HWK #2, DUE WEDNESDAY 10/15

1.3 12, 16, 22, 23, 24, 26.
1.4 1, 10, 12, 13, 20, 24, 26, 32.
1.5 6, 11, 16, 18, 24, 28, 30.
1.7 2, 10, 18, 20, 27, 28, 36.

Just for fun:

Pythagoras says that if we have a rectangle with sides a and b and diagonal c then $c^2 = a^2 + b^2$. It is a natural question to look for rectangles where the three numbers (a, b, c) are all natural numbers; for example $(3, 4, 5)$ and $(5, 12, 13)$.

So what happens for a box (aka a cuboid, aka a rectangular parallelepiped)? Suppose that that the three sides are a, b and c. There are three different face diagonals and one big diagonal, making seven lengths.

Fix one length. Show that one can find a box where all but this length is a natural number. (In the end, writing a computer program which simply runs until it finds a solution is probably the best way to solve this problem). It is an unsolved problem (aka due date ∞) whether one can find a box where all seven lengths are natural numbers.