Flight Trip

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

This is an interactive problem.

Let's consider the planet as a perfect sphere with an equator length of 40 000 km, where the coordinates are defined in the standard way: latitude ϕ ($-90^\circ \le \phi < 90^\circ$) and longitude λ ($-180^\circ \le \lambda \le 180^\circ$). Moving north increases the latitude, while moving west increases the longitude.

The planet is divided into 24 time zones, where the i-th time zone ($i = -11, -10, \ldots, 12$) covers the longitude interval $[15i - 7.5, 15i + 7.5)$ degrees. Time zones determine the difference in local time across various regions of the planet, specifically in the time zone with number i, it is exactly i hours later than in the time zone with number 0. The North and South Poles fall under the time zone with number 0.

You are on a helicopter that has a turn speed of $1\,440^\circ$/min and a travel speed of 3 km/min, in an unknown location on the planet and flying in some direction. Your goal is to reach a specified point on the planet, using only the information about the local time of the regions you will fly over.

Interaction Protocol

First, the jury's program outputs two real numbers with 10 decimal places —latitude and longitude of the target point. You need to approach it within a distance of 10^{-5} km.

In the next line, the jury's program outputs the local time in the format: "`<day of the week> <hours>:<minutes>`", where hours and minutes are exactly two digits long, and the day of the week is a string of 3 characters, which can take one of the following values: "`mon`" (Monday), "`tue`" (Tuesday), "`wed`" (Wednesday), "`thu`" (Thursday), "`fri`" (Friday), "`sat`" (Saturday), "`sun`" (Sunday). The initial moment of time in each test is always Monday 0 hours 0 minutes in the local time of your starting position.

After that, your program should make requests consisting of two real numbers a and d ($-360 < a < 360$, $0 \le d < 40\,000$), meaning that you will first turn a° counterclockwise and then fly straight for a distance of d km. The angle of turn in degrees and the distance in kilometers for your next action should be provided. The output numbers must represent a decimal fraction with no more than 12 decimal places. For each request, the jury's program will output either a string containing the local time in the format described above or the string "`--- 00:00`", indicating that you have reached the target point with the required accuracy, and your program should terminate.

The number of moves must not exceed 25 000.

Example

standard input	standard output
-15.5837712391 -118.7986557214 mon 00:00 mon 04:33 mon 04:33 sat 13:50 --- 00:00	 0 1000 90 0 10.101010 25252.52525252 123 4567.89