Handout $4\frac{7}{8}$
Exercises From Barnier & Feldman

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Let our universe be $\mathbb{R}$ unless otherwise noted.

<u>Definition 2.5.1:</u> Let $a \in \mathbb{N}$. We define b being a **factor** of a iff

$$\exists p \in \mathbb{N} \ni a = p \cdot b$$

.
<u>Definition 2.5.2:</u> Let $m \in \mathbb{N}$. We define n being a **multiple** of m iff

$$\exists q \in \mathbb{N} \ni n = q \cdot m$$

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<u>Definition 2.5.3:</u> Let $j \wedge k \in \mathbb{N}$. We define j **divides** k iff

$$\exists r \in \mathbb{N} \ni k = r \cdot j$$

. We use the notation $j \mid k$ to mean j divides k.
<u>Definition 2.5.4:</u> Let $w \wedge k \in \mathbb{N}$. We say w **does not divides** k iff when w is divided into k

$$\exists t \wedge s \in \mathbb{N} \ni k = t \cdot w + s \ni s \neq 0$$

. We use the notation $w \nmid k$ to mean w does not divides k.

§ 2.1 page 40. Additional directions
1 - 14. $U = \mathbb{R}$
15 - 20. $U = \mathbb{Z}$

§ 2.2 page 44. Additional directions
1 - 4. $U = \mathbb{R}$
5. $U = \mathbb{Z}$
6. $U = \mathbb{Z}$
7 - 10. $U = \mathbb{R}$
11 - 16. $U = \mathbb{Z}$
17 - 22. $U = \mathbb{R}$

§ 2.5 page 69. Additional directions
3. $U = \mathbb{N}$
5. $U = \mathbb{N}$
6. $U = \mathbb{N}$
14. $U = \mathbb{R}, x \in (0, \infty), y \in (0, \infty) \Longrightarrow x + 4y \geq 4 \cdot \sqrt{xy}$
15. $U = \mathbb{R}, x \wedge y \in \mathbb{R}$.
16. $U = \mathbb{N}$
17. $U = \mathbb{R}$
18. $U = \mathbb{Z}$
19. $U = \mathbb{Z}$
20. $U = \mathbb{R} \wedge x \in \mathbb{R}$
21. $U = \mathbb{Z} \wedge x \in \mathbb{Z}$
22. $U = \mathbb{R} \wedge x \in (0, \infty)$