

GCSE Maths: Problems leading to quadratic equations (Higher): worksheet

GCSE Maths - Quadratic and Simultaneous Equations - Higher - Lesson 14.4

Name: _____

Date: _____

Score: _____

15 questions. Write your answers in the spaces. Answers and step-by-step help are free at websink.site/gcse/maths/ch14-quadratics-simultaneous/higher/problems-leading-to-quadratic-equations/

Exercise 14D Problems leading to quadratic equations Non-calculator

1 Solve these number problems. In each case form an equation first.

(a) The product of two consecutive positive whole numbers is 72. Find the numbers.

Answer: _____

(b) The product of two consecutive positive whole numbers is 110. Find the numbers.

Answer: _____

(c) The product of two consecutive positive whole numbers is 210. Find the numbers.

Answer: _____

2 Solve these rectangle problems.

(a) A rectangle has width x cm and length $(x + 2)$ cm. Its area is 24 cm^2 . Find the width and the length.

Answer: _____

(b) A rectangle has width x cm and length $(x + 5)$ cm. Its area is 36 cm^2 . Find the width and the length.

Answer: _____

(c) A rectangle has width x cm and length $(x + 3)$ cm. Its area is 40 cm^2 . Find the width and the length.

Answer: _____

(d) A rectangle has width x cm and length $(x + 1)$ cm. Its area is 56 cm^2 . Find the width and the length.

Answer: _____

3 The square of a number is 5 more than four times the number. Find the possible values of the number.

Answer: _____

4 A number added to its square gives 42. Find the two possible numbers.

Answer: _____

5 A rectangle has width w cm and length $(w + 5)$ cm. Its area is 14 cm^2 . Find the width and the length.

Answer: _____

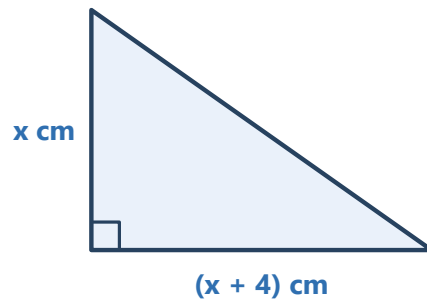
6 A rectangular garden has a perimeter of 34 m and an area of 60 m^2 . Find the length and the width of the garden.

Answer: _____

7 Sam is x years old. His sister is 3 years younger. The product of their ages is 130. Find their ages.

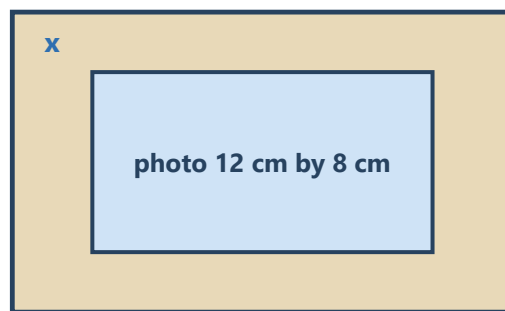
Answer: _____

- 8 A triangle has base $(x + 4)$ cm and height x cm. Its area is 30 cm^2 . Find the base and the height.



Answer:

- 9 A photograph measures 12 cm by 8 cm. It is put in a frame with a border of width x cm all round. The area of the whole frame, including the photograph, is 140 cm^2 . Find x .



whole frame: $(12 + 2x)$ cm by $(8 + 2x)$ cm

Answer:

- 10 Solve these problems about consecutive odd numbers. Form an equation first.

(a) The product of two consecutive odd positive whole numbers is 143. Find the numbers.

Answer:

(b) The product of two consecutive odd positive whole numbers is 195. Find the numbers.

Answer:

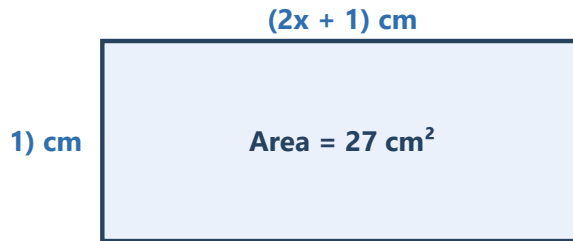
(c) The product of two consecutive odd positive whole numbers is 99. Find the numbers.

Answer:

- 11 The sum of the squares of two consecutive whole numbers is 85. Find the two numbers. (There are two possible pairs.)

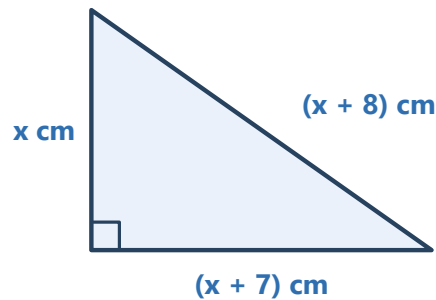
Answer:

- 12 A rectangle has length $(2x + 1)$ cm and width $(x - 1)$ cm. Its area is 27 cm^2 . Find x and write down the dimensions of the rectangle.



Answer:

- 13** The three sides of a right-angled triangle are $x \text{ cm}$, $(x + 7) \text{ cm}$ and $(x + 8) \text{ cm}$. Find the length of each side.



Answer:

- 14** The sum of the squares of three consecutive whole numbers is 365. Find the three numbers. (There are two possible sets.)

Answer:

- 15** Explain why two consecutive whole numbers cannot have a product of 50.

Answer:
