

Name _____

Date _____

15.2 Compound shapes — worksheet

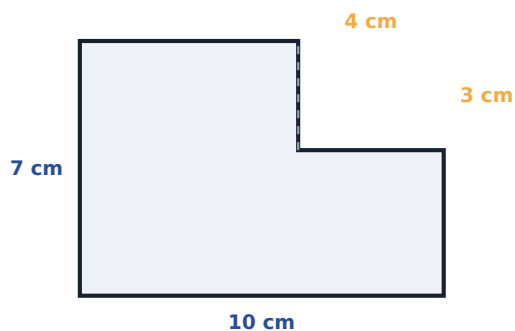
Find the area and perimeter of shapes made from rectangles, by splitting them up or by subtracting from an enclosing rectangle. · 53 questions · Show your working.

Remember

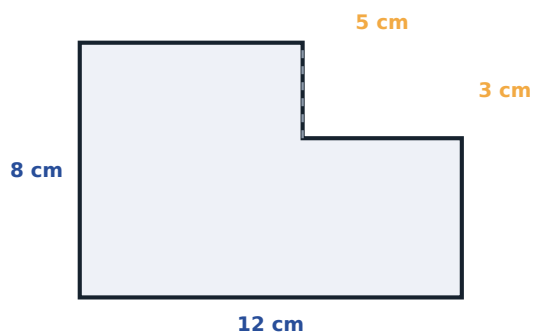
- A **compound shape** is built from rectangles, so it can always be handled with the rectangle formula.
- **Method 1 — split.** Cut it into rectangles and **add** the areas.
- **Method 2 — subtract.** Take the missing piece away from the enclosing rectangle.
- Both methods must give the same answer. Doing one and checking with the other is free insurance.
- Write every side length on the diagram first, including the ones you have to work out by subtracting.
- For the **perimeter**, walk right round the outline. Inside joins are not part of it.
- Cutting a rectangular corner out changes the area but **not** the perimeter.
- A border of width b round an l by w picture makes the outside $(l + 2b)$ by $(w + 2b)$.

A · Fluency — Split it, or subtract from the whole.

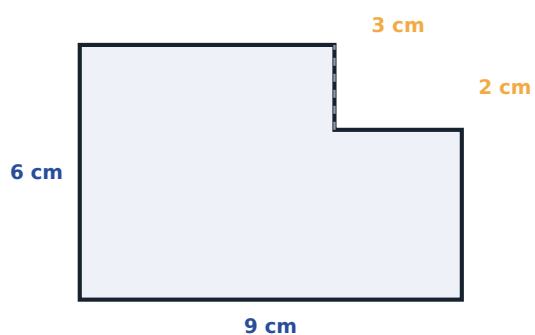
- 1 Find the **area** of this L-shape, in square centimetres.



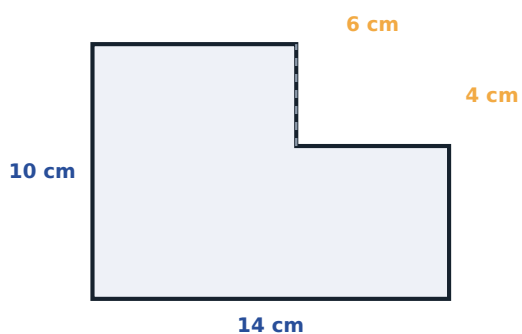
- 2 Find the **area** of this L-shape, in square centimetres.



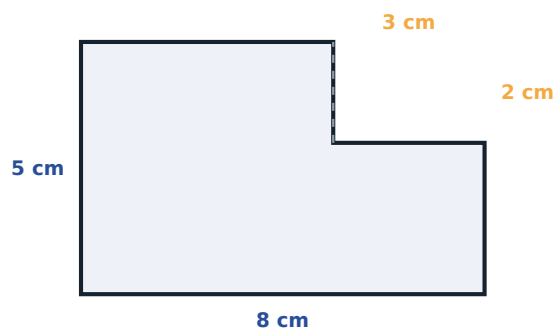
- 3 Find the **area** of this L-shape, in square centimetres.



