

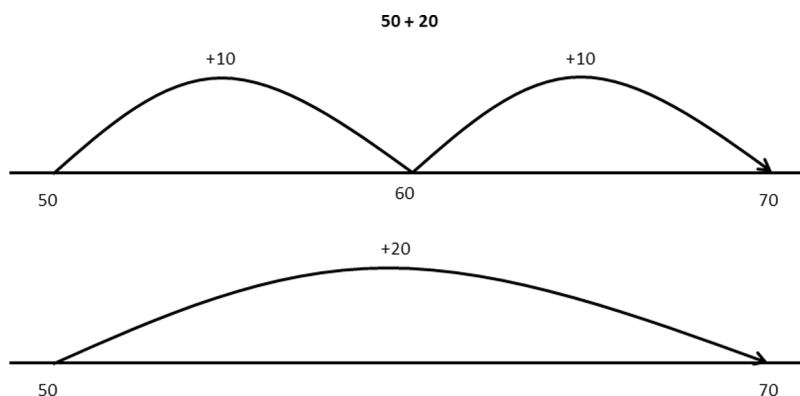
## ACTIVITY IA5.5: Hopping and Leaping on the Empty Number Line

**Intended learning:** To use the empty number line to record and compare addition and subtraction solution strategies.

**Instructional mode:** Longer, inquiry or rehearsal mode for individuals, small groups or whole class.

**Materials:** Chart paper and pen or chalkboard and chalk.

**Description:** Use the empty number line (ENL – see Appendix) to notate incrementing and decrementing. Present students with a bare number problem such as  $50 + 20$ . Record students' solutions on the ENL (see Figure 5.6). Compare different solution strategies.



**Responses, variations and extensions:**

- This task is designed to connect incrementing and decrementing strategies with more formal addition and subtraction notation.
- Base-ten materials may be used as a scaffold if needed.
- Eventually students should be prompted to think about the ENL without actually drawing it. In this way, they are led to anticipate solving the problem with the ENL. In this fashion, the scaffold provided by the ENL gradually fades. *If you were going to use the ENL to solve this, how would you do it? If needed, What would you do first? Where would that leap of 20 get you? And then?*
- Proceed through problems as follows:
  - decuple + or – decuple [ $50 + 20$ ,  $80 - 30$ ]
  - decuple + or – decuple hurdling the centuple [ $90 + 30$ ,  $110 - 20$ ]

- off-decuple + or – decuple [47 + 30, 62 – 20]
- off-decuple + or – decuple hurdling the centuple [97 + 20, 132 – 40]
- centuple + or – centuple [700 + 200, 900 – 300]
- off-centuple + or – decuple [139 + 40, 172 – 30]
- off-centuple + or – decuple hurdling centuple [184 + 20, 213 – 30]
- off-centuple + or – off-decuple [124 + 31, 165 – 23]
- off-centuple + or – off-decuple hurdling centuple [195 + 32, 216 – 24]