

SNAP CIRCUITS

GAME-PLAY

PLAY 20+ GAMES

Learn about Electricity

Create Sound & Light

Easy Snap Construction





Snap Circuits® uses building blocks with snaps to assemble real electronic circuits. Each block has a function: switch, light, battery, different length wire blocks, and more! With easy-to-follow project manual, **simply snap together to create working circuits!**



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Go to <https://shop.elenco.com/consumers/snap-circuits-arcade.html> to download projects 62-203



Installing batteries:

- Remove the safety cover from the battery holder (if your holder has one) with a Phillips head screwdriver
- Insert three (3) 1.5V AA batteries (not included) in the holder. Be sure to orient the battery "+" as marked in the holder.
- Replace the cover (if your holder had one). When installing a battery, be sure the spring is compressed straight back, and not bent up, down, or to one side.
- Battery installation should be supervised by an adult.

What is electricity? Nobody really knows. We only know how to produce it, understand its properties, and how to control it. Electricity is the movement of sub-atomic charged particles (called **electrons**) through a material due to electrical pressure across the material, such as from a battery.

Important Safety Notes for Parents and Kids

- **Adult Supervision:** Because children's abilities vary so much, even with age groups, adults should exercise discretion as to which experiments are suitable and safe. Make sure your child reads and follows all of the relevant instructions and safety procedures, and keeps them at hand for reference.
- **Warning: Choking Hazard-** Small parts. Not for children under 3 years of age.
- **Warning:** This product produces flashes that may trigger epilepsy in sensitized individuals.
- **Warning: Shock Hazard -** Never connect Snap Circuits® to the electrical outlets in your home in any way!
- **Warning:** Always check your wiring before turning on a circuit. Never leave a circuit unattended while the batteries are installed. Never connect additional batteries or any other power sources to your circuits.
- Save the packaging and instructions. They contain important information.

Helpful Symbols:
Look for these symbols throughout the manual.



GENERAL INFORMATION
•Definitions
•"How it works?"



SNAP CIRCUITS
Technical information using your parts.



ADULT ASSISTANCE REQUIRED
Get an adult to help with your build



Batteries:
X3



- Use only 1.5V AA type, alkaline batteries (not included).
- Insert batteries with correct polarity.
- Do not mix old and new batteries.
- Remove batteries when they are used up.
- Do not mix alkaline, standard (carbon-zinc), or rechargeable (nickel-cadmium batteries).
- Do not connect batteries or battery holders in parallel.
- Do not short circuit the battery terminals.
- Never throw batteries in a fire or attempt to open its outer casing.
- Batteries are harmful if swallowed, so keep away from small children.
- Non-rechargeable batteries should not be recharged. Rechargeable batteries should only be charged under adult supervision, and should not be recharged while in the product.

Ready for some fun? Here is a list of games you can build then play!

Summary of Games

#	Name	Sample Project	Description	#	Name	Sample Project	Description
1	Arcade	4	Every few seconds it randomly turns on snaps 1, 4, & S-OUT, or plays a tune, or changes the LED display. Used in many projects.	12	Home Run Derby Game	15	A baseball "pitch" occurs where the red, yellow and then green LEDs light up in sequence but at different speeds. You try to press a button at the right moment to "hit" the pitch.
2	Fast Arcade	5	Same as Game 1 but changes faster.				
3	Faster Arcade	5	Same as Game 2 but changes even faster.				
4	Lucky Doubles	9	Rolls dice on the display, doubles plays a winning tune.	13	Baseball Game	16	Same as game 12, but has "outs".
5	Lucky Sixes, Unlucky Ones	26	Rolls dice on the display, 66 plays a winning tune and 11 plays a losing tune.	14	Memory Game (very easy)	28	A sequence of lights flash, and you try to repeat the order by pressing buttons.
6	Risk & Reward	27	Game based on rolling dice on the display.	15	Memory Game (easy)	29	Same as game 14, but the sequence is faster.
7	3 Second Hold	10	Timing game based on holding a button down for 3 seconds.	16	Memory Game (medium)	30	Same as game 14, but the sequence is faster.
8	5 Second Hold	11	Same as Game 7 but for 5 seconds.	17	Memory Game (hard)	31	Same as game 14, but the sequence is faster.
9	10 Second Hold	12	Same as Game 7 but for 10 seconds.	18	Memory Game (progressive)	32	Same as game 14, but the sequence gets faster as you play it.
10	20 Second Hold	13	Same as Game 7 but for 20 seconds.	19	Twenty-One	14	A game based on the card game Blackjack.
11	Numbers & Letters	24	Cycles through letters & numbers that can be shown on the display.	20	Binary Coded Decimal	34	Uses LEDs to show how numbers 1-7 can be displayed in binary, which has only 2 states.
				21	Changing Speed	25	Turns snaps 1 & 4 on/off at varying speed. Snaps 1 & 4 are always in opposite states. Used in many projects.



