Section 5.4

Ex44. 4 3 2 5 1 8 7 6

4 3 2 5   1 8 7 6

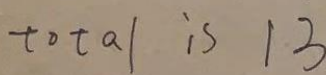4 3   2 5   1 8   7 6

4 3   2 5   1 8   7 6

3 4   2 5   1 8   6 7

2 3 4 5   1 6 7 8

1 2 3 4 5 6 7 8

Section 6.1

Ex.44

$$\frac{10 \times 9 \times 8 \times 7}{4} = 1260$$

Ex 48.

00 ———— 111   or   00 — — — — —
                   — — — — 1 1 1

00 — — 1 1 1 $\Rightarrow$ 2^2

So total is: $2^5 + 2^4 - 2^2 = 32 + 16 - 4 = 44$

Ex 64

total is 13

Ex. 2   Letter has 26 from A ~ Z

So: $\lceil 30/26 \rceil = 2$ by Generalized Pigeonhole Principle
we know that there are at lease 2 students
have last names that begin with the same letter

Ex. 4-a

$\lceil x/2 \rceil \geq 2 \Rightarrow x = 5$