Long Walk, Short Pier

Number of Students: Pairs

Materials:

- 1 game board per pair
- 1 Spinner (plus or minus) per pair
- 1 Spinner 0 – 20 per pair
- 1 Spinner 1 – 9 per pair
- 1 set of player pointers per group
- 1 paperclip per pair
- 1 pencil per person
- 1 sheet of paper, pad or exercise book per person

Preparation:

Photocopy or print sufficient game sheets so that there is one for each person

Photocopy or print sufficient spinner sheets so that there is one or each type for each pair

Spinner sheets and game board sheets need to be cut (there are 2 spinners/game boards per page)

Both spinner sheets and game boards can be laminated for longevity, although this is not strictly necessary.

How :

Each student places a marker on the game board pointing exactly to 50 (the player 1 marker is placed above the line, the player 2 marker is placed below).

Students take turns to spin the three spinners. They then move their marker as indicated, for example a spin of ‘+’, ‘twenty’ and ‘five’ means the marker is moved 25 to the right.

If a player’s number goes below 10, they win. If their number goes above 90, they lose.

Students should be encouraged to move their markers first by tens (while counting up or back by 10s), and then by ones to make up the number spun. They should also be encouraged to observe any patterns as they do this.

After each turn, students should record their move as an equation. For example if they were on 50 and spun ‘-‘, ‘twenty’ and ‘7’, they should write ‘50 – 27 = 23’.

While students initially determine the calculations using the number line , once they become familiar with the game students should be explicitly shown the connection between the number line and a written strategy (see supplement). Students can then progress to use pen and paper methods or mental calculations alone to state the total *before* moving their pointers to check their answer.

Addition and Subtraction Supplement

Bridging understanding from materials to written strategies:

If students are to work flexibly with written algorithms, clear connections need to be made between the material support and each aspect of the written strategy. An example of these connections is shown below:

Number Lines - Subtraction

Written form	**Matching number lines support**
34 – 28	
(Subtracting 10s first)	
34	**Starting with pointer on 34 mark**
-20	**Moving left 2 tens (to 24, then 14)**
= 14	**Pointer now on 14 mark**
- 8	**Moving 8 marks to the left, noting that the pointer crosses a 10s mark after moving 4 marks**
= 6	**Pointer now on 6 mark**
or	
34 – 28	
(Subtracting 1s first)	
34	**Starting with pointer on 34 mark**
- 8	**Moving 8 marks to the left, noting that the pointer crosses a 10s mark after moving 4 marks**
= 26	**Pointer now on the 26 mark**
-20	**Moving left 2 tens (to 16, then 6)**
= 6	**Pointer now on 6 mark**

Note: It is not important at this point whether the 10s or 1s are subtracted first. Either way eventually yields to an efficient mental technique and also paves the way for the understanding of later algorithms for dealing with bigger numbers. In many ways, subtracting the 10s first often seems to be a more ‘natural’ way of proceeding.

Number Lines - Addition

Written form	Matching number lines support
34 + 28	
(Adding 10s first)	
34	**Starting with pointer on 34 mark**
+20	**Moving right 2 tens (to 44, then 54)**
= 54	**Pointer now on 54 mark**
+8	**Moving 8 marks to the right, noting that the pointer crosses a 10s mark after moving 6 marks**
= 62	**Pointer now on 62 mark**
or	
34 + 28	
(Adding 1s first)	
34	**Starting with pointer on 34 mark**
+ 8	**Moving 8 marks to the right, noting that the pointer crosses a 10s mark after moving 6 marks**
= 42	**Pointer now on the 42 mark**
+20	**Moving right 2 tens (to 52, then 62)**
= 62	**Pointer now on 62 mark**

Note: It is not important at this point whether the 10s or 1s are added first. Either way eventually yields to an efficient mental technique and also paves the way for the understanding of later algorithms for dealing with bigger numbers. In many ways, adding the 10s first often seems to be a more ‘natural’ way of proceeding.