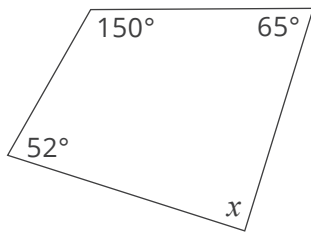# Angles in Quadrilaterals KS3 Walkthrough Worksheet **Answers**

Diagrams are not drawn accurately
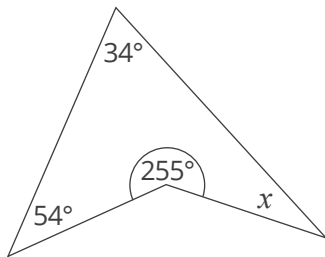
1. Calculate the missing angle marked x.

x = 360 – 150 – 65 – 52

x = **93°**
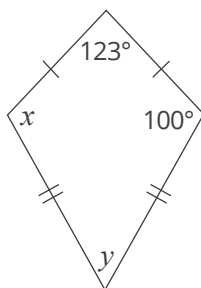
2. Calculate the missing angle marked x.

x = 360 – 255 – 54 – 34

x = **17°**

3. Calculate the missing angles marked x and y.

x = **100°**

y = 360 – 100 – 100 – 123

y = **37°**

4. Calculate the missing angle marked x.
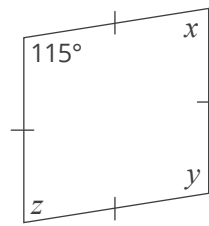
x = 180 – 115

x = **65°**

y = **115°**

z = 180 – 115

z = **65°**

5. Calculate the missing angles marked x, y and z.
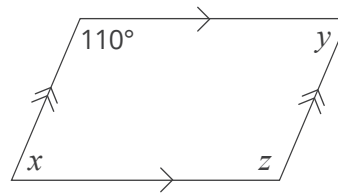
x = 180 – 110

x = **70°**

y = 180 – 110

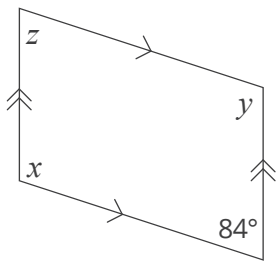y = **70°**

z = **110°**

6. Calculate the missing angle marked x.
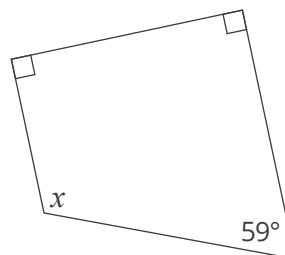
x = 360 – 90 – 90 – 59

x = **121°**

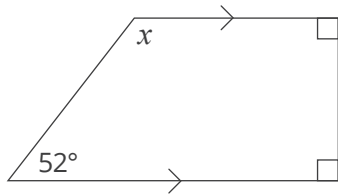7. Calculate the missing angles marked x, y and z.