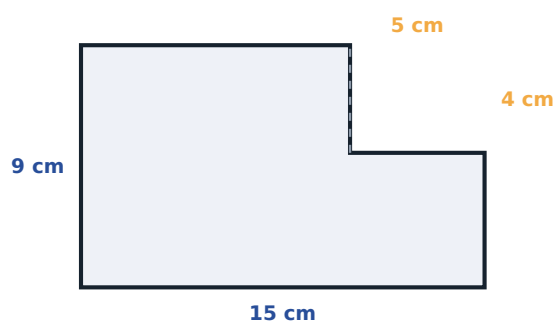
- 4 Find the **area** of this L-shape, in square centimetres.



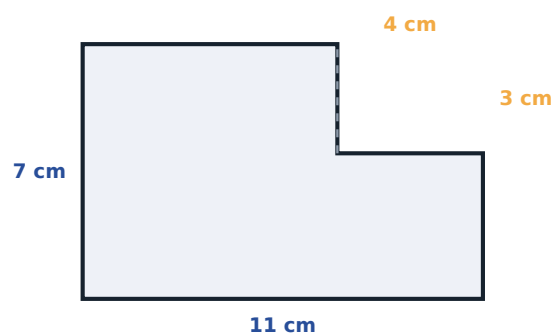
- 5 Find the **area** of this L-shape, in square centimetres.



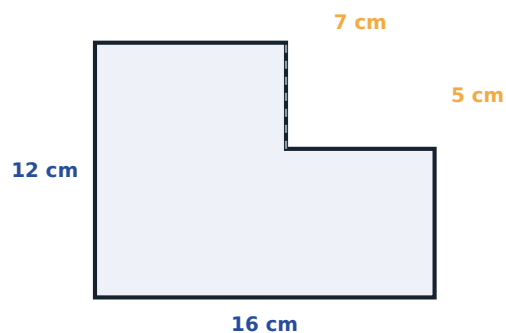
- 6 Find the **area** of this L-shape, in square centimetres.



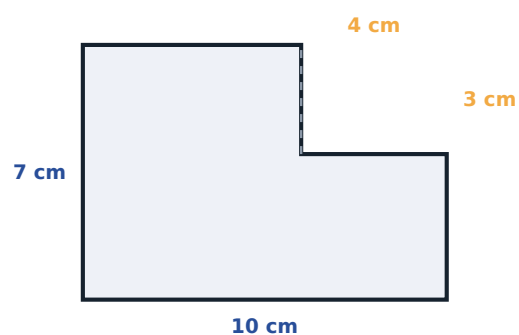
- 7 Find the **area** of this L-shape, in square centimetres.



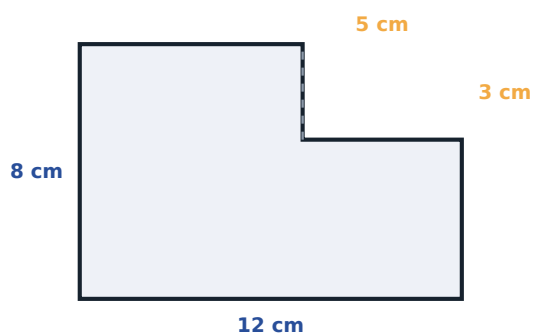
- 8 Find the **area** of this L-shape, in square centimetres.



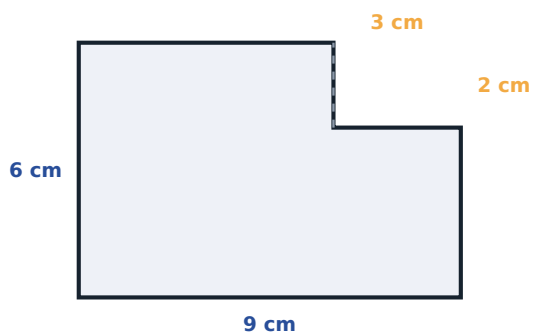
- 9 Find the **perimeter** of this L-shape, in centimetres.



