Arduino Programming Cheat Sheet - #101

1. The bare minimum sketch

```
void setup()
{
  //comment: do this bit once
}

void loop()
{
  //comment: do this forever
}
```

- [setup] and [loop] are required in every sketch. They are known as *structures*.
- curly brackets mark the start and end of a *structure*
- the word [void] is required just cos!
- The curly brackets are also required just cos!
- You can also see here how a comment is written using [//]. Encourage the kids to comment every line of code.

2. Switching on PIN

```
void setup()
{
  pinMode(13, OUTPUT);
  digitalWrite(13, HIGH);
}

void loop()
{
  //comment: do nothing else
}
```

- Step one is to specify that a pin number is about to receive power. We use a special function call [pinMode] and inside the curly brackets write the pin number followed by the word [OUTPUT].
- Step two is to switch that pin on. To do this we use another special function call [digitalWrite] and inside the curly brackets write the pin number followed by the word [HIGH].
- Pin number 13 on the Arduino is special in that it has a tiny light connected to it. You will see this come on if you run this code.
- If you now connect one side of an LED to pin 13 and the other to pin marked GND …guess what!

3. Flash an LED

```
int led = 13;

void setup()
{
  pinMode(led, OUTPUT);
}

void loop()
{
  digitalWrite(led, HIGH);
  delay(1000);
  digitalWrite(led, LOW);
  delay(1000);
}
```

- Step one: specify that a pin number is about to receive power using [pinMode] as seen in item 2.
- Step two: switch that pin on using [digitalWrite] as seen in item 2.
- Step three: wait a moment. We do this by calling a special function called [delay] and inside the curly brackets we specify how many milliseconds to wait. Without the delay the eye would not perceive the changes.
- Step four: switch the pin off using [digitalWrite] as seen in item 2 except this time use the word [LOW].
- Step five: wait another moment using [delay]
- The code for steps two to 5 will execute repeatedly because they are inside the structure [loop].
- In the first line on this sketch we "declare a variable". Here we are saying that every time the word *led* is used it means the number 13. Instead of led we can use any word that is not a reserved (coloured).