

# Staircase Capers

You need  a photocopy of the staircases

## Activity

|  |  |  |    |    |    |    |    |    |    |    |    |    |    |
|--|--|--|----|----|----|----|----|----|----|----|----|----|----|
|  |  |  | 1  |    |    |    |    |    |    |    |    |    |    |
|  |  |  | 2  | 3  | 4  |    |    |    |    |    |    |    |    |
|  |  |  | 5  | 6  | 7  | 8  | 9  |    |    |    |    |    |    |
|  |  |  | 10 | 11 | 12 | 13 | 14 | 15 | 16 |    |    |    |    |
|  |  |  | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |    |    |
|  |  |  | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 |

1 Mark some four- or six-block rectangles on your copy of this staircase.  
Add the pairs of numbers in opposite corners of the rectangles.  
What do you notice (for example, in  $2 + 7 = \square$  and  $3 + 6 = \square$ )?

|  |  |  |    |    |    |    |    |    |    |    |    |    |    |
|--|--|--|----|----|----|----|----|----|----|----|----|----|----|
|  |  |  | 1  |    |    |    |    |    |    |    |    |    |    |
|  |  |  | 2  | 3  | 4  |    |    |    |    |    |    |    |    |
|  |  |  | 5  | 6  | 7  | 8  | 9  |    |    |    |    |    |    |
|  |  |  | 10 | 11 | 12 | 13 | 14 | 15 | 16 |    |    |    |    |
|  |  |  | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |    |    |
|  |  |  | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 |

2 Mark crosses on your copy of this staircase.  
Add numbers at opposite ends of the cross (for example,  $2 + 12 = \square$  and  $5 + 7 = \square$ ).  
What do you notice?

|  |  |  |    |    |    |    |    |    |    |    |    |    |    |
|--|--|--|----|----|----|----|----|----|----|----|----|----|----|
|  |  |  | 1  |    |    |    |    |    |    |    |    |    |    |
|  |  |  | 2  | 3  | 4  |    |    |    |    |    |    |    |    |
|  |  |  | 5  | 6  | 7  | 8  | 9  |    |    |    |    |    |    |
|  |  |  | 10 | 11 | 12 | 13 | 14 | 15 | 16 |    |    |    |    |
|  |  |  | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |    |    |
|  |  |  | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 |

3 Mark out little staircases on your copy of this staircase.  
Make some right-hand staircases and some left-hand staircases.  
Add the numbers at the corners (for example,  $2 + 12 + 14 = \square$ ).  
Add the other three numbers (for example,  $6 + 7 + 13 = \square$ ).  
What do you notice?

## Investigation

Can you find any other patterns?

Discuss your patterns with a classmate. Do they work?