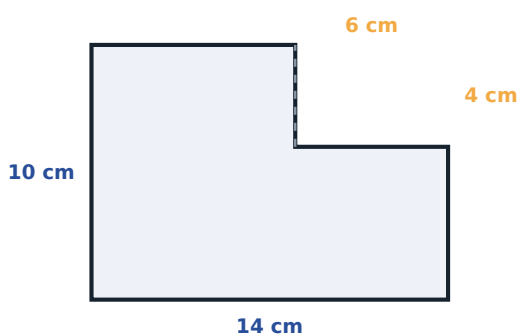
- 10 Find the **perimeter** of this L-shape, in centimetres.



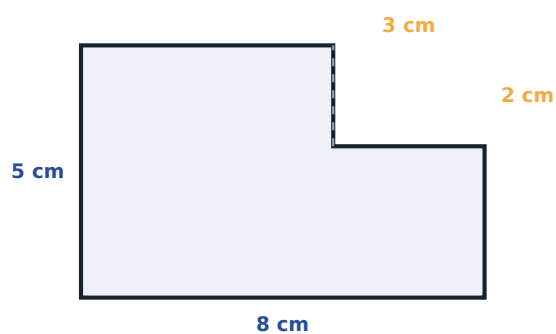
- 11 Find the **perimeter** of this L-shape, in centimetres.



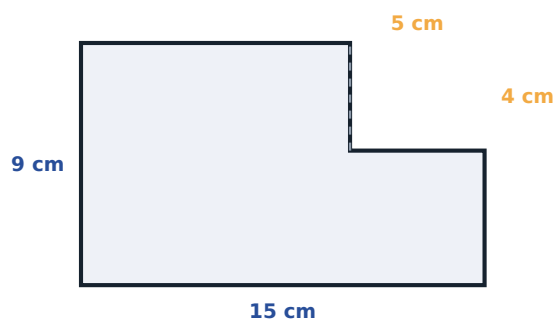
- 12 Find the **perimeter** of this L-shape, in centimetres.



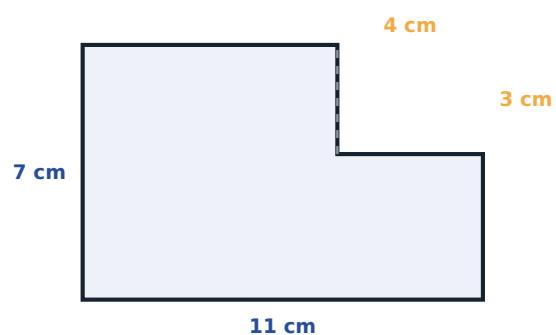
- 13 Find the **perimeter** of this L-shape, in centimetres.



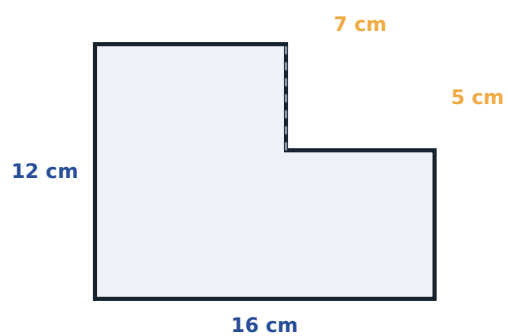
- 14 Find the **perimeter** of this L-shape, in centimetres.



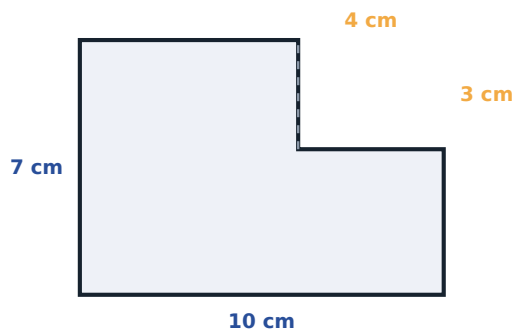
- 15 Find the **perimeter** of this L-shape, in centimetres.



