

**code** `</>`  
**your**  
**world**



# Worksheet

## Part 1: Create a Dance Algorithm

### LET'S TRY IT!

With your group, write an algorithm for the Chicken Dance. Only one set of instructions is needed per group. Remember to be as clear as possible. A few sets of instructions will be chosen and demonstrated to the group **as written!**

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# Worksheet

## Part 2: Code Your Dance

In this activity you will use a special deck of cards to create a computer program for your very own dance. You can use the dance moves written on the cards, or you can write in your own on the blank cards. On the right is what code for the Chicken Dance would look like with the cards:

### LET'S TRY IT!

With your group, design a dance with the code cards by lining them up top-to-bottom like the ones shown on the poster. Once you have coded your dance, see if another group can learn the dance using your code.



On the right is a possible algorithm for the Chicken Dance in a programming language called Python.

```

while not music_ended:
    if music_normal:
        chicken_beak()
        flap_arms()
        shake_hips()
        clap_hands()
    else:
        polka()
    
```

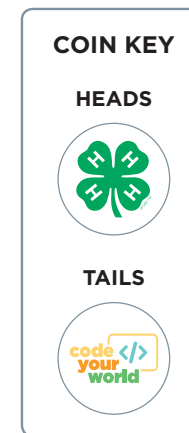
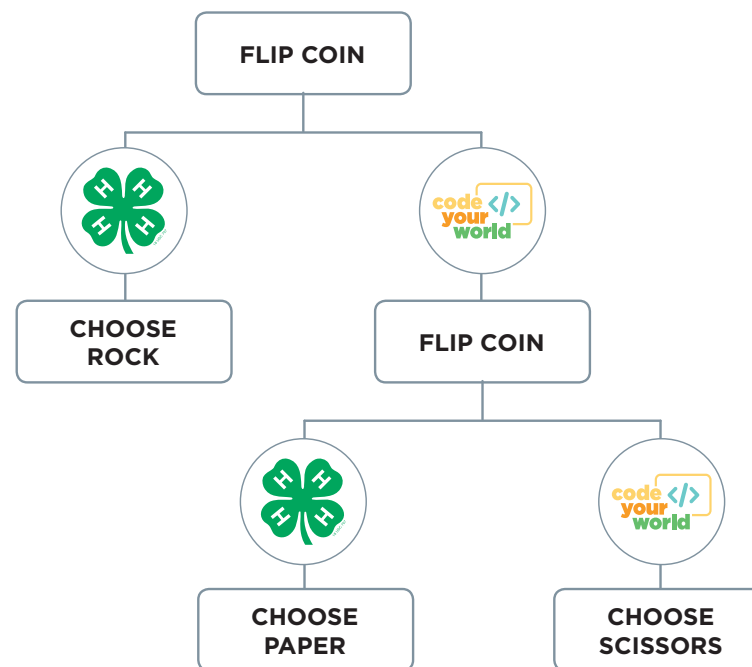


# Worksheet

## AI Die Decision Chart

DIE ROLL	CHOICE
1 or 4	Rock
2 or 5	Paper
3 or 6	Scissors

## AI Coin Flowchart



### OPTIONAL GROUP FOLLOW-UP ACTIVITY:

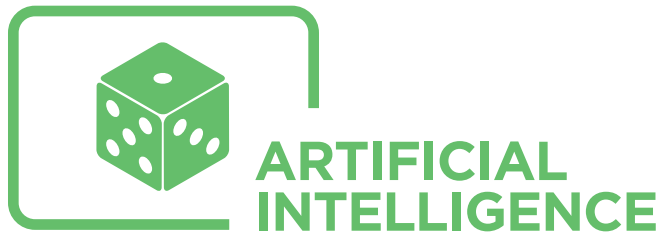
#### Data Analysis

With your group, play a bunch of rounds of rock, paper, scissors against this coin flip AI (15 or more, if possible). Put a tally in the Rock, Paper, or Scissors row on the Coin Flip Data Entry chart to the right.

After you're done, enter the total rounds played and the percentage each option was chosen.

CHOICE	TALLIES
Rock	
Paper	
Scissors	

<b>TOTAL ROUNDS PLAYED:</b>	
<b>100 x (ROCK/ROUNDS) =</b>	
<b>100 x (PAPER/ROUNDS) =</b>	
<b>100 x (SCISSORS/ROUNDS) =</b>	



# Worksheet

## OPTIONAL GROUP FOLLOW-UP ACTIVITY: A Fairer AI

Our first coin flip AI didn't choose fairly. On a scrap piece of paper, try making your own algorithm for choosing rock, paper, or scissors fairly. It may be helpful to draw this as a flowchart—like the one to the left.

**Possible solution:** Flip the coin twice and use the Coin Decision Chart to determine the choice.

COIN DECISION CHART

FIRST FLIP	SECOND FLIP	CHOICE
Heads	Heads	Rock
Heads	Tails	Paper
Tails	Heads	Scissors
Tails	Tails	Try again!

Here's what this **algorithm** looks like in the programming language Python:

```
start
flip coin
flip coin

if heads ( 🍀 ) and heads ( 🍀 ):
    choose rock

else if heads ( 🍀 ) and tails ( 📄 ):
    choose paper

else if tails ( 📄 ) and heads ( 🍀 ):
    choose scissors

else if tails ( 📄 ) and tails ( 📄 ):
    go back to start
```

The places where you say “if” are where you make decisions based on the answer to a question like “is the result heads?” In programming, these are called conditionals.

