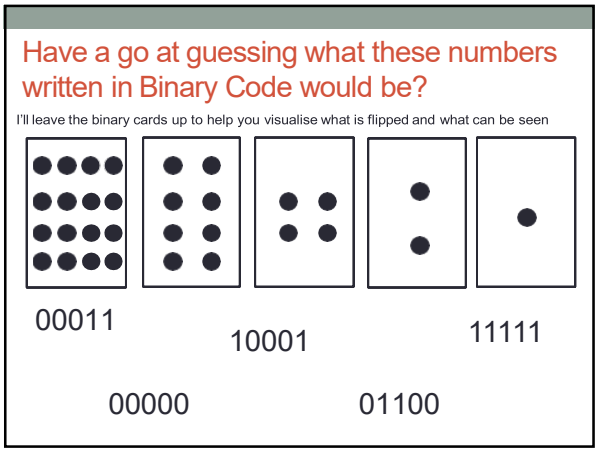
9

7 in Binary Code = _____

25 in Binary Code = _____



10



00011 =

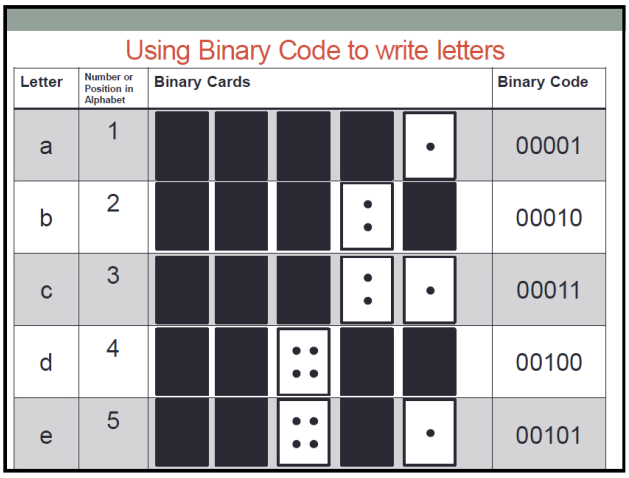
00000 =

10001 =

01100 =

11111 =

11



Binary code can be used to write letters of the alphabet

12

ACTIVITY

Make your own binary alphabet table.

By having your own binary alphabet table you will be able to go back to it to check on letter/code relationships when you need to.

See table below.

13

You can use Binary Code to spell out words.

Bad = 00010,00001,00100

B A D

Using commas help keep the set of 5 numbers/cards together is easier for us, Binary Code Beginners, to understand.

14

Spelling ACTIVITY

1. Find a spelling partner.
2. Exchange spelling word lists.
3. Select 5 of your partners spelling words and translate them into Binary Code Numbers.
4. Give them their sets of Binary Code Numbers and they have to decode and report back which 5 of their spelling words you selected.

Reminders:

- ✓ Make sure you spell the words correctly otherwise it may be confusing for them when they are decoding.
- ✓ Separate each of the binary codes by a comma otherwise all the zeroes and ones will be all clustered together.
- ✓ Separate each spelling word onto a different line or area so they can clearly see where one spelling word starts and finishes.

15

Eg 3rd of May 2000 = 03/05/2000

03052000 = 0 3 0 5 2 0 0 0

= 00000, 00011, 00000, 00101, 00010, 00000,00000 00000

Maths ACTIVITY

Creating your birthday using Binary Code

1. Layout your birthday in the format of DD/MM/YYYY. For example: 7th of April 2004 becomes 07042004.
2. Translate this to Binary Code Numbers.

