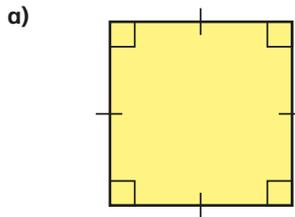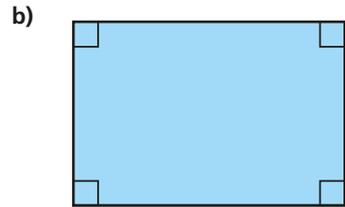# Angles in special quadrilaterals

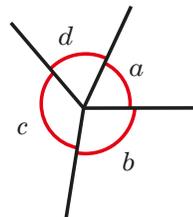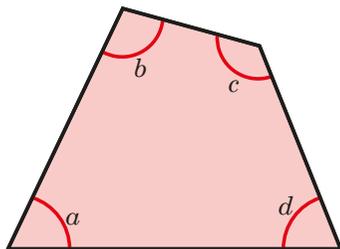**1** Work out the sum of the angles in each shape.

a)

b)

$360°$

$360°$

What do you notice?

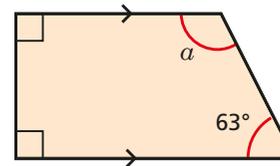**2** The diagrams show the four vertices of a quadrilateral arranged around a point.

What do the diagrams illustrate about the sum of the angles in a quadrilateral?

Complete the sentence.

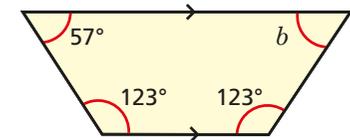Angles in a quadrilateral __sum to 360°__

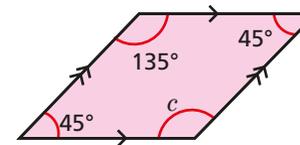**3** Work out the size of the unknown angle in each trapezium.

a)

b)

$a$

$63°$

$57°$ $b$

$123°$ $123°$

$a = $ 117°

$b = $ 57°

c) What is the same and what is different about the trapeziums?

**4** Work out the sizes of the unknown angles.

a)

b)

$45°$

$135°$
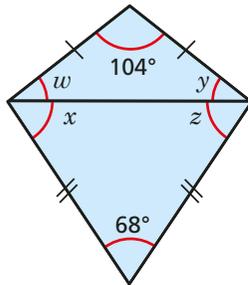
$45°$

$c$

$78°$ $102°$

$d$ $78°$

$c = $ 135°
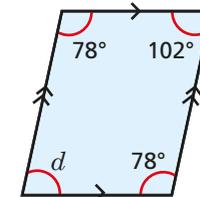
$d = $ 102°

c) What do you notice about opposite angles in a parallelogram?

__They are equal.__

**5** Two isosceles triangles are joined to form a kite.

**a)** Work out the sizes of the unknown angles.

$w =$ | $38°$    $y =$ | $38°$    $x =$ | $56°$    $z =$ | $56°$
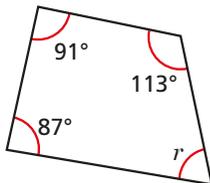
**b)** Work out $w + x$.

| $94°$

**c)** Work out $y + z$.

| $94°$

What do you notice? Talk about it with a partner.
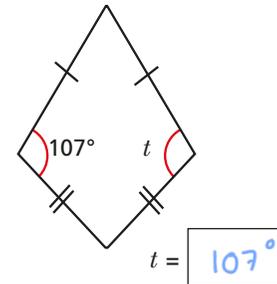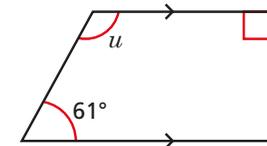
**6** Work out the sizes of the unknown angles.

**a)**

91°
113°
87°
$r$

**b)**

$s$
73°

$r =$ | $69°$

$s =$ | $73°$

**c)**

107° $t$

$t =$ | $107°$

**d)**

$u$
61°
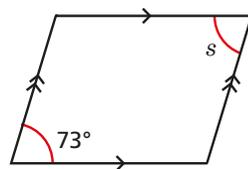
$u =$ | $119°$

Compare your reasoning with a partner.

**7** Teddy is drawing a quadrilateral.

> My quadrilateral has exactly three right-angles.

Is Teddy's quadrilateral possible? _No_

Explain your answer.

$90 \times 3 = 270$    $360 - 270 = 90$

If three angles were right angles the fourth would
also have to be a right angle.