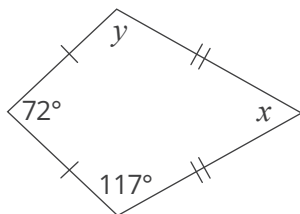x = 180 – 84

x = 96°

y = 180 – 84

y = 96°

z = 84°

8. Calculate the missing angle marked x.

x = 360 – 90 – 90 – 52

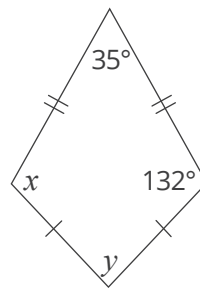x = 128°

9. Calculate the missing angles marked x and y.

y = 117°

x = 360 – 117 – 117 – 72

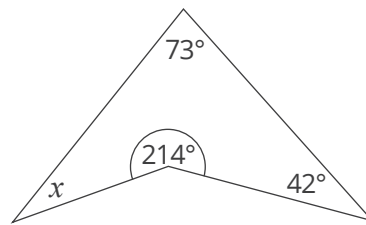x = 54°

10. Calculate the missing angles marked x and y.
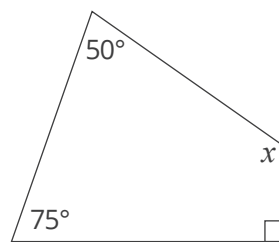

x = 132°

y = 360 – 132 – 132 – 35

y = 61°

11. Calculate the missing angle marked x.

x = 360 – 214 – 73 – 42
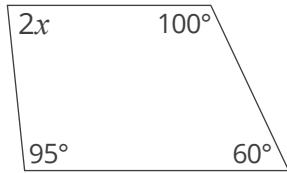
x = 31°

12. Calculate the missing angle marked x.

x = 360 – 90 – 75 – 50

x = 145°

Challenge

1. Calculate the value of x. Hence, find the missing angle.

2. Calculate the values of x and y.

2x + 100 + 95 + 60 = 360

2x + 255 = 360

2x = 105

x = 52.5°

Missing angle is 105°
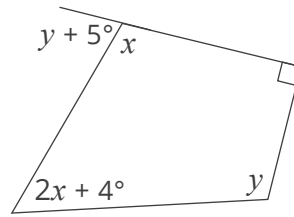
2x + 4 + x + y + 90 = 360

3x + y + 94 = 360

3x + y = 266

x + y + 5 = 180

x + y = 175

2x = 91

x = 45.5°

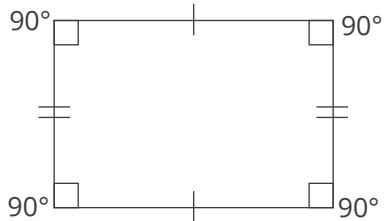**y = 129.5°**

Angles in Quadrilaterals
KS3 Walkthrough Worksheet

Prior Knowledge:
- Names of different types of angles.
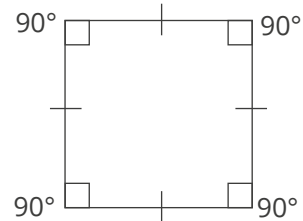- Angle facts, including that angles on a straight line add up to 180°.

You need to know the names and properties of the different types of quadrilaterals.
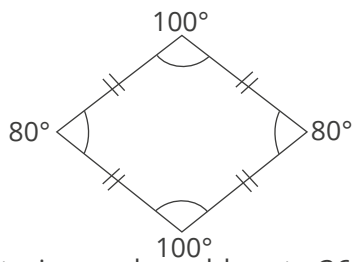
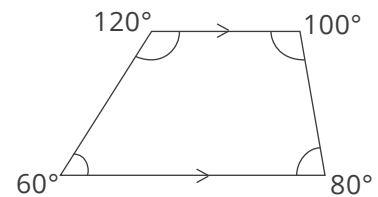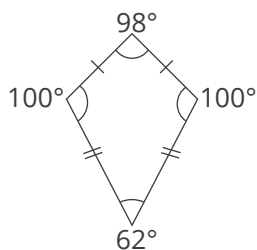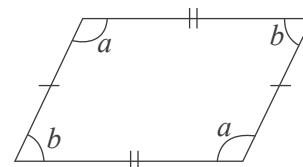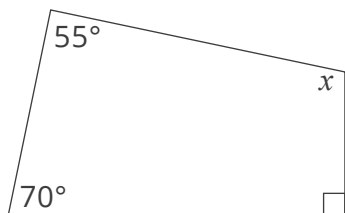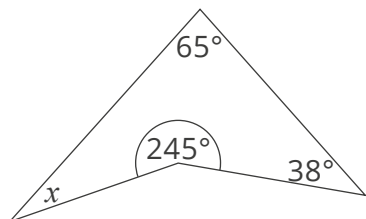| Rectangle	Square
• The interior angles add up to 360°. • Each angle is 90°. • Opposite sides have equal length. • It has 2 pairs of parallel lines.	• The interior angles add up to 360°. • Each angle is 90°. • All sides have equal length. • It has 2 pairs of parallel lines.
Rhombus	**Trapezium**
• The interior angles add up to 360°. • All sides have equal length. • Opposite sides are parallel and opposite angles are equal. • The diagonals bisect each other at a right angle.	• The interior angles add up to 360°. • Each angle may be different. • It has 1 pair of parallel lines. • It has 2 pairs of angles that are supplementary: they add up to 180°.
Kite	**Parallelogram**
• The interior angles add up to 360°. • There are 2 congruent pairs of sides. • Each pair consists of 2 equal-length sides that are adjacent (they meet). • The angles are equal where the 2 pairs meet. • The diagonals are perpendicular.	• The interior angles add up to 360°. • Opposite sides are parallel. • Opposite sides are equal in length. • Opposite angles are equal (angles a are the same and angles b are the same). • Angles a and b are supplementary: they add up to 180°.

