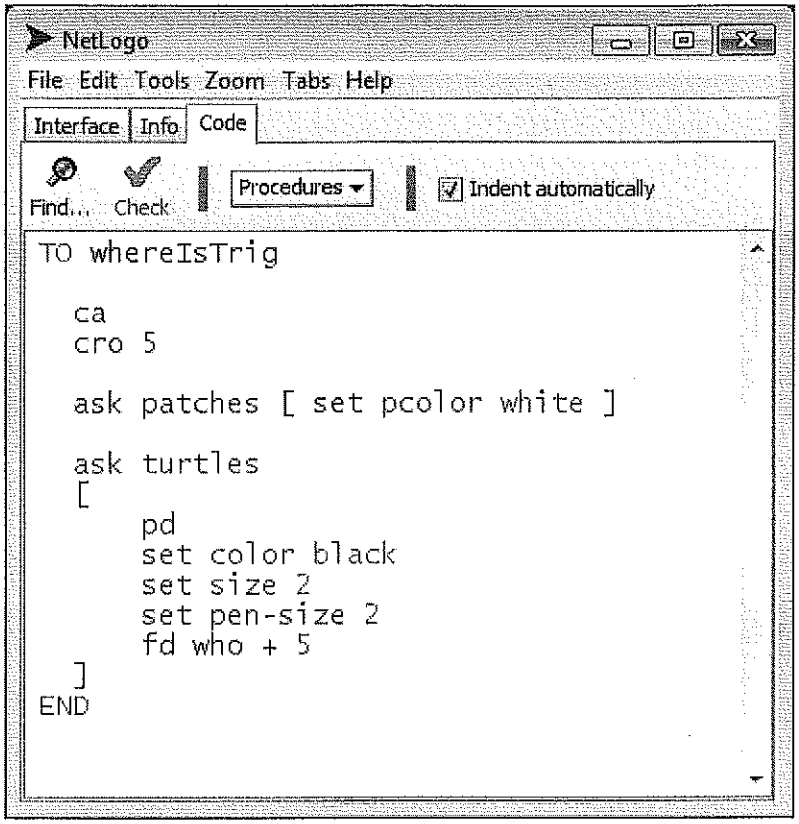


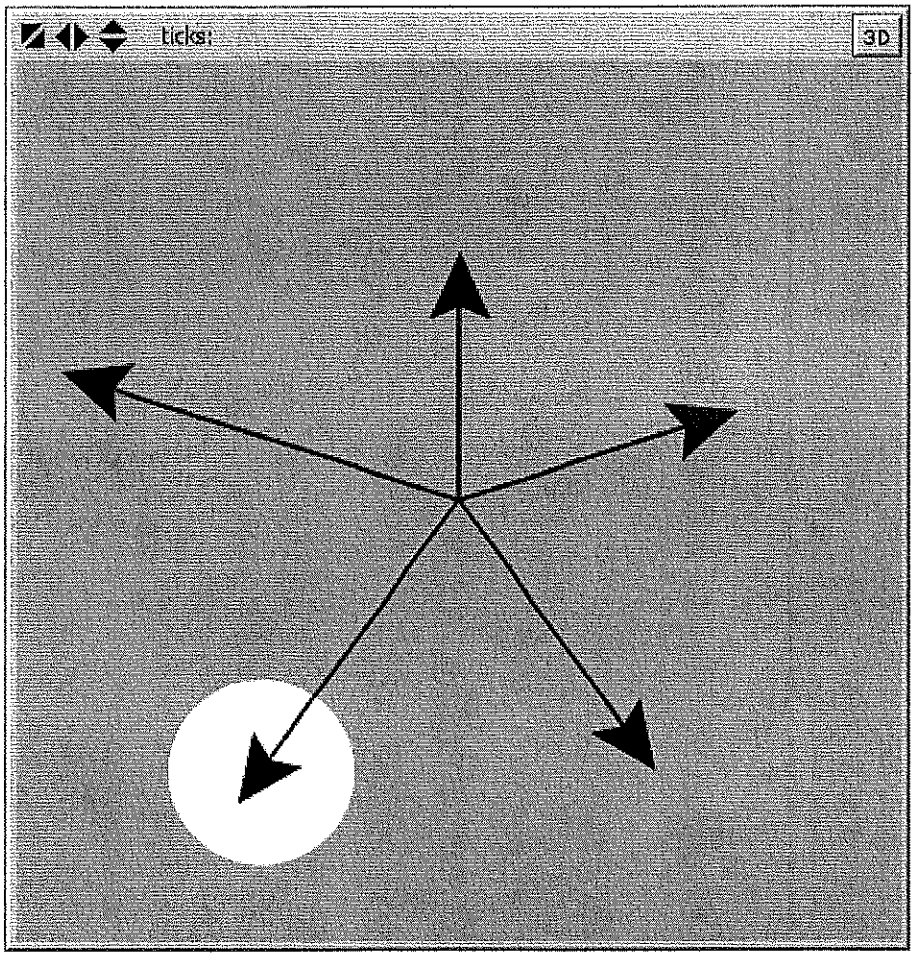
1. What is the heading of the turtle with WHO #1? This heading the direction it is facing. The heading is somewhere between 0 and 360 for all turtles in NetLOGO. *Remember: if there are 16 turtles they are numbered 0, 1, 2, ..., 14, 15!*

2. Where is the turtle with WHO #1? This means the xcor and the ycor, i.e. the (xcor, ycor) or (X, Y) location in the turtle grid.

