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

Using the \textit{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 \texttt{xcor} as turtle #2 and to have the same \texttt{ycor} as turtle #0. We could add the following two statements to the program to achieve this for turtle #1:

\begin{verbatim}
wait 2
set mysteryDistance 2
if remainder who 2 = 1 [ fd mysteryDistance ]
\end{verbatim}

What is the \texttt{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.

a. List the four headings that the turtles have immediately after the **cro 4** statement has created them.

b. How many degrees will each turtle have turned to the RIGHT or RT or clockwise after the program has finished?

c. 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 its **who** number. Choose inspect turtle to see the other properties.