Model SC-GMPY

PARTS LIST

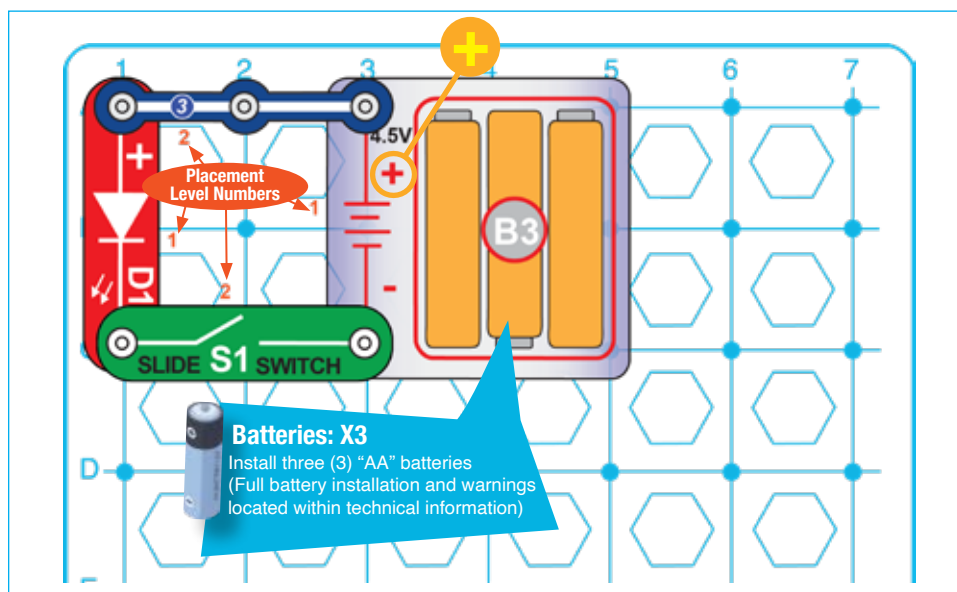
QTY.	ID	NAME	Part #
☐ 1		BASE GRID	6SCBGM
☐ 4	1	1-snap wire	6SC01
☐ 5	2	2-snap wire	6SC02
☐ 2	3	3-snap wire	6SC03
☐ 5	5	5-snap wire	6SC05
☐ 1	B3 B3B	3ABattery holder	6SCB3
☐ 1	D1	Red LED	6SCD1
☐ 1	D2	Green LED	6SCD2
☐ 1	D10	Red/Yellow LED	6SCD10
☐ 1	SP	Jumper Wire Orange 8"	6SCJ3A
☐ 1	SP	Jumper Wire Yellow 8"	6SCJ3B
☐ 1	SP	Jumper Wire Green 8"	6SCJ3C
☐ 1	S1	Slide Switch	6SCS1
☐ 1	S8	Selector	6SCS8
☐ 1	SP	Speaker	6SCSP
☐ 1	U29	LED Display and Microcontroller	6SCU29
☐ 1	S8	Selector	6SCS8

IMPORTANT:
If any parts are missing or damaged,
DO NOT RETURN TO RETAILER.

e-mail us at:
support@elenco.com

You may order additional/
replacement parts:
elenco.com/replacement-parts

Project 1: Red Light



- Build the circuit shown on the left by placing all the parts with a black 1 next to them on the board first.
- Then, assemble parts marked with a 2.
- Install three (3) “AA” batteries (not included) into the battery holder (B3) if you have not done so already. When installing a battery, be sure the spring is compressed straight back, and not bent up, down, or to one side. Battery installation should be supervised by an adult.
- Turn on the slide switch (S1), and the red LED (D1) lights.

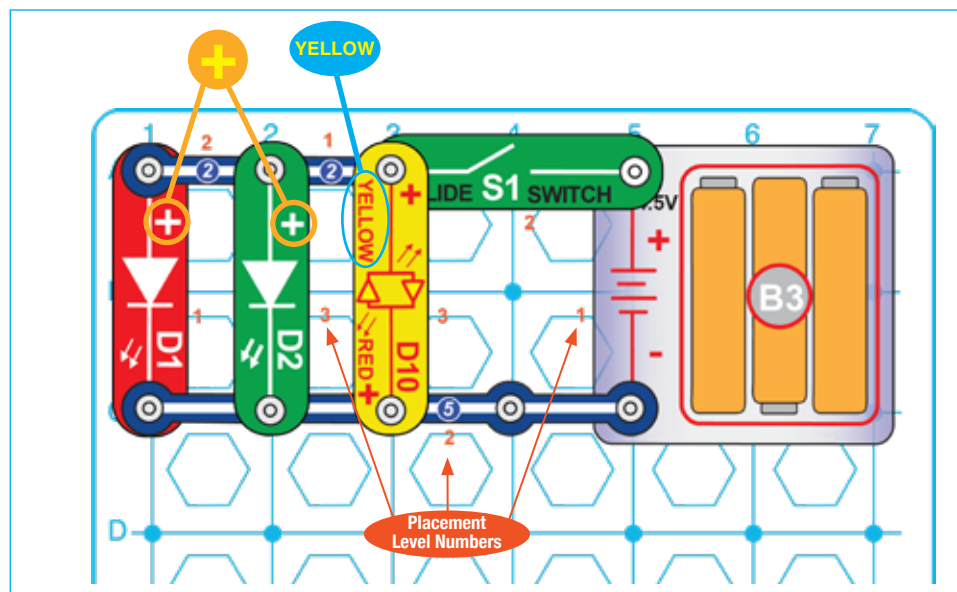


NOTE: this circuit (and many others in this book) have an LED being used without a resistor or other component to limit the electric current through it. Normally this could damage an LED but your Snap Circuits® LEDs include internal protection resistors, and will not be damaged. Be careful if you later use other electrical sets with unprotected LEDs.



