



These pages are taken from the G4  
"Patterns can Transfer Information" journal.



## Drums can send messages with sound

The African drums shown here are different sizes and shapes. Each drum makes a different sound. The small drum makes a high-pitched sound like a 'bap' and a large drum makes a low-pitched sound like a 'boom'. Drums in Africa have traditionally been used to gather people in a village and to send messages between villages.



*Each of these drums makes a different sound. In addition to making music and rhythms, drums can be used to communicate.*



How could you use drums to send a message? What types of messages could you send?



Think,  
Pair,  
Share!



## Drums can send messages with sound

The djembe drum is one of the most well known instruments in Africa. The djembe has a big end topped with an animal skin drum head and a smaller open end. It was created and named by the Mandé people more than 800 years ago. In their language, “dje” means to gather and “be” means everyone. The drum was used as a signal to gather people within a village and to send messages between villages. It is played with different rhythms that have meanings.



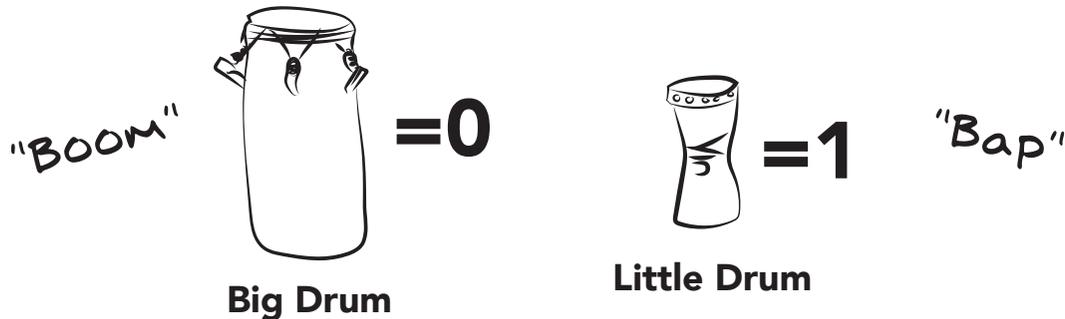
*These drummers are using djembe drums to create music.*

How could you use drums to send a binary message? Plan how you will do it.



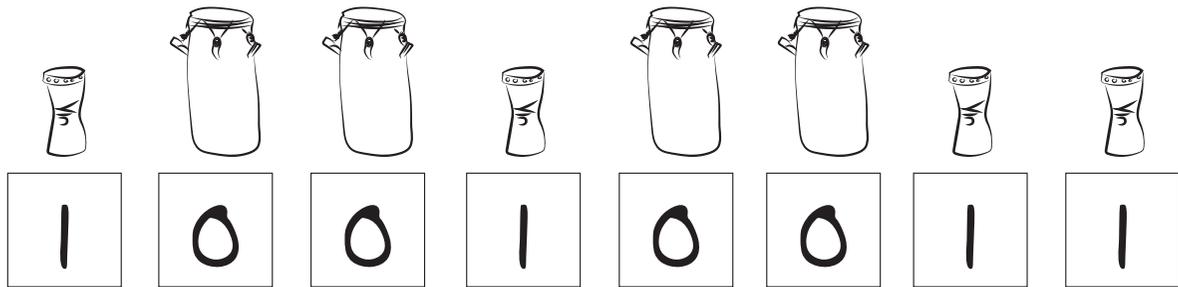
## A binary pattern can be sent using drums

How could a binary pattern be sent using drum beats? First, let's decide what the drum beats mean. Let's say that a tap from the big drum represent a "0" and a tap from the small drum represent a "1".



### Send the letter "S"

Let's send the message "S" as "10010011" with drum beats. This is the binary pattern that represents the letter S in computer language. Beat on the drums in the right order to communicate the signal "10010011."



Hooray, you did it! You just sent a binary code using drum beats.

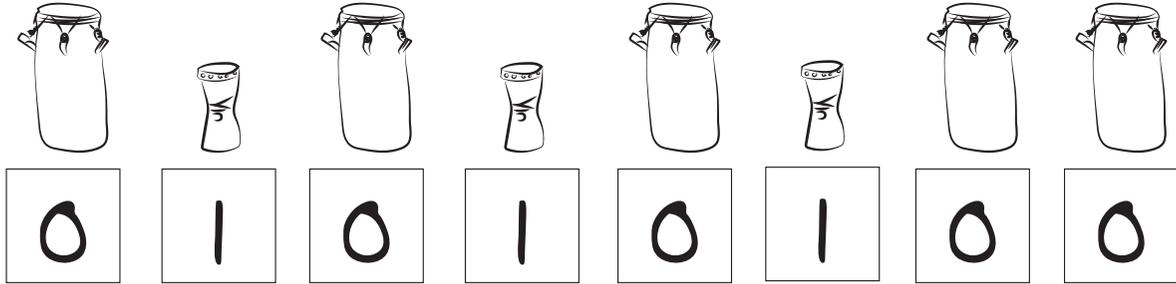
Try tapping the coded message at a constant rate. The beat sounds similar to the rhythm of a song. This song communicates the letter "S" in binary code.

### Rhythm of the letter "S"

Bap - **Boom** - **Boom** - Bap - **Boom** - **Boom** - Bap - Bap

## Send the letter "T"

Now try tapping another letter in the code. Let's send the message "T" as "01010100" with drum beats.



## Rhythm of the letter "T"

**Boom - Bap - Boom - Bap - Boom - Bap - Boom - Boom**



Choose two objects to tap that make different sounds (your drums). Find a way to send these binary patterns using sound.

1. Send one of these patterns to a partner.

S	T	E	M
01010011	01010100	01000101	01001101

2. Receive a pattern from a partner. Which letter did they send you?



## How good is a drum for sending signals?

Using a drum to send and interpret messages has both advantages and limitations.

How far do you think you could send a message using drum beats? Why?

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Were you able to send and receive your messages accurately? What difficulties did you have?

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What limitations does using drums to send a message have?

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