Course reversal©
Interesting ting about knowledge. You don't know what you don't know.
So...making a 180 is NOT a course reversal it is a heading reversal.
Big difference.

This history of the compass rose of 360 degrees begins in the
Mediterranean Sea. As with much of my knowledge, it is difficult to
determine the exact origin. The sailors used wind directions and from
them drew lines between the Mediterranean ports. These lines began to
cross and wind directions acquired names. The ultimate selection of 360
equal divisions to make the full circle was a stroke of genius. There
is no other number below 720 with so many even divisors. (24) The whole
story is fascinating.

I once started to explain the operation of a compass and heading
indicator to the student who was the supervising ships captain of
American President Lines. The lesson was over quickly. However, he did
learn a 'hidden' technique that I have always taught my students.

There is an old arithmetic system (In Encyclopedia Britannica) that
allows a very quick check of your 'correct answer' probability. The
system is called "Casting out Nines". As an math teacher I used it on
test papers to give the victims a way to give their answers a
probability check without doing the whole problem over. The process
used is called "sum of the digits". If you've got a youngster suffering
in math, take a look. I have a version I could email.

The "sum of the digits" method of doing many flight maneuvers simplifies
using the heading indicator. The process requires that you add together
the digits of a heading to get a single digit. 345 becomes 3+4+5
equals 12 becomes 1+2 equals 3. Helps if you have an E6B or compass
rose handy. The reciprocal and 90 degree headings from this 345 heading
all equal a sum of the digits 3 as well. Let's do an easy one.

Any four headings 90 degrees away from another equals the same 'sum of
the digits' total. 300, 030, 120 and 210 all equal 3. Even the 45
degree sums equal three as in 345 above. Once you see this relationship
90 degree turns become simple and you know what to look for when doing
270s

In basic turn maneuver practice, I always teach 30 degree banks and 90
degree turns. From a 360 heading a 90 degree turn left or right will
total 9. Left is 270 =9 and 090 = 9. The 45 degree combinations are
not of practical value but they do exist..

I assume that even the three hour student has been taught how to get a
reciprocal heading. Just look at the bottom of the heading indicator.
The compass (and older HIs) require the +2/-2 method. Just in case:
You can get the opposite or reciprocal heading of most existing headings
easily by using + 2/ + 2 on the first two digits of headings. Only the
first two digits of a heading are changed. The last digit remains the
same. For a heading of 235 degrees you subtract 2 from the first digit
and add two to the middle digit. Result 055 to get the reciprocal
of 055 you add 2 to the 0 and subtract 2 from the 5. The result is 235.
If you add first then you subtract, if you subtract first then you add.
Simple. This works except at 001 to 019 degrees to the north and 181 to
199 degrees to the south. On these headings just + 180

I have just recently flown with two pilots who I took to uncontrolled airports. Of different levels of experience but both having been to uncontrolled airports, I was surprised to find that, while their overhead arrivals and outbound 45 entries were identical, neither were familiar with the course reversal which is now a required maneuver of the Practical Test Standards. The "sum of the digits" is a very easy and practical way of making a precision course reversal. A course reversal consists of first a 90 degree turn followed by an immediate 270 with the same opposite bank.

The introduction and practice of the course reversal should be while doing ground reference maneuvers. After doing left turns around a point, you fly up-wind for about minute tangent to the circle and make note of your reciprocal heading. That is the direction you will return for you right turns about the original point. You have a choice of making either a left or right initial 30 degree bank and 90 degree turn. The course reversal will only work with precision if you are flying directly into the wind, fly constant 30 degree banks first on the 90 degree and then as you reverse back into the 270 to the reciprocal of your initial heading.

Performing the course reversal on an uncontrolled airport arrival probably means that your 45 outbound and inbound will most likely be dealing with a cross-wind. Thus, you will be unlikely to make them as well as you did in practice. Because of the wind corrections required and terrain, you must select your initial r/l 90 degree turn as well as your adjusted outbound 45 for the situation as it exists.

New ground reference procedure for PTS 1998
The FAA has revised the procedure for rectangular patterns in the PTS.

The initial entry is to be on a left 45° entry to the downwind just as would occur at an uncontrolled field. The departure would also be on a left 45^ on the downwind.

The reversal of direction is rather convoluted but may be accomplished as directedy the the Examiner. You are expected to fly around the field and enter on a right 45^ entry to the downwind and again after flying one or two circuits depart on a right 45°.