When you turn on the slide switch, electricity flows from the batteries, through the red LED and back to the battery through the switch. If the switch is off, the flow of electricity is blocked, and the red LED won't light.

Project 2: Lights



- Build the circuit shown here.
- Turn on the slide switch (S1).
The red, green, and yellow LEDs (D1, D2, & D10) light.

Project 3: Reverse Lights

Try reversing the position of the slide switch (S1), 2-snap wire, and each of the LEDs (D1, D2, & D10), separately.

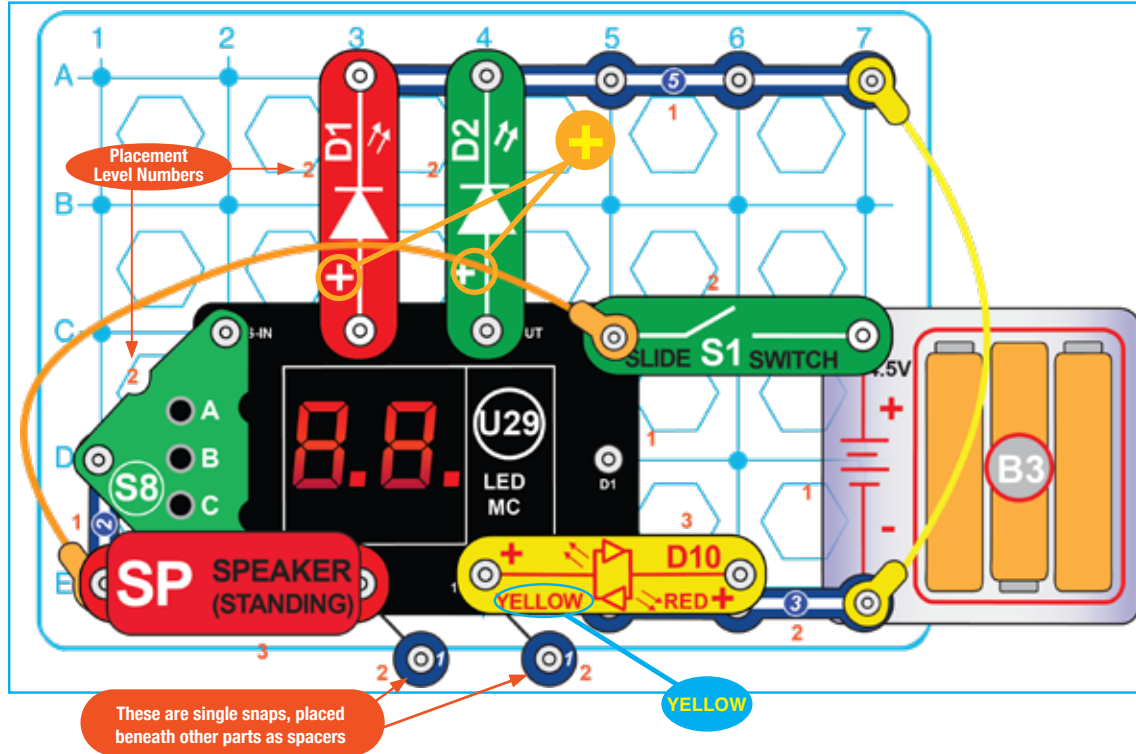


Reversing the slide switch and 2-snap wire has no effect. LEDs only work in one direction, so the red & green LEDs do not work in reverse, but the yellow LED (D10) is a bi-color LED, with separate red & yellow LEDs in opposite directions, as shown in its symbol.



LEDs are light emitting diodes, which convert electrical energy into light. The color of the light depends on the characteristics of the material used in them.

Project 4: Arcade



- Build the circuit shown above by placing all the parts with a black 1 next to them on the board first. Then, place parts marked with a 2, and then parts with a 3.
- Connect the jumper wires (red, black, orange, and blue) as shown in the drawing. Install three (3) “AA” batteries (not included) into the battery holder (B3) if you have not done so already.

- Turn on the slide switch (S1). The display on the LED-MC (U29) displays “00”. Make the display on the LED-MC show “01” by pressing the A button on the selector (S8) to increase the ones digit on the display.
- Press the B button on the selector to select the game (now game 1), and a mini arcade show begins.

Every few seconds the speaker plays a tune, one or more of the LEDs (D1, D2, & D10) lights, and/or the U29 LED display shows a random pattern.

If you want to change games then turn off S1 to reset the circuit.

Project 5: Fast Arcade

- Use the project 4 circuit but select game 2 or 3 (instead of game 1).
- Some parts of the arcade show happen faster now, such as the changing random pattern on the U29 LED display.

Project 6: New Pattern Arcade

- Use the project 4 circuit (with game 1, 2, or 3), but replace the disco cover with the other one that is included.
- Place the circuit in a dark room for best effects.