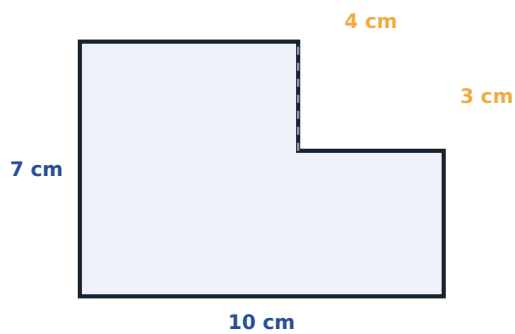
- 16 Find the **perimeter** of this L-shape, in centimetres.



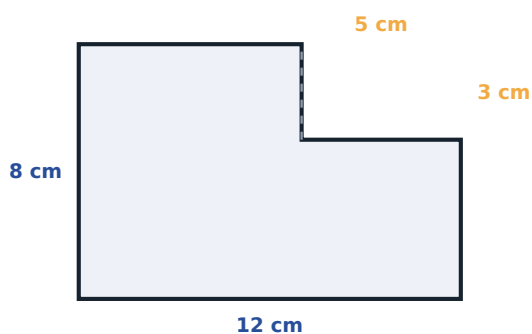
- 17 Split this L-shape into two rectangles with a horizontal cut. What is the area of the **lower** rectangle, in square centimetres?



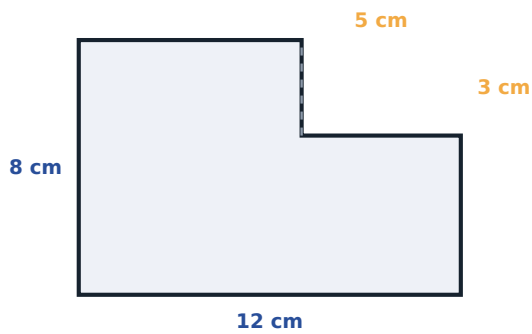
- 18 Split this L-shape into two rectangles with a horizontal cut. What is the area of the **upper** rectangle, in square centimetres?



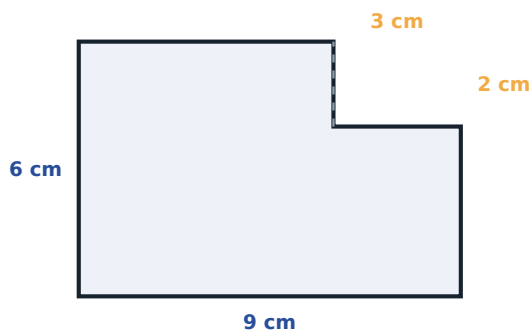
- 19 Split this L-shape into two rectangles with a horizontal cut. What is the area of the **lower** rectangle, in square centimetres?



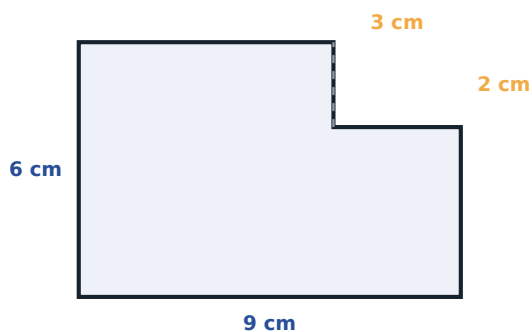
- 20 Split this L-shape into two rectangles with a horizontal cut. What is the area of the **upper** rectangle, in square centimetres?



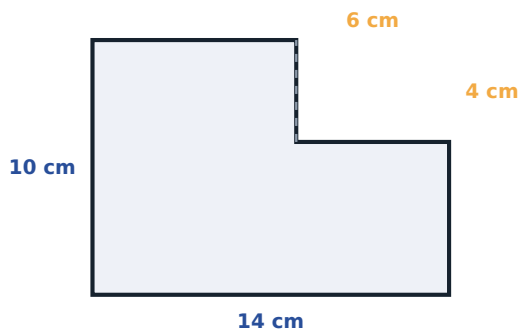
- 21 Split this L-shape into two rectangles with a horizontal cut. What is the area of the **lower** rectangle, in square centimetres?



