

**Specifications for grade 7, 8 and 9 Coding and Robotics Kits**  
**20 Coding and Robotics Kits and 20 Tablets and 2 Laptop per school for 1000**  
**Grade 7 schools and 569 Grade 8 and 9 schools**

No	Qty and Item	Description (DIMENSIONS TO BE SPECIFIED)
1	1 x Arduino Uno R3 (EM/Microbit/Raspberry Pi/Powerfull microcontroller)	popular microcontroller board to build electronic projects
2	1 x light diffuser acrylic box	a container with sheets of acrylic to diffuse light
3	1 x RGB Light box	RGB is an acronym for the colors red, green and blue miniature lights
4	1 x gears	is a simple machine with teeth that increases the force needed to push or pull something.
5	1 x USB Cable	used mostly to connect computers to peripheral devices such as cameras, camcorders, printers, scanners, and more
6	1 x breadboard	A thin plastic board used to hold electronic components (transistors, resistors, chips, etc.) that are wired together.
7	1 x buzzer	A buzzer or beeper is an audio signal device, which may be mechanical, electromechanical, or piezoelectric.
8	1 x relay	relays are electrically operated switches. It consists of a set of input terminals for a single or multiple control signals
9	1 x 8 segment LED	The 8 SEG LED board enables you to easily add four 8 segment digits to your device. It is ideal for applications such as displaying the digits and/or time
10	10 x LED's normal	a light-emitting diode (LED) is a semiconductor device that emits light when an electric current is passed through it
11	1 x RGB LED	a light-emitting diode (LED) is a semiconductor device that emits light when an electric current is passed through it. RGB- Red Green and Blue LEDs
12	1 x 10 k potentiometer	a potentiometer is a resistor with one variable end
13	1 x IR receiver	An IR receiver can detect bursts of infrared light sent by a common remote controller.
14	1 x Remote controller	A remote control can allow operation of devices that are out of convenient reach for direct operation of controls.
15	1 x joystick module	Joystick module is similar to analog joysticks found in gamepads.
16	1 x LED screen	A liquid crystal display is a flat-panel display or other electronically modulated optical device.
17	1 x H-bridge	An H-bridge is an electronic circuit that switches the polarity of a voltage applied to a load. These circuits are often used in robotics
18	1 x stepper motor with ULN2003 driver IC	ULN2003 IC is one of the most commonly used Motor driver IC generally used when we need to drive high current loads using digital logic
19	1 x NPN transistor	A transistor is a semiconductor device used to amplify or switch electronic signals and electrical power
20	1 x push buttons	A push button is a simple type of switch that controls an action in a machine or some type of process. Most of the time, the buttons are plastic or metal.
21	1 x shift register IC	Shift registers are low-level logic devices commonly used to convert data in the form of digital logic signals between serial and parallel formats.
22	1 x light sensor (LDR)	Photoresistors, also known as light dependent resistors (LDR), are light sensitive devices most often used to indicate the presence or absence of light, or to measure the light intensity.
23	1 x temperature sensor	A temperature sensor is a device used to measure temperature.
24	10 x 10k resistors	A resistor is a passive two-terminal electrical component that implements electrical resistance as a circuit element. In electronic circuits, resistors are used to reduce current flow, adjust signal levels, to divide voltages, bias active elements, and terminate transmission lines
25	10 x 220k resistors	It is a 220 Ohm resistor
26	1 diode	diode is a semiconductor device that essentially acts as a one-way switch for current. It allows current to flow easily in one direction, but severely restricts current from flowing in the opposite direction.
27	1 x servo	servo motor is related to the term servomechanism, which means that the motor is constantly monitored to control its motion.
28	1 x 9V battery connector	It is a connector for a 9 Volt battery
29	1 x 20 headers row	headers are a type of electrical connector. 20 headers row will allow 20 connections
30	15 x jumper cables	an electrical wire, or group of them in a cable, with a connector or pin at each end (or sometimes without them – simply "tinned"), which is normally used to interconnect the components of a breadboard
31	1 x ultrasonic sensor	ultrasonic sensors are devices that generate or sense ultrasound energy
32	1 x keypad	A keypad is a block or pad of buttons set with an arrangement of digits, symbols, or alphabetical letters.
33	1 x Robot Chassis	A chassis of a robot will carry the IC-motors, batteries, electronics, mounting supports, and more
34	2 x motors with wheels	an electric motor that is incorporated into the hub of a wheel and drives it directly.
35	1 x caster wheel	It is an assembly that contains both a wheel and a bracket for it.
36	1 x motor brackets	motor brackets providing easy and secure mounting for motors, etc. used in your projects
37	37 screws to fasten the motors and wheels	a fastener used to join things together
38	2 x axles	a rod or spindle (either fixed or rotating) passing through the centre of a wheel or group of wheels
39	16 pulleys	a simple machine, helps to perform work by changing the direction of forces and making easier the moving of large objects.
40	20 x Learners Tablets	10-inch Microsoft Tablet equipped with Bluetooth and Wi-Fi Capabilities. Tablet must have free coding and robotics software installed as per C&R CAPS that can function offline as well
41	2 x Teachers Laptops	Minimum Requirements: Core i5 8th Generation CPU; 8GB DDR 4 Ram; 500gb HDD; 208 Dedicated Graphics card; 15.6" HD 1366x768 Anti-Glare Screen; Intel HD Graphics 620; 802.11 ac Wireless LAN; Bluetooth 4.0 ; 720p HD Camera; Lap Top must have free coding and robotics software installed as per C&R CAPS that can function offline as well. Software must be licensed.

