1 Functions Learned

`FullForm`	`Plus`	`Times`	`List`	`Head`	`Apply(@@ or @@@)`
`TreeForm`	`Rational`	`Power`	`Factorial`	`Floor`	`Ceiling`
`Inner`	`Thread`	`Min`	`Max`	`Outer`	`TableForm`

2 Problems

From electronic text

1. Problem 4.1
2. Problem 4.2
3. Exercise 4.1
4. Problem 4.3
5. Problem 4.4
6. Problem 4.5
7. Problem 4.6
8. Exercise 4.2
9. Exercise 4.3
10. Exercise 4.4
11. Exercise 4.5
12. Exercise 4.6 (Word of caution: be careful when copying and pasting from a pdf into Mathematica as you may end up with an unintentional line break in which case mathematica will ignore the first line.)
13. Exercise 4.7 (The author was a little over-zealous here, instead find all the weird numbers up to 100. Also, check out the function `Subsets`.)

From lesson on pure functions

14. Exercise 1
15. Exercise 2
16. Exercise 3
17. Exercise 4
18. Exercise 5
19. Exercise 6
20. Exercise 7
21. Exercise 8
22. Exercise 9

23. A positive integer is called a practical number if every smaller positive integer can be expressed a sum of its (proper) divisors. Find all the practical numbers between 1 and 100. (You can modify the code from the lecture notes).

24. (a) Suppose that you have an envelope that can hold three stamps. You have an unlimited set of stamps of the following denominations: 1, 2, 5, 10. What is the smallest postage that you can't create on the envelope with the stamps that you have? (Consider the function `Tuples`.)

    (b) What if your envelope can fit four stamps?

    (c) What stamp denomination should you add if you want to create the largest set of possible postage values for envelopes that fit three stamps?

    (d) Construct a function that solves the problem given an envelope that can fit n stamps and stamps of denominations $s_1, \ldots, s_m$.