3. What is the heading of the turtle with WHO #3?

4. Where is the turtles with WHO #3. It is the highlighted turtle?

Assignment due on Friday, 11/21/2014 in class. Turn in a hard copy (printout or hand-written answers).



Example solution to a similar problem will be handed out on Monday, November 17th. You must show ALL your work. What does that mean?

Show the entire process of solving the problem from start to finish.

Understand the problem. Focus on WHAT is given and WHAT is the goal or desired result. Draw a picture. Label the pieces of the puzzle clearly.

Develop a PLAN for HOW to solve it. Figure out HOW to get from the given facts or input to the desired goal or result.

Translate your plan into a specific solution. Show the algebra and formulas.

Friday, November 14, 2014

Where is Waldo

1. *What is the heading of the turtle with WHO #1?*

   360/5 = $\boxed{72}$

2. *Where is the turtle with WHO #1?* → hypotenuse = 6 [who (1) + 5 = 6]

   90-72 = 18 →(x 6) $\sin(18) = \frac{y}{6}$ (x 6) → $\boxed{y = 1.85}$ (x 6) $\cos(18) = \frac{x}{6}$ (x 6) → $\boxed{x = 5.71}$

3. *What is the heading of the turtle with WHO #3?*

   360/5 = 72 →72 + 72 + 72 = $\boxed{216}$

4. *Where is the turtles with WHO #3?* → hypotenuse = 8 [who (3) + 5 = 8]

   270-216 = 54 → (x 8) $\sin(54) = \frac{y}{8}$ (x 8) → $\boxed{y = -6.47}$

   (x 8) $\cos(54) = \frac{x}{8}$ (x 8) → $\boxed{x = -4.70}$

   → Both are negative because they are in the 3rd quadrant.

① $\frac{360}{5} = 72°$ (72°) OK

Very good

② $\frac{360}{5} = 72°$

Who + 5 = 6 hyp is 6 OK

Sin (72) $\frac{opp}{hyp} = \frac{opp}{6}$
·6 ·6

Sin (72)·6 = 5.7 (xcor = 5.7) OK

Cos(72) $\frac{adj}{hyp} = \frac{adj}{6}$
·6 ·6

Cos(72)·6 = 1.85 (ycor = 1.85) OK

③ $\frac{360}{5} = 72$ $72 \times 3 = 216$ (216°) OK

④ $\frac{360}{5} = 72 \times 3 = 216$ | Who + 5 = 8 hyp = 8 OK

Sin (216) $\frac{opp}{hyp} = \frac{opp}{8}$
·8 ·8

Sine(216) = −0.588
Sine(36) = 0.588

Sin (216)·8 = −4.71 (xcor = −4.71) OK

Cos(216) $\frac{adj}{hyp} = \frac{adj}{8}$
·8 ·8

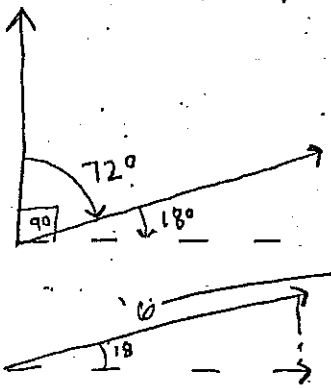
Cos(216)·8 = −6.47 (ycor = −6.47) OK

cos(36) = |cos(216)| = 0.809

(1) The heading of turtle with who #1 is 72.

$\frac{360°}{5}$ → # of turtles $= \boxed{72°}$ OK

(2) Where is the turtle with who #1?



$90° - 72° = 18°$

6 because who #1 + 5 = 6 OK

$\cos 18 = \frac{\text{adj}}{6\text{-hyp}}$

$.660316 = \frac{\text{adj}}{6} \cdot 6$

$\cdot 6 \quad\quad \cdot 6$

$5.706133 = x$ LOR OK

$\sin 18 = \frac{\text{opp}}{6\text{-hyp}}$

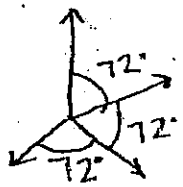
$.309016 = \frac{\text{opp}}{6} \cdot 6$