00000, 00111, 00000, 00100, 00010, 00000, 00000, 00100

Optional Extra – Turn this into a colour code

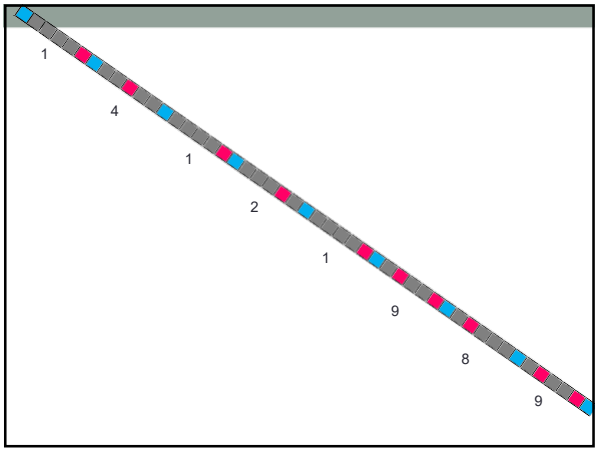
Pick three colours that you can clearly remember represent 0,1 and commas.

I pick grey for 0, pink for 1 and blue for commas.

You can create a bracelet or cube line that represents your birthday.

It would look something like the picture below. What is my birthday?

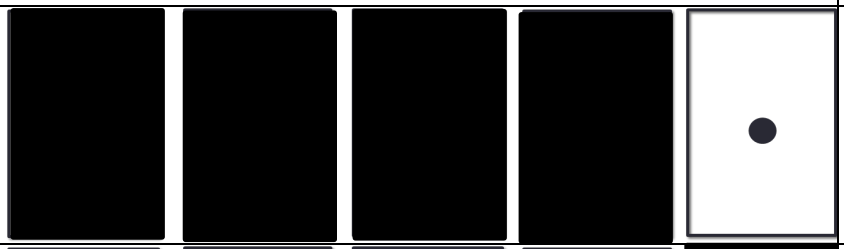
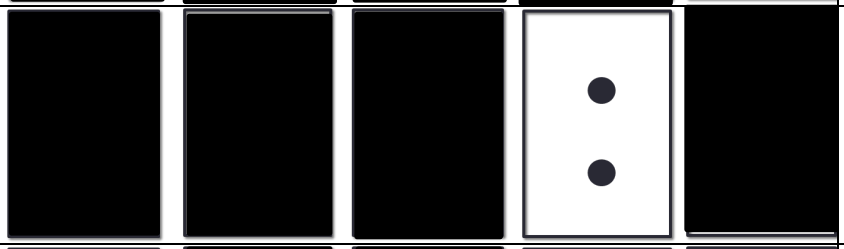
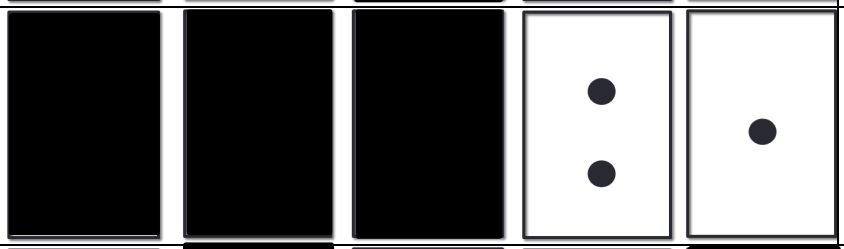
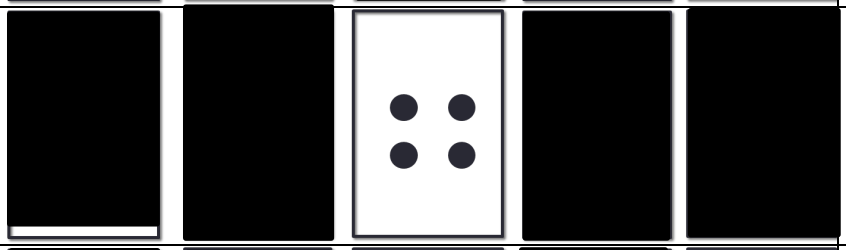
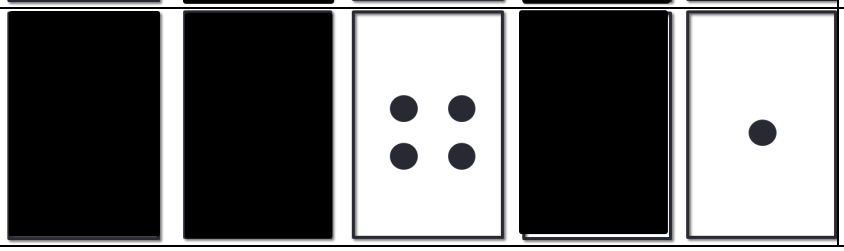
16