Project 7: Arcade Dice

Use the project 4 circuit but select game 4 (instead of game 1), then press button B. When the display shows “Go” press button B to start the game.

- Hold down button C for a few seconds and then release it.
- Two random digits from 1 to 6 will be shown on the display (like rolling 2 dice).
- If the player rolls “doubles” (i.e. the two digits are the same), a winning song will be played, and the game starts over (“Go” is shown on the display again).
- If the player does not roll “doubles”, then they can keep trying by pressing button C again.

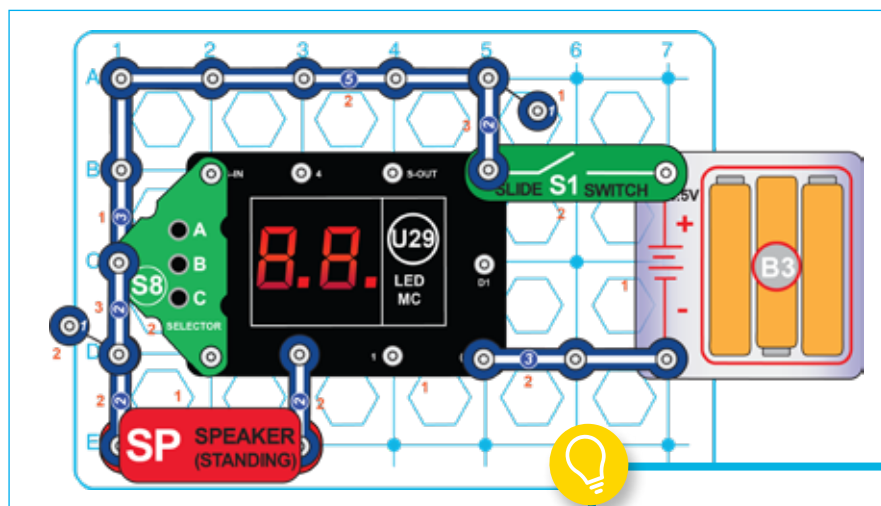
Turn on the slide switch (S1); the display on the LED-MC shows “00”. Press the A button on the selector (S8) to increase the ones digit on the display, and press the C button on the selector to increase the tens digit on the display. When the display shows the game number you want, press the B button on the selector to select it; you hear a beep and the display shows “Go” for most games.

- There are 21 games available, but most cannot be played with this simple circuit, or would only have limited features.
- If you try to select a game number higher than 21, then the display will be reset to “00”.
- When the player wins, loses, or finishes a game, the display will say “Go” again and the player can play the game again.
- The only way to select a different game is by turning off the circuit and then turning it back on so that “00” appears on the display again.

- Hold down button C for a few seconds and then release it.
- Two random digits from 1 to 6 will be shown on the display (like rolling 2 dice).
- If the player rolls “doubles” (i.e. the two digits are the same), a winning song will be played and the game starts over (“Go” is shown on the display again).
- If the player does not roll “doubles”, then they can keep trying by pressing button C again.
- Have multiple people play to see who is the first to roll “doubles”, or who can roll the most “doubles” in 10 tries.

5

Project 10: 3 Second Hold



This is a timing game

Use the project 8 circuit but select Game 7 using the game selection procedure in project 8. Once the player selects Game 7 and sees “Go” on the display, then:

- Try to hold down button C for exactly 3 seconds, then release button C.
- The display will show the number of seconds the player held button C down.
- If the player held button C down for 3 seconds, a winning song will play, and the game starts over (“Go” is displayed to play the game again).
- If the player held button C down for less than 3 seconds or more than 3 seconds, a losing song will play and the game starts over (“Go” is displayed to play the game again).
- Play with multiple people to see who is the first to hold the button for exactly 3 seconds.

Project 11: 5 Second Hold

Use the same circuit and instructions, but select game 8, and try to hold down button C for 5 seconds.

Project 12: 10 Second Hold

Use the same circuit and instructions, but select game 9, and try to hold down button C for 10 seconds.

Project 13: 20 Second Hold

Use the same circuit and instructions, but select game 10, and try to hold down button C for 20 seconds.

Project 14: Twenty-One



This game is based on the card game “Blackjack”

Use the project 8 circuit but select Game 19 using the game selection procedure in project 8.

Once the player selects Game 19 and sees “Go” on the display, then:

- Press button C to get a first playing card (all jacks, queens, and kings are displayed as a 10). An Ace is displayed as an 11.
- The player then has the option to either:

- Press A to Stand – a winning or losing song will then play depending on what the computer player gets:

◊ If the computer player “busts” (i.e. goes over 21), then a winning song will play and the display will flash “Co” and then 22 indicating that the computer player went over 21. Then the game starts over by displaying a new card.

◊ If the computer player has more points than the player, but not greater than 21, then a losing song will be played and the display will flash “Co” and the total points the computer player had. Then the game starts over by displaying a new card.

◊ If the computer player has equal or less points than the player, then a winning song will be played and the display will flash “Co” and the total points the computer player had. Then the game starts over by displaying a new card.