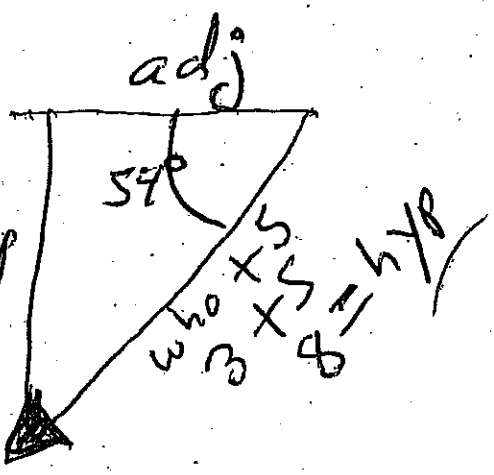
$\cdot 6$

$1.85410 = y$ LOR OK

(3) The heading of the turtle with who #3 is 216°

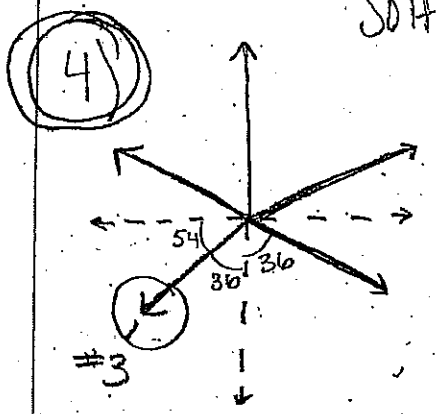
$72° + 72° + 72° = 216$ OK

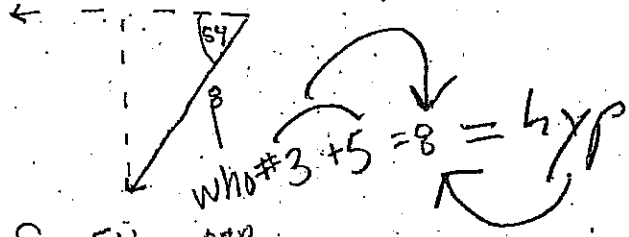




(x coor, y coor)

SOH CAH TOA





$\sin 54 = \frac{opp}{8\text{-hyp}}$

$.8090169 = \frac{opp}{8} \cdot 8$

$\cdot 8$

$6.47213 = y$ (OR)

OK

$\cos 54 = \frac{adj}{8\text{-hyp}}$

$.587785 = \frac{adj}{8} \cdot 8$

$\cdot 8$

$4.70228 = x$ (OR)

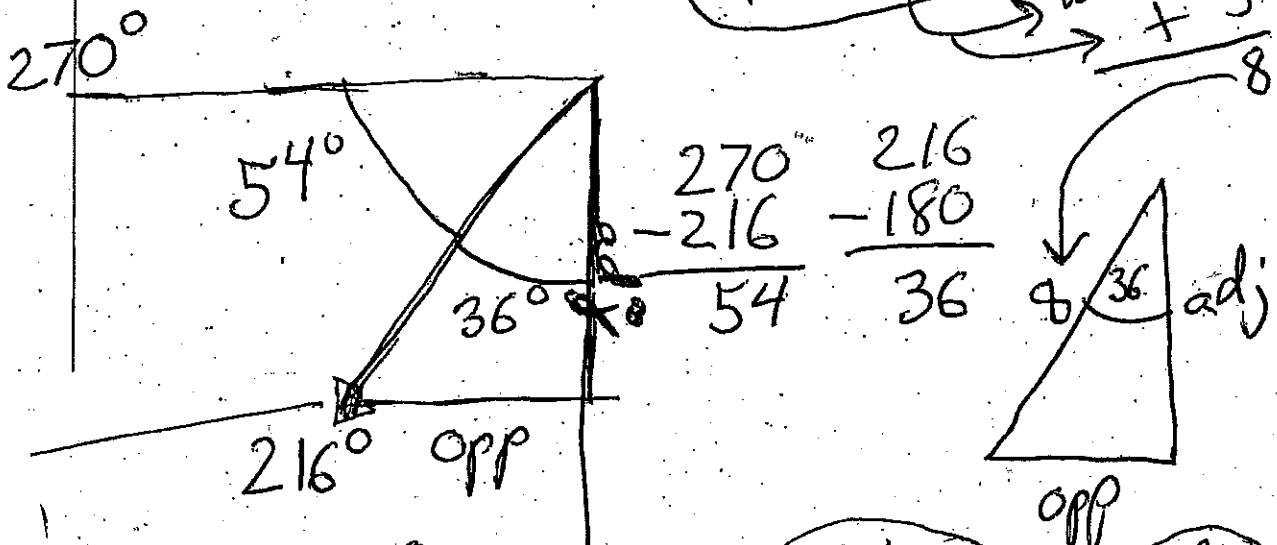
OK

The coordinates are both negative because they're born in the III quadrant.

* Yes, this turtle, who #3, is the highlighted one *

fd who +5

who #3 + 5 = 8



270 − 216 = 54

216 − 180 = 36

CAH $\cos 36° = \frac{adj}{8}$

SOH $\sin e 36° = \frac{opp}{8}$