Problem 1. For each statement, write **T** in the blank if the statement is true, and write **F** in the blank if the statement is false.

(a) _____ $\dfrac{2}{3} \in \mathbb{Z}$

(b) _____ $3 \notin \mathbb{N}$

(c) _____ $\dfrac{3}{2} \in \mathbb{Q}$

(d) _____ $-3 \in \mathbb{Q}$

(e) _____ $4 \notin \mathbb{N}$

(f) _____ $0 \in \mathbb{Q}$

(g) _____ $-5 \notin \mathbb{Q}$

(h) _____ $\dfrac{-5}{2} \notin \mathbb{Q}$

(i) _____ $\sqrt{2} \notin \mathbb{Q}$

(j) _____ $\sqrt{5} + 2 \in \mathbb{R}$

(k) _____ $\{1,3\} \subset \{1,2,3\}$

(l) _____ $\{1,3,1\} \subset \{1,2,3\}$

(m) _____ $\{2,3,5\} \subset \mathbb{Z}$

(n) _____ $\mathbb{Z} \subset \{1,2,3,4,5\}$

(o) _____ $\{-2,0,-2\} \subset \mathbb{N}$

(p) _____ $\{1/2\} \in \mathbb{Q}$

(q) _____ $\mathbb{N} \subset \mathbb{Q}$

(r) _____ $\{1\} \in \{1,2,3\}$

(s) _____ $\{1.5, 2.5\} \subset \mathbb{Q}$

(t) _____ $\{2,3,5\} \subset \{1,3,5\}$

Problem 2. Find the decimal expansion of each fraction. Identify the repeating part.

(a) $\dfrac{1}{8}$

(b) $\dfrac{5}{11}$

(c) $\dfrac{3}{7}$

(d) $\dfrac{100}{37}$

Problem 3. Find the reduced fractional form of each decimal expansion.

(a) $0.\overline{7}$

(b) $0.\overline{92}$

(c) $12.34\overline{5}$

(d) $8.1\overline{253}$