OR

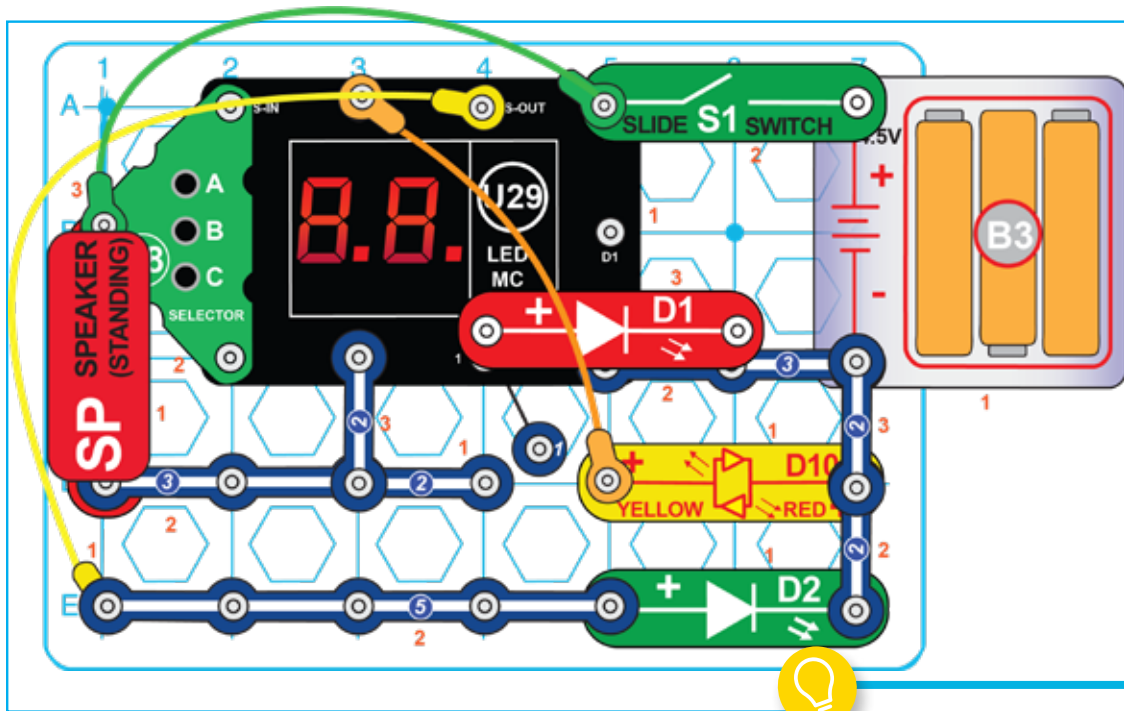
- Press C to Hit – Another card will be drawn and the value will be added to the previous card(s) value, and then:

◊ If the player “busts” (i.e. goes over 21), then a losing song will play and the display will show the total value of all cards for a few seconds. Then the game starts over by displaying a new card.

◊ If the total value of all player cards is still 21 or less, then the player must decide whether to Stand (press A) or take another Hit (press C again).

◊ Note that Aces are treated as 11 points, unless the total value of the cards exceeds 21, in which case Aces are treated as 1 point. Sometimes you may see that your total reduced after you take a Hit, which means you had an Ace that was being treated as 11, but now is treated as a 1.

Project 15: Home Run Derby Game



See who can get the most home runs before getting 10 outs!

Use this circuit but select Game 12 using the game selection procedure in project 8.

Once the player selects Game 12 and sees “Go” on the display, then:

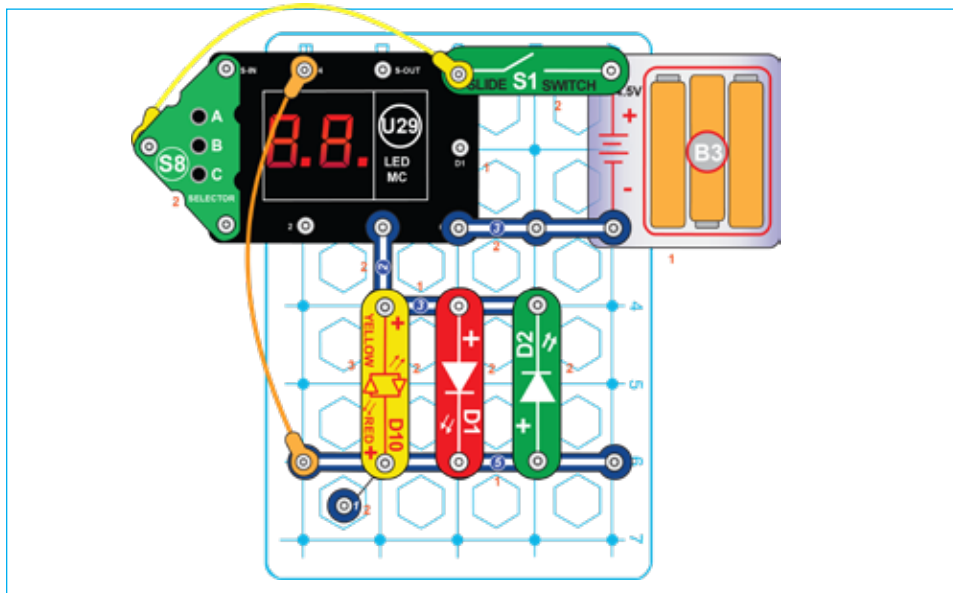
- Press & release button B, and the derby will begin.
- A baseball pitch occurs where the red, yellow, and then green LEDs light up in sequence but at different speeds.
- The player needs to press button B at just the right time (after the green LED is displayed) to hit a home run.
- If the player presses button B at just the right time, a winning song will play, the crowd will cheer, and the display will increase to indicate the number of home runs the player has. The next pitch will come automatically.
- If the player presses button B at the wrong time (either too late or too early), then a losing song will play and the display will flash the number of outs (or misses) the player has for a few seconds, and then go back to displaying the number of home runs the player has so far. The next pitch will come automatically.
- Once the player gets 10 outs, a losing song will play, the total number of home runs the player got is displayed for a few seconds, then the game starts over (“Go” is displayed until the next player presses button B).