Example 1: Find the missing angle marked x.

$x = 360 - 90 - 70 - 55$

$x = 145°$

Example 2: Find the missing angle marked x.

$x = 360 - 245 - 65 - 38$

$x = 12°$

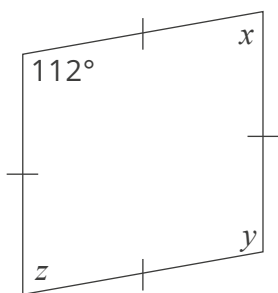**Example 3:** Find the missing angles marked x, y and z.

$x + 108 = 180$

$x = 72°$

$y = 72°$

$z = 108°$

Example 4: Find the missing angles marked x, y and z.

$x + 112 = 180$

$x = 68°$

$y = 112°$

$z + 112 = 180$

$z = 68°$

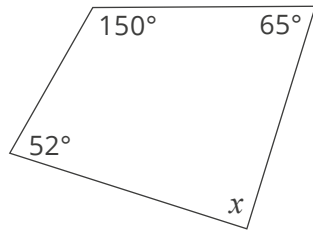**Example 5:** Find the missing angles marked x and y.
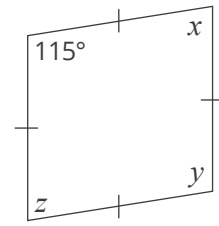
$x = 100°$

$y = 360 - 104 - 100 - 100$

$y = 56°$

Your Turn

Diagrams are not drawn accurately

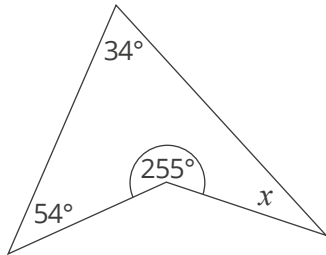1. Calculate the missing angle marked x.

150°   65°
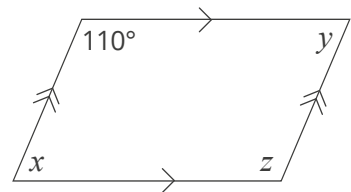
52°

x

4. Calculate the missing angle marked x.

x

115°

y

z

2. Calculate the missing angle marked x.

34°

255°
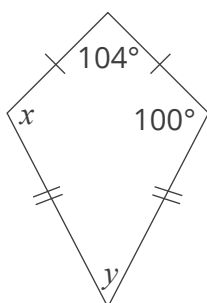
54° x

5. Calculate the missing angles marked x, y and z.

110° y

x z

3. Calculate the missing angles marked x and y.

123°

x 100°

y

6. Calculate the missing angle marked x.

x

59°

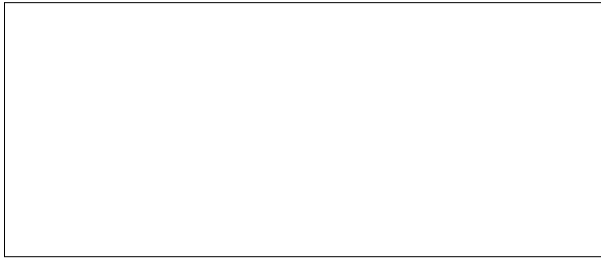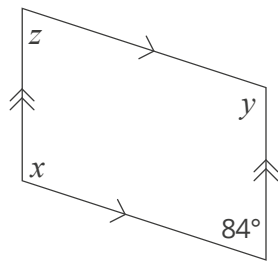7. Calculate the missing angles marked x, y and z.

