

1. Complete the sentence: A **rational number** is any number that

2. If a number is rational, then it has a _____ decimal representation.
3. Express the number $\overline{.12}$ as a fraction.

4. Express the following sets in interval notation:
 - (a) $\{x \mid -2 < x \leq 8\}$
 - (b) $\{x \mid x \geq 0\}$
 - (c) $\{x \mid 0 \leq x \leq 1\}$
 - (d) $\{x \mid x < 3 \text{ or } x > 7\}$

5. Write the following intervals in set builder notation:
 - (a) $(-\infty, 0)$
 - (b) $[-4, 4]$
 - (c) $(0, 1)$
 - (d) $(-\infty, -3) \cup [3, \infty)$