Project 16: Baseball Game

Use the same circuit and instructions, but select game 13, and try to hold down button C for 5 seconds. The game plays the same way except that each player gets 3 outs and then the game goes to the next inning.

- Once the player gets 3 outs, a losing song will play, the total number of home runs the player got in the inning is displayed for a few seconds, then the game starts over to go to the next inning (“Go” is displayed until the next player presses button B).
- Write down your scores after each inning and play a 9 inning game to see who scores the most runs!

Project 17: Dual Bi-Color Lights



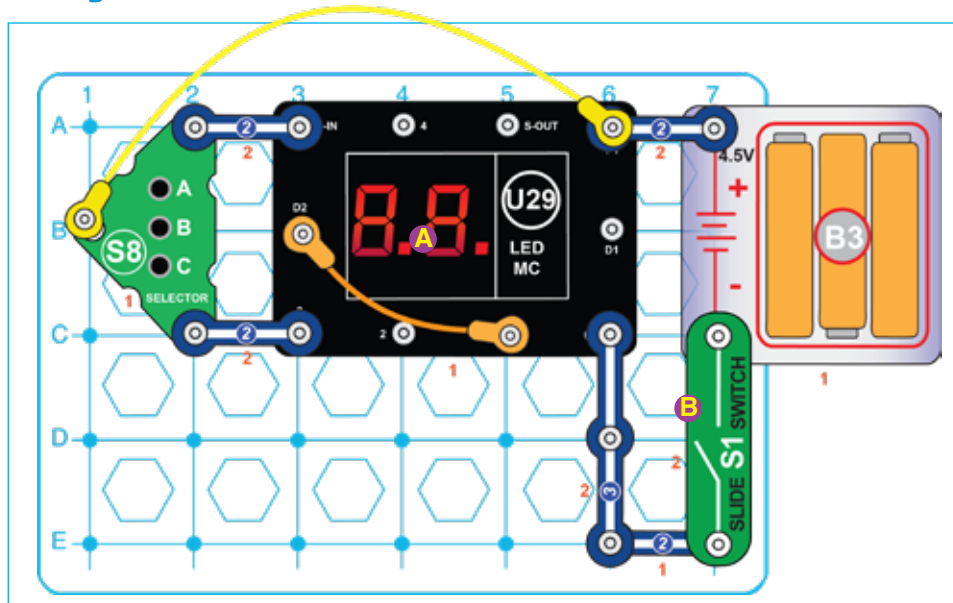
Turn on the slide switch (S1); the display on the LED-MC (U29) shows “00”. Press the A button on the selector (S8) to increase the ones digit on the display, and press the C button on the selector to increase the tens digit on the display. When the display shows “21”, press the B button on the selector to start.

The red/yellow LED (D10) will be on continuously, but changing colors at varying speed. The red & green LEDs (D1 & D2) will be alternately between on and off, opposite each other, and synchronized with D10.



The red & green LEDs together act as a bi-color LED. Compare them to the red/yellow LED, which is a true bi-color LED.

Project 18: Vibrato 2



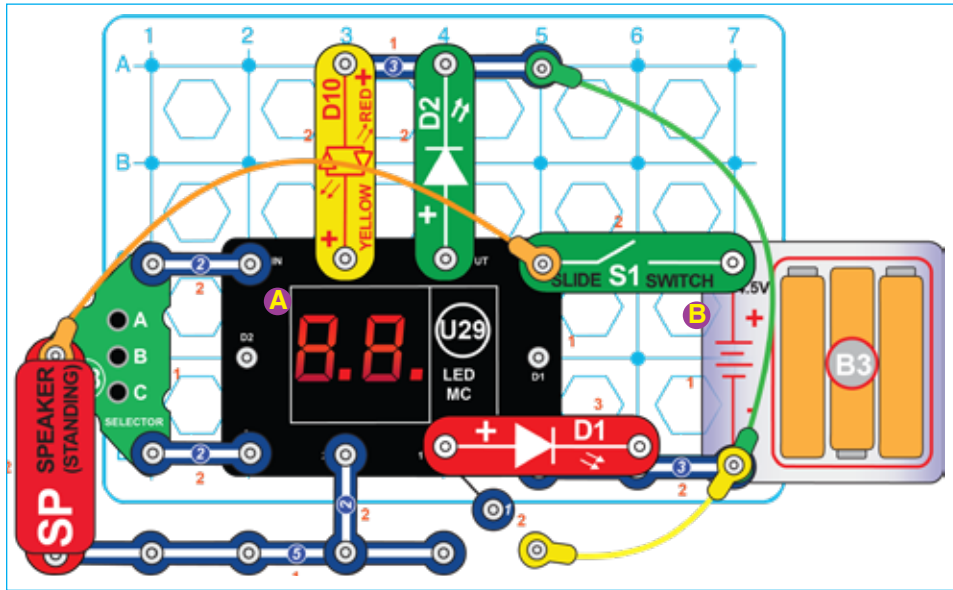
Turn on the slide switch (S1); the display on the LED-MC (U29) shows “00”. Press the A button on the selector (S8) to increase the ones digit on the display, and press the C button on the selector to increase the tens digit on the display. When the display shows “21”, press the B button on the selector to start.

