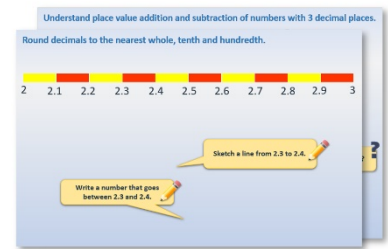


Week 8, Day 4

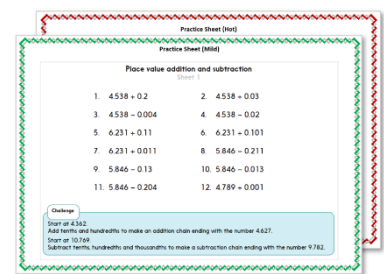
Angles in quadrilaterals

Each day covers one maths topic. It should take you about 1 hour or just a little more.

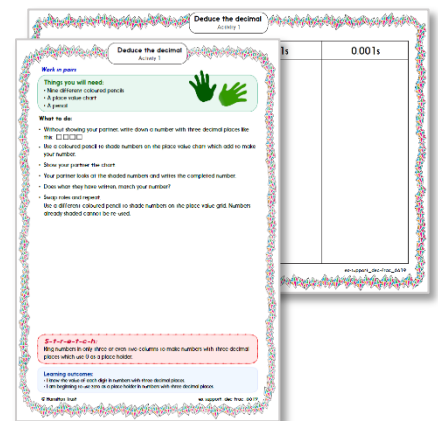
1. Start by reading through the **Learning Reminders**. They come from our *PowerPoint* slides.



2. Tackle the questions on the **Practice Sheet**. There might be a choice of either **Mild** (easier) or **Hot** (harder)! Check the answers.



3. Finding it tricky? That's OK... have a go with a grown-up at **A Bit Stuck?**



4. Think you've cracked it? Whizzed through the Practice Sheets? Have a go at the **Investigation**...

Learning Reminders

Compare and classify quadrilaterals, based on properties including types of angles.

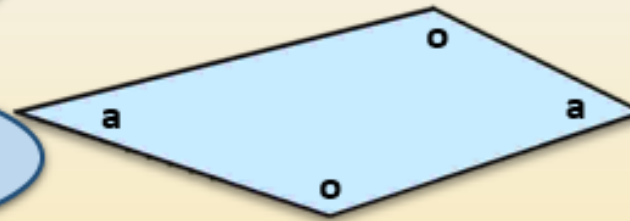
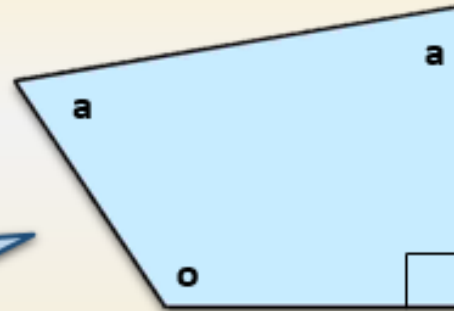
A **quadrilateral** is a polygon (a straight-sided, 2-D, closed shape) with four sides.

Let's look at the angles in these two quadrilaterals...

We can mark right angles with a little square, acute angles with 'a' and obtuse angles with 'o'.

Draw your own quadrilateral.

Mark the angles in your quadrilateral in the same way.



Practice Sheet Mild

Angles in quadrilaterals

Colour acute angles red. Colour obtuse angles blue. Mark right angles with a square.
Write the name of each type of quadrilateral.

Fill in the information for each quadrilateral.

1.

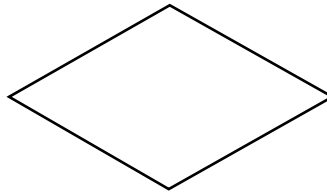


Number of acute angles: _____

Number of obtuse angles: _____

Number of right angles: _____

2.



Number of acute angles: _____

Number of obtuse angles: _____

Number of right angles: _____

3.

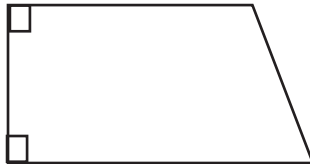


Number of acute angles: _____

Number of obtuse angles: _____

Number of right angles: _____

4.

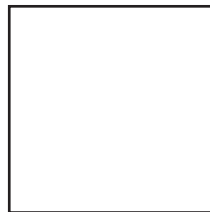


Number of acute angles: _____

Number of obtuse angles: _____

Number of right angles: _____

5.

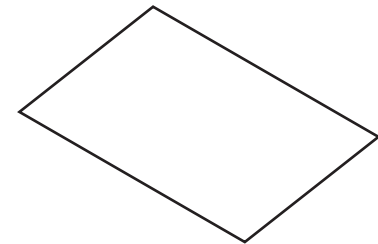


Number of acute angles: _____

Number of obtuse angles: _____

Number of right angles: _____

6.



Number of acute angles: _____

Number of obtuse angles: _____

Number of right angles: _____

Practice Sheet Hot

Angles in quadrilaterals

Colour acute angles red. Colour obtuse angles blue. Mark right angles with a square.
Write the name of each type of quadrilateral and fill in the information.

1.



Number of acute angles: _____

Number of obtuse angles: _____

Number of right angles: _____

2.