10. Calculate the missing angles marked x and y.
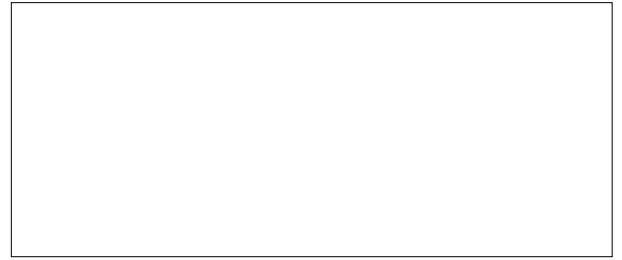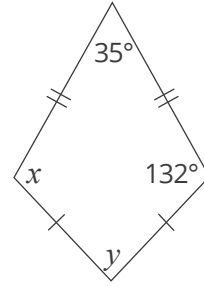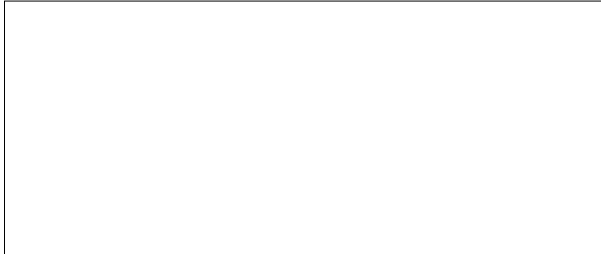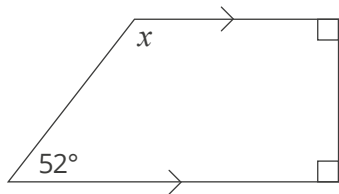
8. Calculate the missing angle marked x.

11. Calculate the missing angle marked x.
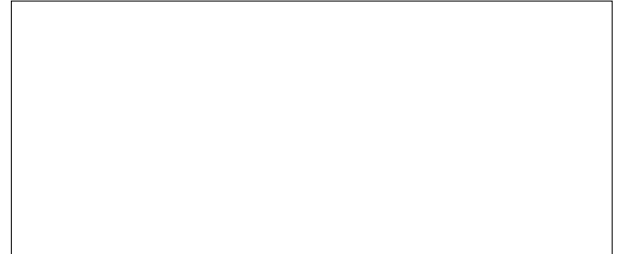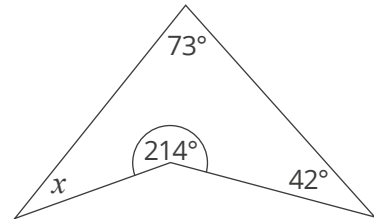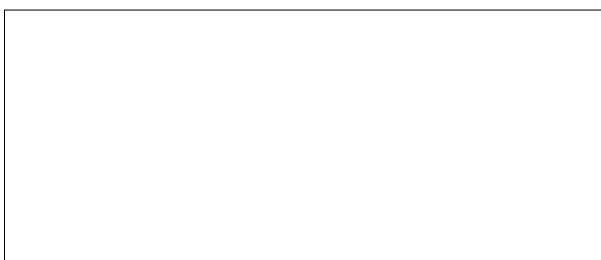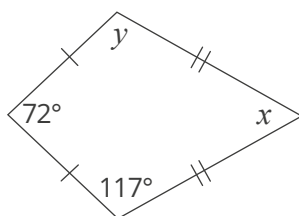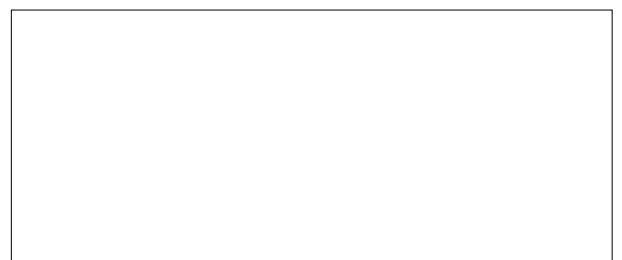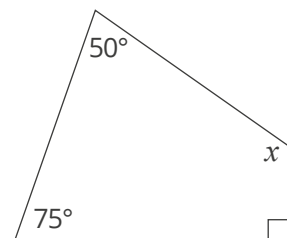
9. Calculate the missing angles marked x and y.

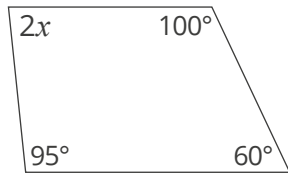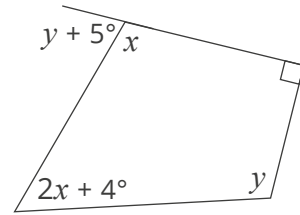12. Calculate the missing angle marked x.

Challenge

1. Calculate the value of x. Hence, find the missing angle.

    2x   100°

    95°   60°

2. Calculate the values of x and y.

    $y + 5°$ x

    $2x + 4°$ y
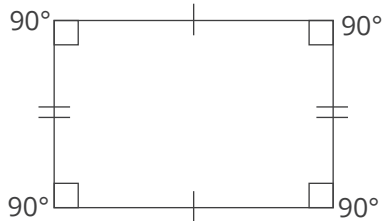
Angles in Quadrilaterals
KS3 Walkthrough Worksheet

Prior Knowledge:
- Names of different types of angles.
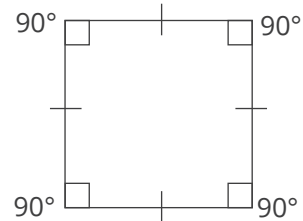- Angle facts, including that angles on a straight line add up to 180°.

You need to know the names and properties of the different types of quadrilaterals.
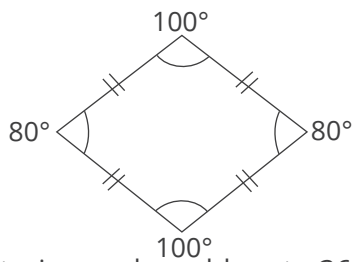
Rectangle	**Square**
• The interior angles add up to 360°.	• The interior angles add up to 360°.
• Each angle is 90°.	• Each angle is 90°.
• Opposite sides have equal length.	• All sides have equal length.
• It has 2 pairs of parallel lines.	• It has 2 pairs of parallel lines.

Rhombus	**Trapezium**
• The interior angles add up to 360°.	• The interior angles add up to 360°.
• All sides have equal length.	• Each angle may be different.
• Opposite sides are parallel and opposite angles are equal.	• It has 1 pair of parallel lines.
• The diagonals bisect each other at a right angle.	• It has 2 pairs of angles that are supplementary: they add up to 180°.

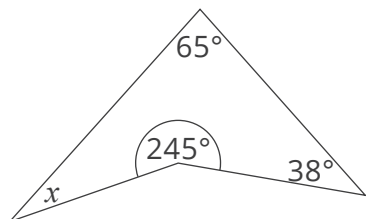| **Kite**	**Parallelogram**
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• Each pair consists of 2 equal-length sides that are adjacent (they meet).	• Opposite sides are equal in length.
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$x = 360 – 90 – 70 – 55$

$x = 145°$

Example 2: Find the missing angle marked x.

$x = 360 – 245 – 65 – 38$

$x = 12°$

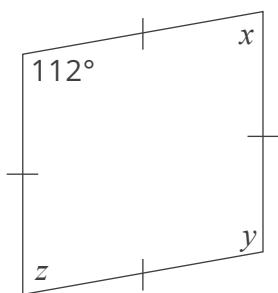**Example 3:** Find the missing angles marked x, y and z.