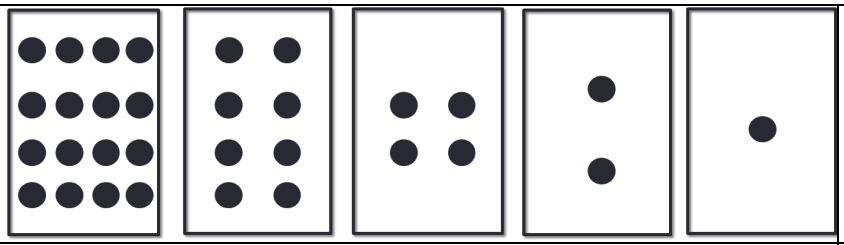
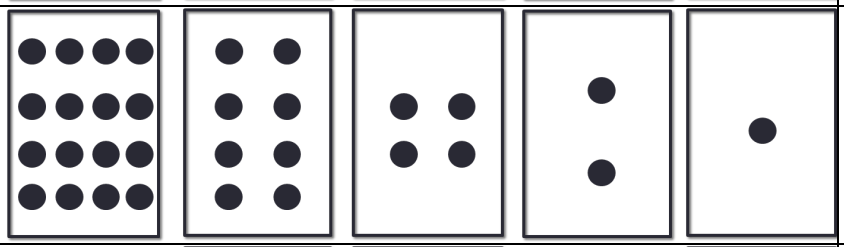
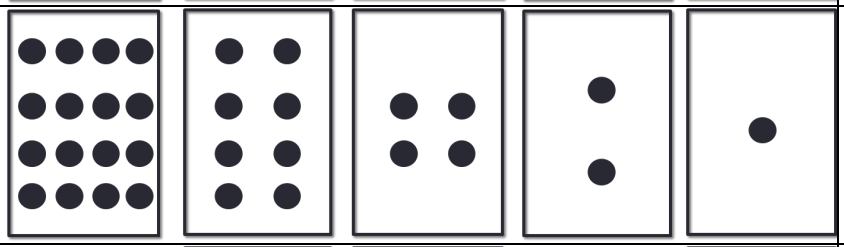
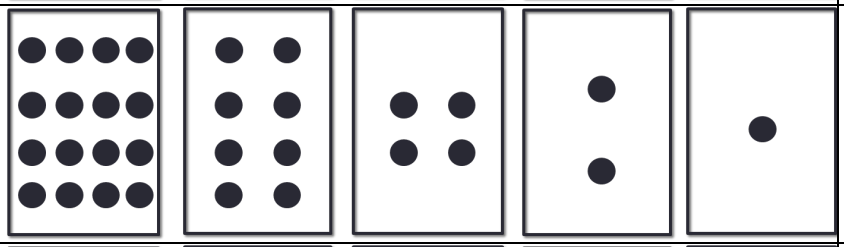
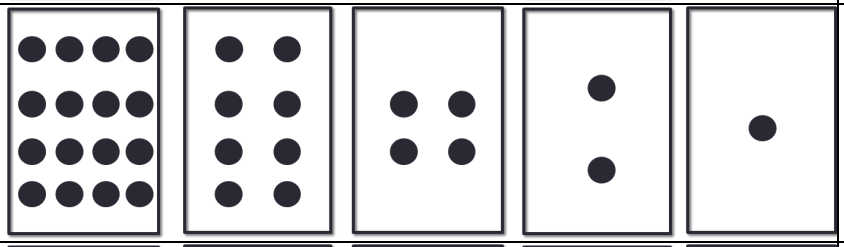
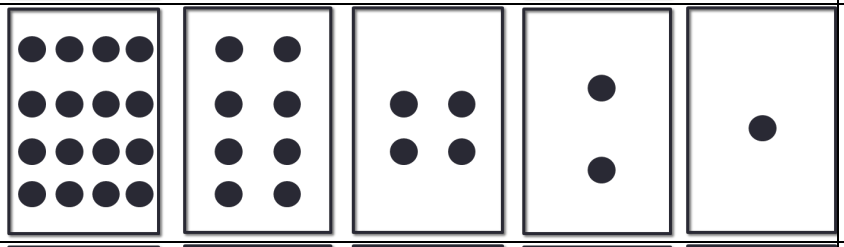
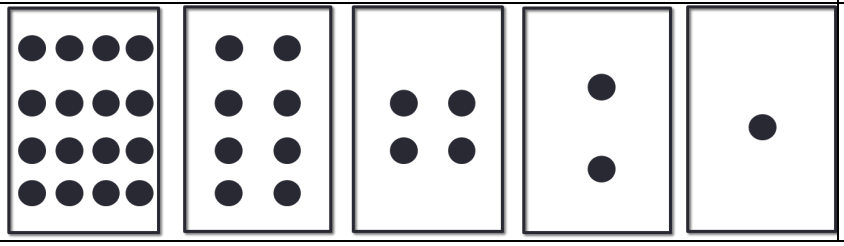