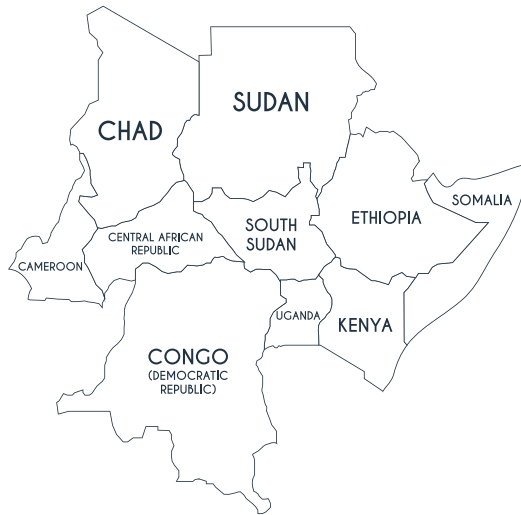


# Worksheet

## 1A - Color Patterns

In this activity, you are going to color three maps. Here's the challenge: You want to color in the countries on this map using the fewest different colors possible. The only rule is that two countries that touch each other can't be the same color.

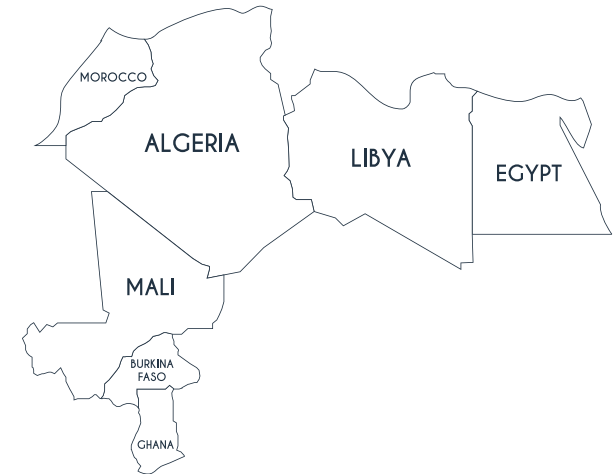
MAP 1



MAP 2



MAP 3





# Worksheet

## 1B – Wheel and Spoke Patterns



MAP 4. AN EXAMPLE OF A WHEEL AND SPOKES PATTERN.

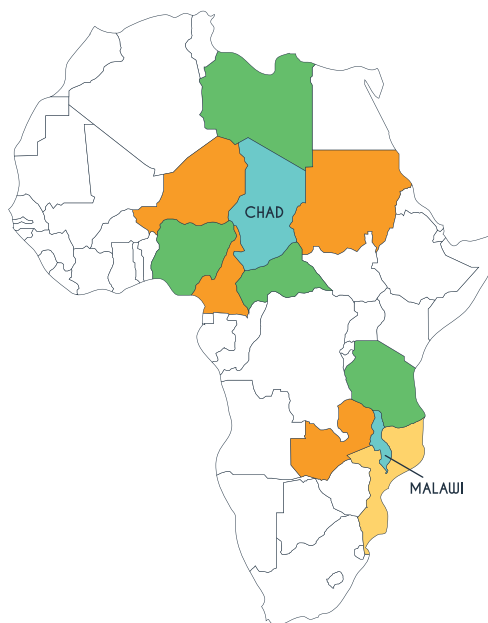
Many people coloring maps notice something like this, with a country in the middle and several surrounding it. We'll call it a "wheel and spokes" pattern because it looks like the spokes on a bicycle wheel. Each country attached to the center country is a "spoke."

Can you find an example of three countries touching one another in this wheel and spokes pattern?

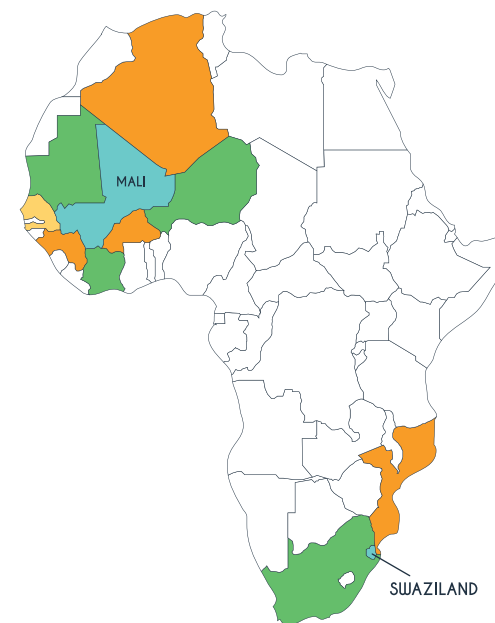
All wheel and spokes patterns require at least three colors, but some require four. Can you spot the difference between which wheel and spokes require three vs four colors? The four blue countries on these two maps (Chad, Malawi, Mali, and Swaziland) are the centers of different wheel and spokes patterns. Write in the number of colors required for each pattern, and the number of spokes.

COUNTRY AT CENTER	COLORS REQUIRED	SPOKES
Chad		
Malawi		
Mali		
Swaziland		

MAP 5



MAP 6





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