

Solutions to Practice Problems

1.
 - a. ..., -43, -17, 9, 35, 61, ...
 - b. ..., -22, -18, -14, -10, -6, ...
 - c. ..., 5, 13, 21, 29, 37, ...
 - d. ..., 1, 6, 11, 16, 21, ...

2.
 - a. 2
 - b. 0
 - c. 4
 - d. 14

3.
 - a. 31^2
 - b. $2 \cdot 3 \cdot 5 \cdot 7 \cdot 11$
 - c. $7^3 \cdot 19$

4.
 - a. Any numbers that lack 3 or 5 as a factor
 - b. Any numbers that lack 2, 3, or 5 as a factor
 - c. Any numbers that lack 2, 4, or 31 as a factor
 - d. Any numbers that lack 2 as 5 factor

5.
 - a. 1, 2, 7, 14
 - b. 1, 5, 25
 - c. 1, 2, 13, 26

6.
 - a. 23
 - b. 1
 - c. 61

7.
 - a. $s = 2, t = -3$
 - b. $s = -53, t = 294$
 - c. $s = 15, t = -314$

8.

- a. 210
- b. 2520
- c. 35
- d. 21

9.

- a. 3744
- b. 5148 (if you also count straight flushes and royal flushes)
- c. 10240 (if you count straight flushes and allow both Ace-2-3-4-5 and 10-Jack-Queen-King-Ace)
- d. 54912

10.

- a. 17,576,000
- b. $1/1000$, assuming order matters, and fudging just a bit—it's actually $(26^3-1)/17,576,000$, which is just a hair under $1/1000$, since you can't pick the exact same license plate twice
- c. 6000
- d. $\approx 11.1\%$. Hint: How many license plates have exactly one D? How many have exactly two Ds? How many have exactly three Ds?

11.

- a. 110 000
- b. 1 000 100

12.

- a. 19
- b. 13
- c. 190