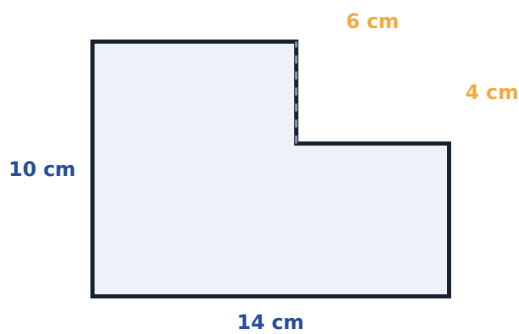
- 22 Split this L-shape into two rectangles with a horizontal cut. What is the area of the **upper** rectangle, in square centimetres?



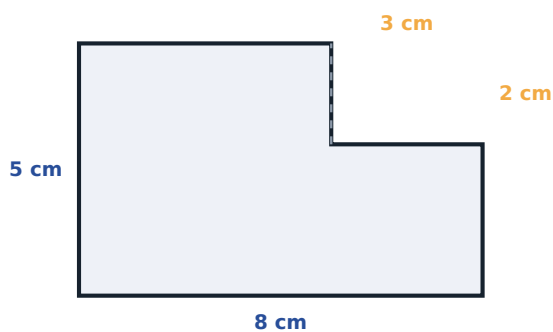
- 23 Split this L-shape into two rectangles with a horizontal cut. What is the area of the **lower** rectangle, in square centimetres?



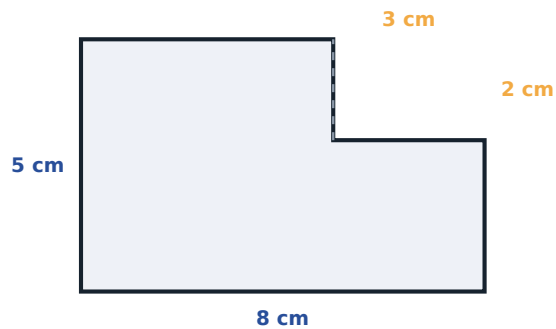
- 24 Split this L-shape into two rectangles with a horizontal cut. What is the area of the **upper** rectangle, in square centimetres?



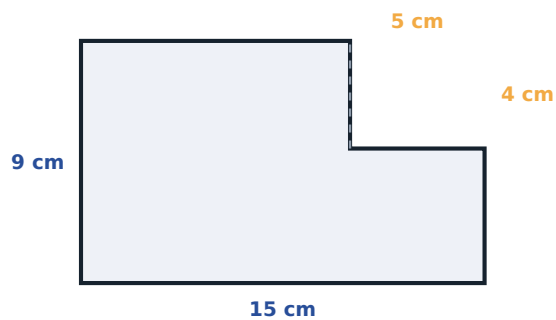
- 25 Split this L-shape into two rectangles with a horizontal cut. What is the area of the **lower** rectangle, in square centimetres?



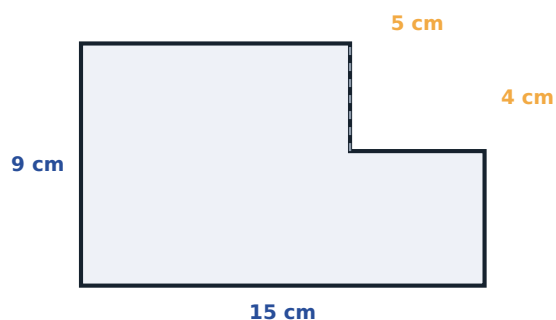
- 26 Split this L-shape into two rectangles with a horizontal cut. What is the area of the **upper** rectangle, in square centimetres?



