→ set builder notation :- $X = \{ \text{expression} : \text{rule} \}$

→ $E = \{ 2n : n \in \mathbb{Z} \}$

① → $n \in \mathbb{Z} \Rightarrow n \in \{ \dots, -3, -2, -1, 0, 1, 2, 3, \dots \}$

② $2n \Rightarrow \{ \dots, 2(-3), 2(-2), 2(-1), 2(0), 2(1), 2(2), 2(3), \dots \}$

③ $E = \{ \dots, -6, -4, -2, 0, 2, 4, 6, \dots \}$

→ $\{ \sqrt{2}, -\sqrt{2} \}$ → not special

→ but

→ $\{ x \in \mathbb{R} : x^2 - 2 = 0 \} = \{ \sqrt{2}, -\sqrt{2} \}$

↳ with context

→ Describe the set $A = \{ 7a + 3b : a, b \in \mathbb{Z} \}$

→ imagine integer n

→ you can write n as $7n - 6n$

$7n + 3(-2n)$,

→ so, $n = 7a + 3b$ where $a = n$ and $b = -2n$

→ therefore $n \in A$

→ since n was an integer, A contains only integers ✓

→ since n was an integer, every integer is in A ✓

then $A = \mathbb{Z}$

Exercises :