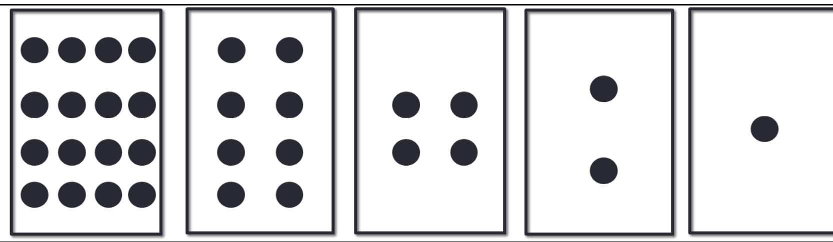
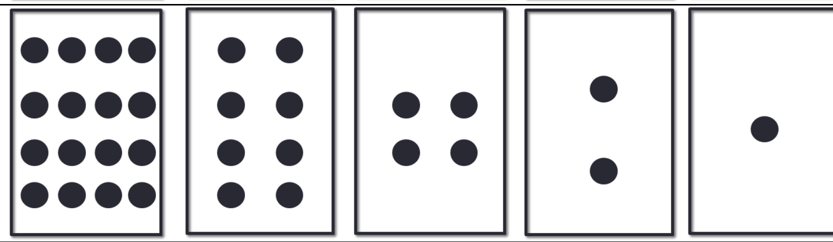
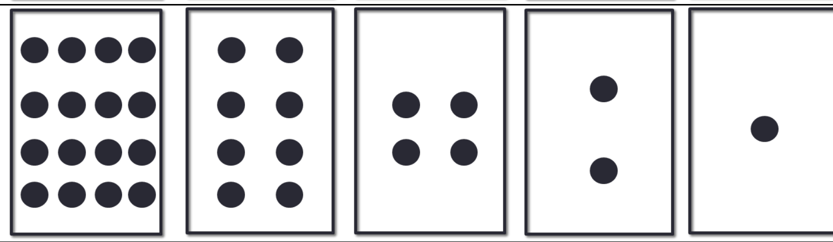
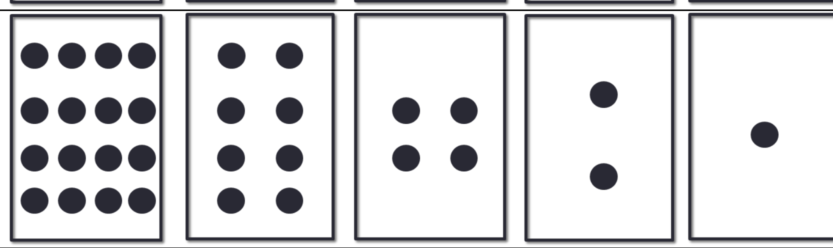
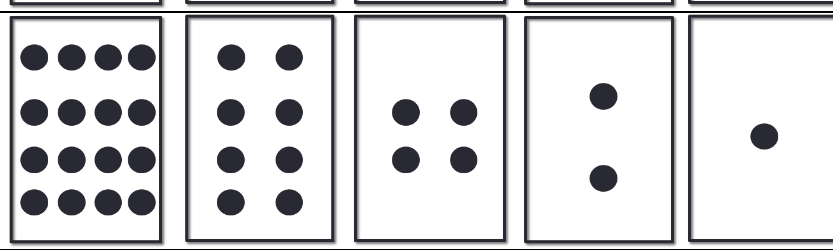
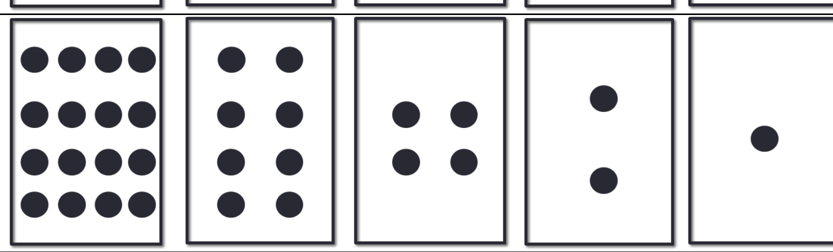
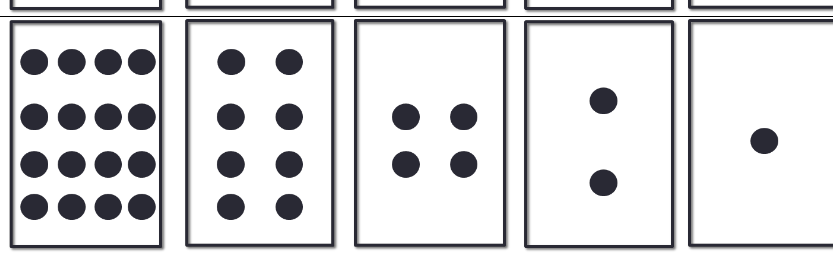
17