The “2” in the display will be toggling on/off at a varying rate.

Project 19: Vibrato 21

Use the preceding circuit, but add a black jumper between points A & B. Now both digits on the display are toggling, but opposite to each other.

Project 20: LED-MC Test

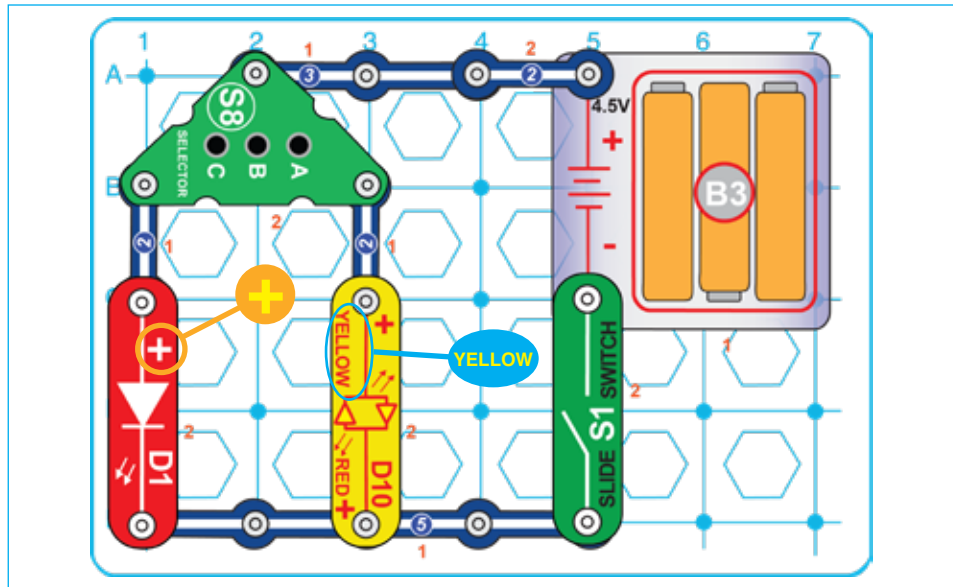


Some parts of this circuit do not fit on the base grid. Leave one end of the red jumper wire unconnected for now. Turn on the slide switch (S1); the display on the LED MC (U29) should show "00". Select game 1 by pressing the A button on the selector (S8), then the B button.

Every 2 seconds one or more of the following will happen, randomly changing: D1 lights, D2 lights, D10 lights, SP2 plays a tune, the U29 LEDs display a random pattern. Make sure that eventually all these parts are being controlled. If not, something is wrong. Also, connecting the loose end of the red jumper wire to point A or point B should turn off each side of the LED display on U29.

If desired, you can speed things up by turning S1 off and on (to reset the circuit), then selecting game 2 or game 3 by pressing the A button on S8, then the B button. The tunes played on the speaker (SP2) will play at the same speed as before.

Project 21: Selector



Turn on the slide switch (S1). Press button C on the selector (S8) to light the red LED (D1), press button A on the selector to light the yellow LED (D10), or press button B on the selector to light both LEDs.

Project 22: Red Selector

Use the preceding circuit, but reverse the orientation of the yellow bi-color LED (D10), to make it red.

Project 23: Green Selector

Use the project 21 circuit, but replace either of the LEDs (D1 or D10) with the green LED (D2).

Advanced Troubleshooting

Elenco® is not responsible for parts damaged due to incorrect wiring.

If you suspect you have damaged parts, you can follow this procedure to systematically determine which ones need replacing:

1. To Test:

Red LED (D1)

Green LED (D2)

Red/Yellow LED (D10)

Speaker (SP2)

Battery Holder (B3)

•Place batteries in holder.

•Place the **Red/Yellow LED** directly across the battery holder in both directions, it should light red or yellow depending on which side was positioned towards the battery "+" side.

•Do the same for the **Red and Green LEDs**, but be sure to position their "+" side towards the battery "+" side.

•"Tap" the **Speaker** across the battery holder contacts, you should hear static as it touches.

•If none work, then replace your batteries and repeat, if still bad then the **Battery Holder** is damaged.

Basic Troubleshooting

1. Most circuit problems are due to incorrect assembly, always double-check that your circuit exactly matches the drawing for it.
2. Be sure that parts with positive/negative markings are positioned as per the drawing.
3. Be sure that all connections are securely snapped.
4. Try replacing the batteries.