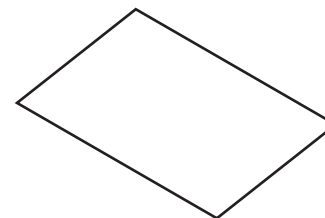


Number of acute angles: _____

Number of obtuse angles: _____

Number of right angles: _____

3.

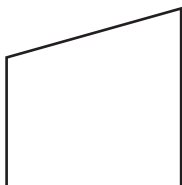


Number of acute angles: _____

Number of obtuse angles: _____

Number of right angles: _____

4.

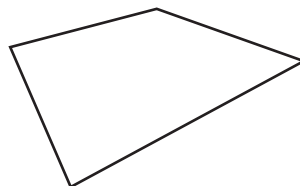


Number of acute angles: _____

Number of obtuse angles: _____

Number of right angles: _____

5.

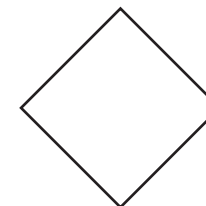


Number of acute angles: _____

Number of obtuse angles: _____

Number of right angles: _____

6.



Number of acute angles: _____

Number of obtuse angles: _____

Number of right angles: _____

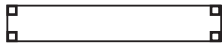
Challenge

Can you draw a quadrilateral with one right angle, two obtuse angles and one acute angle?

Practice Sheet Answers

Angles in quadrilaterals (Mild)

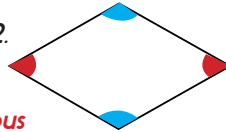
1.



Rectangle

Number of acute angles: 0
 Number of obtuse angles: 0
 Number of right angles: 4

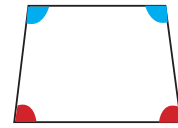
2.



Rhombus

Number of acute angles: 2
 Number of obtuse angles: 2
 Number of right angles: 0

3.



Trapezoid

Number of acute angles: 2
 Number of obtuse angles: 2
 Number of right angles: 0

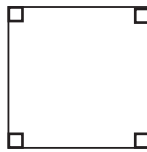
4.



Trapezoid

Number of acute angles: 1
 Number of obtuse angles: 1
 Number of right angles: 2

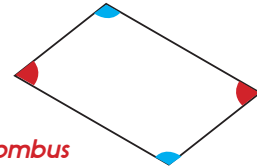
5.



Square

Number of acute angles: 0
 Number of obtuse angles: 0
 Number of right angles: 4

6.

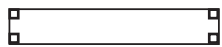


Rhombus

Number of acute angles: 2
 Number of obtuse angles: 2
 Number of right angles: 0

Angles in quadrilaterals (Hot)

1.



Rectangle

Number of acute angles: 0
 Number of obtuse angles: 0
 Number of right angles: 4

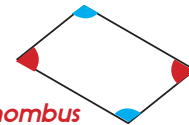
2.



Trapezoid

Number of acute angles: 2
 Number of obtuse angles: 2
 Number of right angles: 0

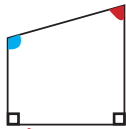
3.



Rhombus

Number of acute angles: 2
 Number of obtuse angles: 2
 Number of right angles: 0

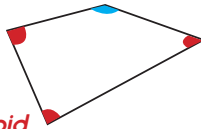
4.



Trapezoid

Number of acute angles: 1
 Number of obtuse angles: 1
 Number of right angles: 2

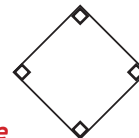
5.



Trapezoid

Number of acute angles: 3
 Number of obtuse angles: 1
 Number of right angles: 0

6.



Square

Number of acute angles: 0
 Number of obtuse angles: 0
 Number of right angles: 4

A Bit Stuck? Angle Alien Attack

A protractor measures angles in degrees, $^{\circ}$.

A right angle is 90° .

Read the angles on the protractor at: <https://mathsframe.co.uk/en/resources/resource/470/Angle-Alien-Attack>

Choose 'up to 180°' and 'yes' to see the protractor, e.g.



As you play the game, write the angles you measure in this table.

Remember: an acute angle measures $< 90^{\circ}$; an obtuse angle measures $> 90^{\circ}$ (but less than 180°).

Acute angles	Obtuse angles

Investigation



Quadrilaterals and their angles

Use careful sketching to explore the numbers of acute, right and obtuse angles it is possible for quadrilaterals to have. You might try to answer these questions:

- Can a quadrilateral have four right angles?
- Can a quadrilateral have four acute angles?
- Can a quadrilateral have four obtuse angles?
- Can a quadrilateral have three obtuse angles and one acute angle?
- Can a quadrilateral have three acute angles and one obtuse angle?
- Can a quadrilateral have two obtuse angles and two acute angles?

List the possibilities systematically with a sketch/ sentence to illustrate your findings, e.g.

Findings:

- o Quadrilaterals with 4 right angles? **Yes!**

- o Quadrilaterals with 3 right angles? **No... 'Closing' the shape creates a fourth right angle.**

- o Quadrilaterals with four obtuse angles?
- o Quadrilaterals with three obtuse angles and one acute angle?
- o Quadrilaterals with three acute angles and one obtuse angle?
- o Quadrilaterals with two obtuse angles and two acute angles?