Dimensions of Item  
differs in each microcontroller between 8 bits, 16 bits, 32 bits and even 64 bits.  
Sheet Size: 2500 x 1250mm; Thickness: 3mm; Colour: Clear  
one box containing miniature Red Green and Blue light bulbs  
gears are measured by the number of tooth they have ( 30 teeth and 60 teeth gears)  
+ 30 cm usb cable  
8 cm x 12 cm  
length 15 mm diameter 30 mm  
capable of handling 0-5 Volts  
5mm  
5mm  
15 mm shaft length  
diameter +- 3mm  
5cm x 35cm  
Approx. 95 x 60 x 100mm  
outline size of 80.0 x 36.0 mm and the maximum thickness is 13.2 mm  
Dimensions: 43 x 43 x 96mm.  
3.5 x 3.5 x 1 cm  
5 mm in width and 20 mm in length.  
Material: Plastic; Dimensions: 6 x 5.0mmØ  
10mm x 20 mm  
available in 5.8, 12 and 25 mm dimensions as stand alone items  
15.5 mm x 12mm x 5.5mm  
elements, and terminate transmission lines  
59.42mm x 2.69mm  
59.42mm x 2.69mm  
22.2mm x 11.8mm x 31mm  
6.7 x 3.2 x 2 cm  
2.5mm pitch  
4.6 inch  
45mm x 20mm x 15 mm  
4cm x 8.8cm  
4cm x 8.5cm  
47mm diameter wheels  
Caster Wheel 8mm Diameter has a height of 32 mm.  
26.5 x 25 x 11mm  
8mm long  
comes in sizes 80mm 132 mm 164mm long  
different sizes 22 mm 47mm 75 mm  
10 inch tablets



1. 2 User manuals with worksheets and answers  
2. 10 workbooks for learners  
3. All items to be packaged and to be labelled  
4. a user guide with pictures and functions of all items to be included  
All items must be compatible to the software procured for coding and robotics  
5. 1 Large Mobile Plastic Container to house kit  
6. 1 USB containing 6 videos demonstrating the usage of the kit as well as safety measures in usage of kits as pertaining to activities in the Draft CAPS 2 activities per grade for grades 7, 8 and 9  
7. Mediation session to mediate the kit to all provincial Technology Coordinators in a central venue prior to distribution of kits  
8. Mediation video on USB

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