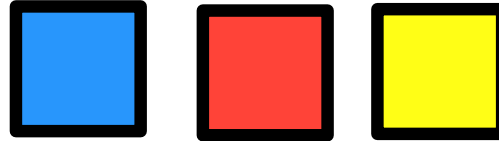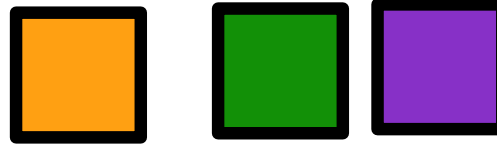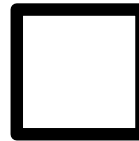Primary Colors

Secondary Colors
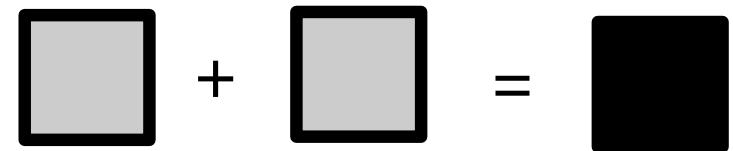
Presence of all Colors
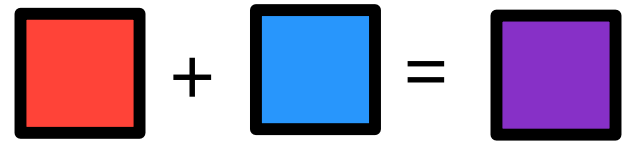
Absence of all Colors

Basic Addition Facts

🟥 + 🟨 = 🟧

🟥 + 🟦 = 🟪

🟨 + 🟦 = 🟩

🟥 + 🟨 + 🟦 = ⬜

⬜ + ⬛ = ⬜

⬜ + ⬜ = ⬛
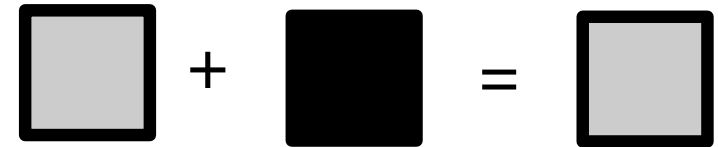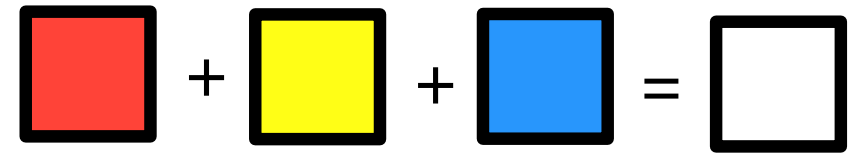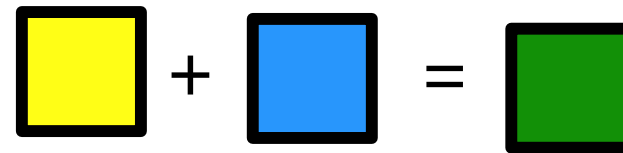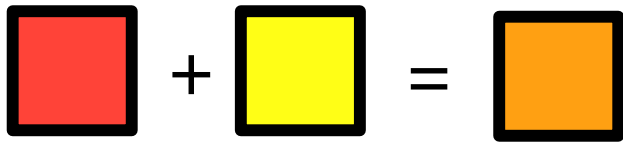
More Addition Facts
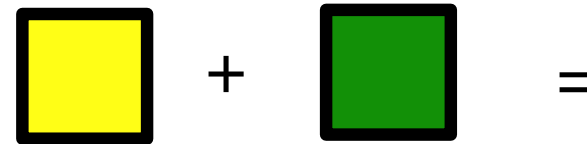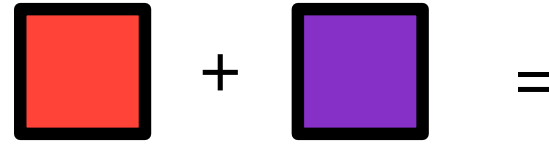
Can you state a generalization?

Still More Addition Facts

■ + ■ =

■ + ■ =

■ + ■ =

Can you state a generalization?

Choose two blocks at random and find their sum.
Repeat several times.

Choose three blocks at random and find their sum.
Repeat several times.

Choose a large handful of blocks and simplify.

Suggestions for how to simplify?
Make an addition table for the Al-Jabar blocks.

What about subtraction?

Subtraction can be "take away" or "missing addend."

Think of 9-4. This equals some number x such that x+4=9. That number must be 5.

Think of

🟧 - 🟥 = _____

_____ + 🟥 = 🟧

🟧 - 🟩 = _____

_____ + 🟩 = 🟧

The Game:

Goal is to get rid of the pieces in your hand as quickly as possible by exchanging pieces from your hand with pieces from a center pile.

Each player has a "hand" of pieces and there is a center pile.
On a turn, you can exchange up to 3 pieces from your hand
for up to 3 pieces from the center.

To begin, place a black piece and a randomly drawn colored piece in the center.

Player to the left of the dealer takes a turn, exchanging up to 3 pieces. If the player has more than 3 pieces in their hand and cannot make an exchange, draw from the bag until an exchange can be made.

Additional Rules:
1. 🟥+🟨+🟦+⬜ = ⬛
2. If, at the end of a turn, there are doubles in the center, these are exchanged for black pieces. In addition, all other players add the appropriate number of black pieces to their hands.
   a. Do not cancel pairs of blacks from the center.
   b. Exchanging pairs from your hand for a black does NOT add blacks to other players' hands.