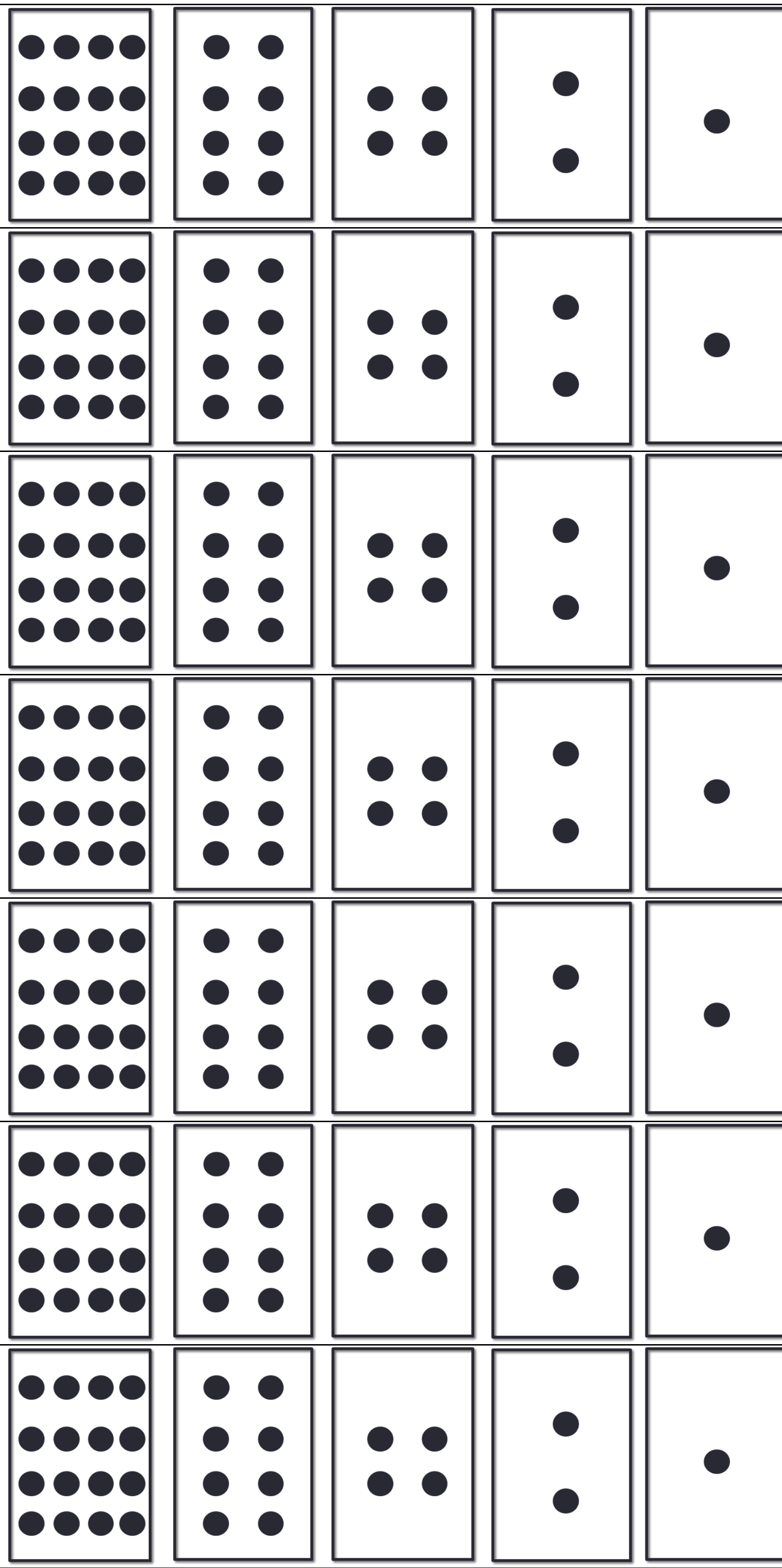
My Binary Alphabet

Complete the full alphabet with this table using what you've learnt about Binary Coding.

Alphabet Letter	Position in Alphabet	**Binary Code Cards** Shade over the cards that need to be "turned over"	Binary Code Numbers
A	1		0 0 0 0 1 As 'A' is the first letter of the alphabet
B	2		0 0 0 1 0 As 'B' is the second letter of the alphabet
C	3		0 0 0 1 1 As 'C' is the third letter of the alphabet
D	4		0 0 1 0 0 As 'D' is the fourth letter of the alphabet
E	5		0 0 1 0 1 As 'E' is the fifth letter of the alphabet

F	**6**						**0 1 0 0 0** As 'F' is the sixth letter of the alphabet
G	7						**0 0 1 1 1** As 'G' is the seventh letter of the alphabet
H							
I							
J							
							
							



Now send Mr Galloway an email message

in binary numbers to show your understanding. 😉

Take a look at this ASCII Code: Character to Binary.

It is used to convert characters (letters) to binary numbers. Can you see the patterns for capitals and lower case letters.