- 27 Split this L-shape into two rectangles with a horizontal cut. What is the area of the **lower** rectangle, in square centimetres?



- 28 Split this L-shape into two rectangles with a horizontal cut. What is the area of the **upper** rectangle, in square centimetres?



B · Reasoning — Why the two methods agree, and how area and perimeter differ.

- 29** What is a compound shape?
- ☐ A shape with curves
 - ☐ A shape made from simpler shapes joined together
 - ☐ A 3D shape
 - ☐ A shape with equal sides
- 30** Which two methods both find the area of an L-shape?
- ☐ Split it in two, or subtract the missing corner
 - ☐ Add the sides, or multiply them
 - ☐ Measure it, or guess
 - ☐ Only splitting works
- 31** Does cutting a rectangular corner out of a rectangle change its perimeter?
- ☐ Yes
 - ☐ No
- 32** Does cutting a corner out of a rectangle change its area?
- ☐ Yes
 - ☐ No
- 33** When you split a compound shape, the areas of the parts ...
- ☐ are multiplied
 - ☐ are added
 - ☐ are subtracted
 - ☐ are averaged
- 34** Why write down every side length before you start?
- ☐ It looks tidy
 - ☐ Because the missing ones are found by subtracting, and that is where marks are lost
 - ☐ It is not necessary
 - ☐ To fill the page
- 35** An L-shape is 10 cm by 7 cm overall with a 4 cm by 3 cm corner removed. Its area is ...
- ☐ 70 cm²
 - ☐ 58 cm²
 - ☐ 82 cm²
 - ☐ 12 cm²
- 36** Can a compound shape be split in more than one way?
- ☐ Yes
 - ☐ No
- 37** Two learners split the same L-shape differently and get different answers. What follows?
- ☐ Both can be right
 - ☐ At least one has made a mistake
 - ☐ The shape is wrong
 - ☐ It depends on the split

38 The area of a compound shape is measured in ...

- ☐ cm
- ☐ cm^2
- ☐ cm^3
- ☐ no units

C · Challenge — Squares in rows, crosses and borders.

39 A rectangle 20 cm by 12 cm has a 6 cm square cut from one corner. What is the remaining area, in square centimetres?

40 A rectangular lawn 15 m by 10 m has a rectangular pond 4 m by 3 m in it. What area of grass is left, in square metres?

41 An L-shape is made of a 9 cm by 4 cm rectangle and a 5 cm by 6 cm rectangle joined edge to edge. What is its total area, in square centimetres?

42 A shape is made from three squares of side 5 cm joined in a row. What is its area, in square centimetres?

43 A shape is made from three squares of side 5 cm joined in a row. What is its perimeter, in centimetres?

44 A cross is made from five 3 cm squares. What is its area, in square centimetres?

45 A room is an L-shape: 8 m by 5 m with a 3 m by 2 m corner taken out. What area of flooring is needed, in square metres?

D · Word problems — Patios, walls, car parks and mounts.

46 A patio is 12 m by 8 m with a 3 m by 3 m flower bed cut out of one corner. What area is paved, in square metres?

47 A rectangular sheet of card 30 cm by 20 cm has a 10 cm by 8 cm rectangle cut from it. What area of card remains, in square centimetres?

48 A wall 5 m by 3 m has a window 2 m by 1 m. What area is painted, in square metres?

49 A car park is 40 m by 25 m with a 10 m by 10 m building on it. What area is left for cars, in square metres?

- 50** A picture 20 cm by 15 cm is mounted with a 3 cm border all round. What is the area of the mount and picture together, in square centimetres?
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- 51** A picture 20 cm by 15 cm is mounted with a 3 cm border all round. What is the area of the border alone, in square centimetres?
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- 52** A garden path 2 m wide runs along one 12 m side of a rectangular garden. What is the area of the path, in square metres?
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- 53** A kitchen floor is an L-shape: 6 m by 4 m with a 2 m by 2 m corner taken out. Tiles cost \$12 per square metre. What is the total cost, in dollars?
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