$x + 108 = 180$

$x = 72°$

$y = 72°$

$z = 108°$

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$x + 112 = 180$

$x = 68°$

$y = 112°$

$z + 112 = 180$

$z = 68°$

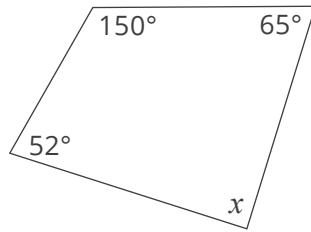**Example 5:** Find the missing angles marked x and y.

$x = 100°$

$y = 360 – 104 – 100 – 100$

$y = 56°$

Your Turn

Diagrams are not drawn accurately

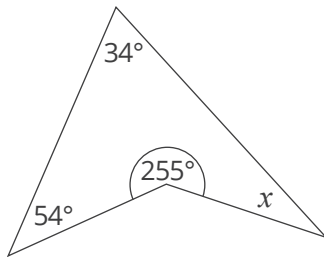1. Calculate the missing angle marked x.

150°   65°

52°

x

_____

_____

_____

_____

2. Calculate the missing angle marked x.

34°

255°

54° x

_____

_____

_____

_____

3. Calculate the missing angles marked x and y.

123°

x 100°

y

_____

_____

_____

_____

4. Calculate the missing angle marked x.

115° x

z y

_____

_____

_____

_____

5. Calculate the missing angles marked x, y and z.

110° y

x z

_____

_____

_____

_____

6. Calculate the missing angle marked x.

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59°

_____

_____

_____

_____

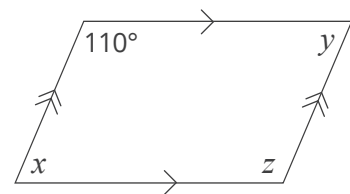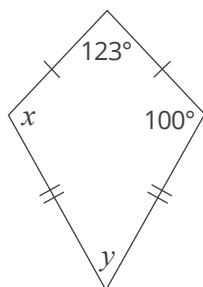7. Calculate the missing angles marked x, y and z.

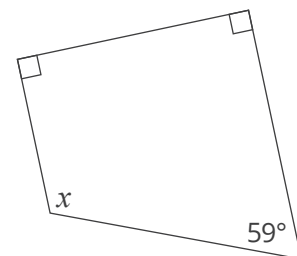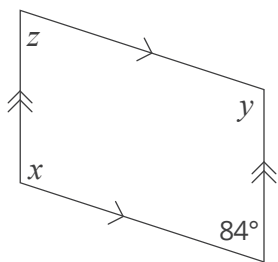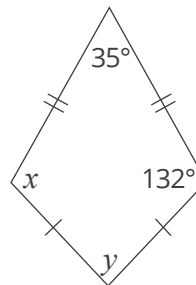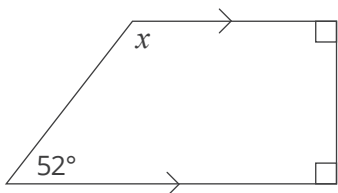8. Calculate the missing angle marked x.

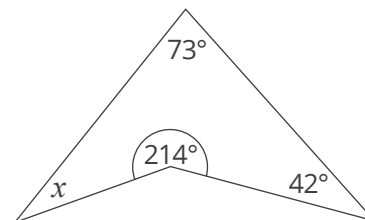9. Calculate the missing angles marked x and y.
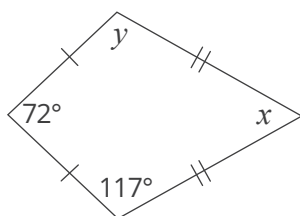

10. Calculate the missing angles marked x and y.

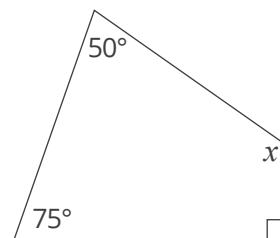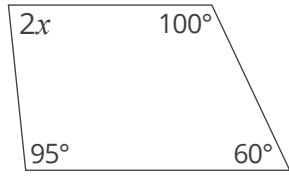11. Calculate the missing angle marked x.

12. Calculate the missing angle marked x.

Challenge

1. Calculate the value of x. Hence, find the missing angle.

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