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? \( \Rightarrow \) hypotenuse = 6 \([\text{who (1)} + 5 = 6]\)

\[ 90-72 = 18 \rightarrow (x \ 6) \ \sin(18) = \frac{y}{6} \ (x \ 6) \rightarrow \boxed{y = 1.85} \]

\[ (x \ 6) \ \cos(18) = \frac{x}{6} \ (x \ 6) \rightarrow \boxed{x = 5.71} \]

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

\[ 360/5 = 72 \rightarrow 72 + 72 + 72 = \boxed{216} \]

4. Where is the turtles with WHO #3? \( \Rightarrow \) hypotenuse = 8 \([\text{who (3)} + 5 = 8]\)

\[ 270-216 = 54 \rightarrow (x \ 8) \ \sin(54) = \frac{y}{8} \ (x \ 8) \rightarrow \boxed{y = -6.47} \]

\[ (x \ 8) \ \cos(54) = \frac{x}{8} \ (x \ 8) \rightarrow \boxed{x = -4.70} \]

\( \Rightarrow \) Both are negative because they are in the 3rd quadrant.
1. \( \frac{360}{5} = 72^\circ \) \( 72^\circ \) OK

2. \( \frac{360}{5} = 72^\circ \)

\[ \text{hyp} + 5 = 6 \quad \text{hyp is 6 OK} \]

\[ \sin(72) \quad \frac{\text{opp}}{\text{hyp}} = \frac{6}{6} \]

\[ \sin(72) \cdot 6 = 5.7 \quad \text{ycor} = 5.7 \text{ OK} \]

\[ \cos(72) \quad \frac{\text{adj}}{\text{hyp}} = \frac{6}{6} \]

\[ \cos(72) \cdot 6 = 1.85 \quad \text{ycor} = 1.85 \text{ OK} \]

3. \( \frac{360}{5} = 72 \quad 72 \times 3 = 216 \quad 216^\circ \text{ OK} \)

4. \( \frac{360}{5} = 72 \times 2 = 216 \)

\[ \text{hyp} + 5 = 8 \quad \text{hyp is 8 OK} \]

\[ \sin(216) \quad \frac{\text{opp}}{\text{hyp}} = \frac{8}{8} \]

\[ \sin(216) \cdot 8 = -4.71 \quad \text{ycor} = -4.71 \text{ OK} \]

\[ \cos(216) \quad \frac{\text{adj}}{\text{hyp}} = \frac{8}{8} \]

\[ \cos(216) \cdot 8 = -6.47 \quad \text{ycor} = -6.47 \text{ OK} \]

\[ \cos(36) = |\cos(216)| = 0.809 \]
1. The heading of turtle with who #1 is 72°.
\[
\frac{300°}{5} = \frac{\text{adj}}{\text{hyp}} = 72° \quad \text{OK}
\]

2. Where is the turtle with who #1?
\[
90° - 72° = 18°
\]

\[
\theta = 18° \quad \text{because who #1 + 5 = 6}
\]

\[
\cos 18° = \frac{\text{adj}}{\text{hyp}}
\]
\[
\cos 18° = \frac{60}{\text{hyp}}
\]
\[
\text{hyp} = \frac{60}{0.95410} = 62.63 \quad \text{OK}
\]

\[
\sin 18° = \frac{\text{opp}}{\text{hyp}}
\]
\[
\sin 18° = \frac{90.16}{62.63} = 1.44 \quad \text{OK}
\]

\[
\angle A = 18° \quad \text{OK}
\]

3. The heading of the turtle with who #3 is 216°.
\[
72° + 72° + 72° = 216° \quad \text{OK}
\]

\[
(\text{x cor.}, \text{y cor.})
\]

\[
\text{adj.}
\]

\[
\text{opp}
\]

\[
\text{adj.}
\]

\[
\text{opp} = 6 \quad \text{OK}
\]
SOH CAH TOA

\[
\sin 54^\circ = \frac{\text{opp}}{8} \quad \text{-hyp}
\]

\[
.8090169 = \frac{\text{opp}}{8}
\]

\[
-6.47213 = \text{y cor}
\]

\[
-4.70228 = \text{x cor}
\]

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

\(\text{x yes, this turbine, who #3, is the highlighted one}\)

\[
\cos 54^\circ = \frac{\text{adj}}{8} \quad \text{-hyp}
\]

\[
.587785 = \frac{\text{adj}}{8}
\]

\[
-4.70228 = \text{x cor}
\]

\[
\text{fwd who + 5}
\]

\[
\text{who #3} \quad + 5
\]

\[
\text{adj}
\]

\[
\text{opp}
\]

\[
\cos 36^\circ = \frac{\text{adj}}{8}
\]

\[
\text{SOH sine } 36^\circ = \frac{\text{opp}}{8}
\]