**ADULT
SUPERVISION
RECOMMENDED**

IMPORTANT:

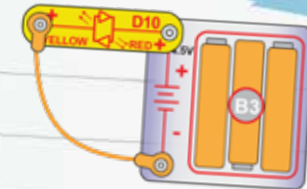
If any parts are missing or damaged,
DO NOT RETURN TO RETAILER.

**e-mail us at:
support@elenco.com**

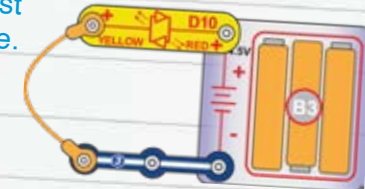
**You may order additional/
replacement parts:
elenco.com/replacement-parts**

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2. **Jumper wires:** Use this mini-circuit to test each jumper wire, the LED should light.



3. **Snap wires:** Use this mini-circuit to test each of the snap wires, one at a time. The LED should light.



4. **Slide switch (S1) and press switch (S2):** Build project 1; if the red LED (D1) doesn't light then the slide switch is bad. Replace the slide switch with the press switch to test it.

5. **Selector (S8):** Use project 21 to test it.

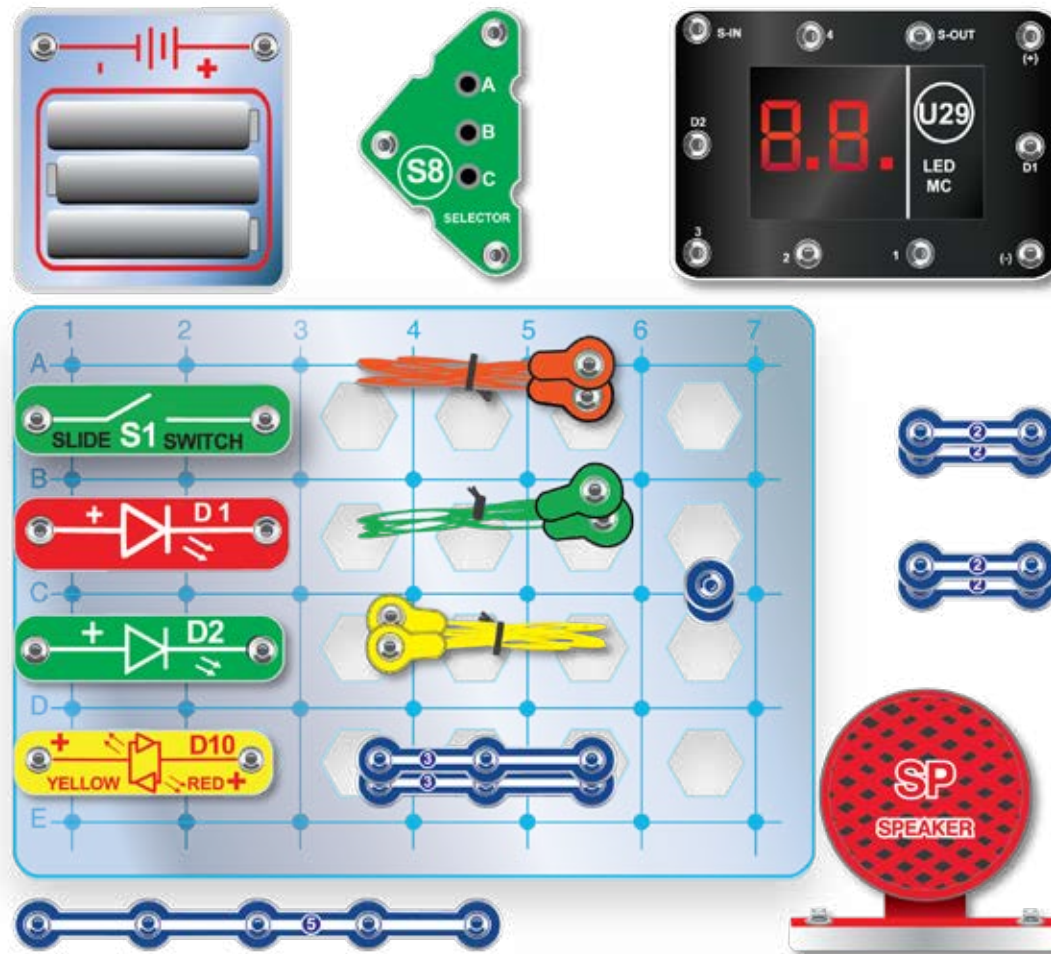
6. **LED-MC (U29, the LED display & microcontroller):** Use project 20 to test it.

Snap Circuits® Game Play Parts Layout

IMPORTANT:

If any parts are missing or damaged, DO NOT RETURN TO RETAILER. Go to elenco.com/replacement-parts or e-mail us at support@elenco.com.

Note: A complete parts list is on page 2 in this manual.



Base Grid (7.7" x 5.5") overlays some parts.

If you have any problems, contact: ELENCO® ELECTRONICS, LLC
150 Carpenter Ave. Wheeling, IL 60090 | (800) 533-2441 | e-mail: support@elenco.com | elenco.com

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Model: SC-GMPLY