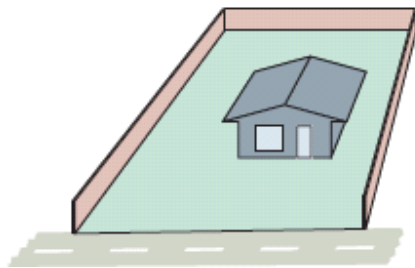


## Problem Solving

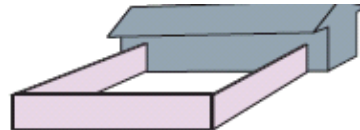
- 1 The product of a number and the number increased by 3 is 54. Find the two possible values the number could be.
- 2 The difference between a number and its square is 42. Find the number.
- 3 When 15 is added to the square of a number, the result is eight times the original number. Find the number.
- 4 Two numbers add up to 5. The sum of their squares is 73. What are the numbers?
- 5 Two numbers differ by 13 and the sum of their squares is 125. Find the numbers.
- 7 A right angled triangle has sides 2 cm and 7 cm respectively less than its hypotenuse. Find the length of each side of the triangle to the nearest millimetre.
- 8 A rectangle has length 3 cm greater than its width. Find its length given that its area is  $40 \text{ cm}^2$ .
- 9 A rectangular paddock has perimeter 600 m and area  $21\,600 \text{ m}^2$ . What are its dimensions?

10



A new fence is constructed on three sides of a housing block with area  $240 \text{ m}^2$ . The fourth side facing the road is left open. If 52 m of fencing is used, what are the dimensions of the block?

- 11 A rectangular chicken yard was built against an existing shed wall. 30 m of fencing was used to enclose  $108 \text{ m}^2$ . Find the dimensions of the yard.



- 12 A gardener plants 462 seedlings. The number of seedlings in each row is 20 more than twice the number of rows. If equal numbers of seedlings were planted in each row, how many rows did the gardener plant?
- 13 A manufacturer has determined that if his company sells  $x$  items per day then their profit is given by  $P = -x^2 + 700x - 100\,000$  euros. How many items must be sold each day in order to make a profit?

**EXERCISE 16E**

- 1** 6 or  $-9$    **2** 7 or  $-6$    **3** 3 or 5   **4** 8 and  $-3$   
**5** 11 and  $-2$  or 2 and  $-11$
- 6**   **a**  $x = 12$       **b**  $x = 5 + \sqrt{70} \approx 13.4$       **c**  $x = 3$
- 7** 7.3 cm, 12.3 cm, 14.3 cm   **8** 8 cm   **9** 120 m  $\times$  180 m
- 10** 20 m  $\times$  12 m or 6 m  $\times$  40 m
- 11** 9 m  $\times$  12 m or 6 m  $\times$  18 m   **12** 11 rows
- 13** between 200 and 500 items   **14**  $40\sqrt{10} \approx 126.5$  m