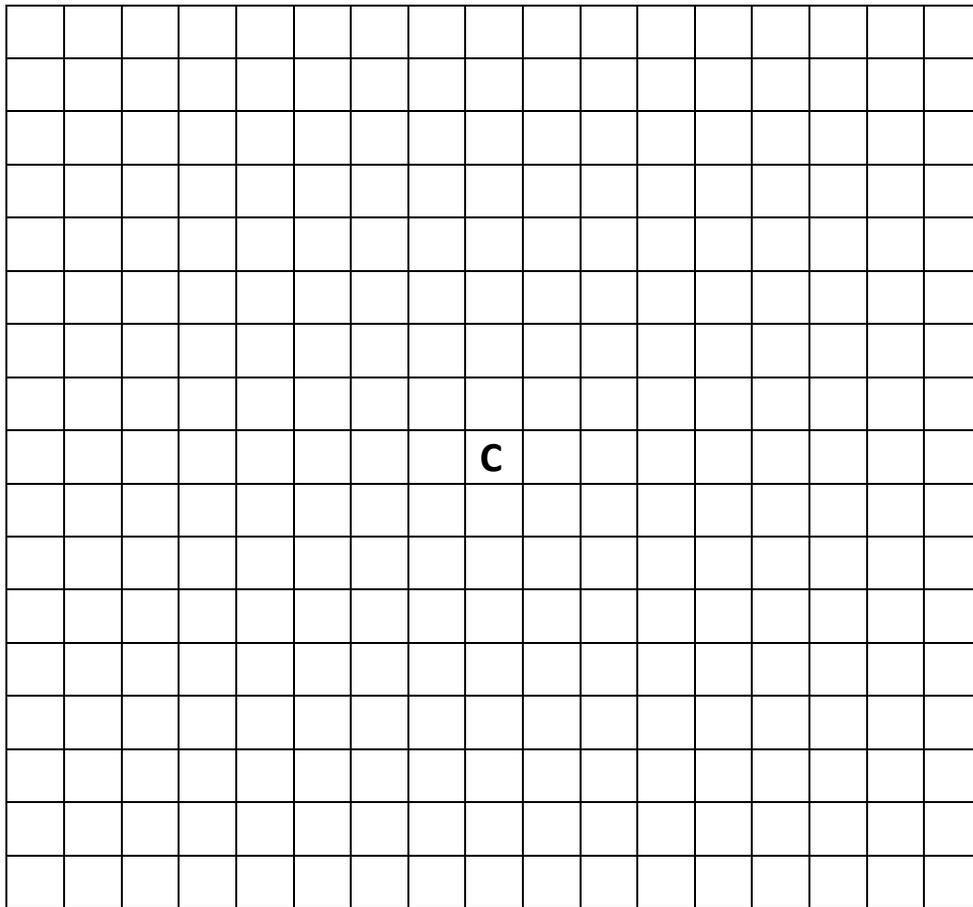


1. After the following NetLogo program is run, you will have turtles with who numbers 0, 1, 2, 3, 4, 5, 6 and 7.



Using the standard turtle shape,. Be sure to clearly show what direction each of the turtles is facing when you draw what the output would look like.

- a. What will be the coordinates for turtle #0?
- b. What will be the coordinates for turtle #1? Show your work step by step and justify your process of arriving at the answer.
- c. What will be the coordinates for turtle #2?
- d. What will be the coordinates for turtle #3?
- e. Suppose we wanted turtle #1 to have the same xcor as turtle #2 and to have the same ycor as turtle #0. We could add the following two statements to the program to achieve this for turtle #1:

```
wait 2
set mysteryDistance _____
if remainder who 2 = 1 [ fd mysteryDistance ]
```

```
to QuestionOnePattern
  ca
  cro 8

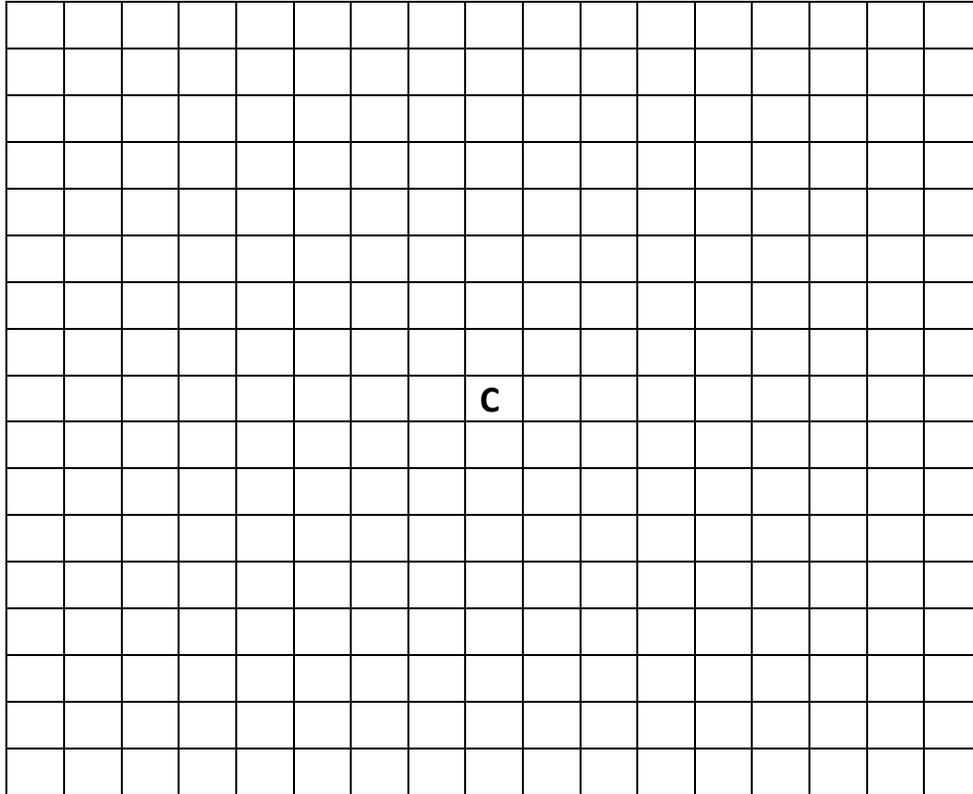
  ask turtles [
    fd 2

    pd
    fd 3

    pu
    fd 2
  ]
end
```

What is the mysteryDistance? Fill in the blank above, but also in detail and step by step show how you arrived at that specific value.

2. Follow-up to the “Show what the output of the NetLogo QuestionTwoPattern procedure would look like after the following procedure has finished” midterm test question.
- List the four headings that the turtles have immediately after the `cro 4` statement has created them.
 - How many degrees will each turtle have turned to the RIGHT or RT or clockwise after the program has finished?
 - Where will each and every turtle be pointing to or facing when the program is done? List the four headings.



```

to QuestionTwoPattern
  ca
  cro 4

  ask turtles [
    fd 5

    pd
    repeat 4 [ fd 2 rt 90 ]

    pu

    rt 180
    fd 4
  ]
end

```



Recall that **heading** is the name of one of the properties each turtle has.

- **heading** (direction turtle is facing)
- **xcor** and **ycor** (location of the turtle)
- **who**
- **pen-mode** (up or down as in pu or pd)

Right mouse button click on a turtle to see it's **who** number. Choose inspect turtle to see the other properties.
