

# Home Learning **MATHS** week 14

**Monday - Week 11 lesson 1**

**Tuesday - Week 11 lesson 2**

**Wednesday - Week 11 lesson 3**

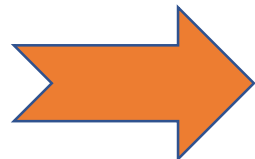
**Thursday - Week 11 lesson 4**

**Friday - Catch up day**

Summer Term - Week 11 (w/c 6th July)	
Summer Term - Week 10 (w/c 29th June)	+
Summer Term - Week 9 (w/c 22nd June)	+

This is where this weeks videos will be

You will need to use this link to access the videos



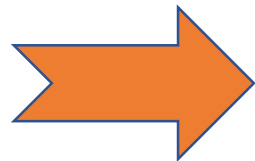
<https://whiterosemaths.com/homelearning/year-6/>

# Home Learning **MATHS** week 12

This week, you will not be able to access the worksheets online.

I have included them as a PDF file and are accessible through the school website.

You will need to use this link to access the videos



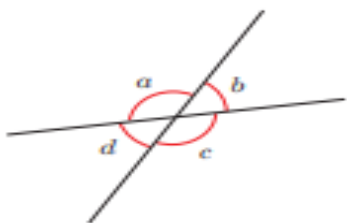
<https://whiterosemaths.com/homelearning/year-6/>

# Answers - Monday

## Vertically opposite angles

White  
Rose  
Maths

- 1 The diagram shows four angles formed by two straight lines.



- a) Measure the sizes of the angles.

$$a = \boxed{130^\circ} \quad b = \boxed{50^\circ} \quad c = \boxed{130^\circ} \quad d = \boxed{50^\circ}$$

- b) What is the total of angles  $a$  and  $b$ ?

$$\boxed{180^\circ}$$

Explain why.

Adjacent angles on a straight line sum to  $180^\circ$

Do any other pairs of angles have this same total?

- c) Angles  $a$  and  $c$  are vertically opposite angles.

What do you notice about the sizes of angles  $a$  and  $c$ ?

They are equal.

- d) Angles  $b$  and  $d$  are also vertically opposite angles.

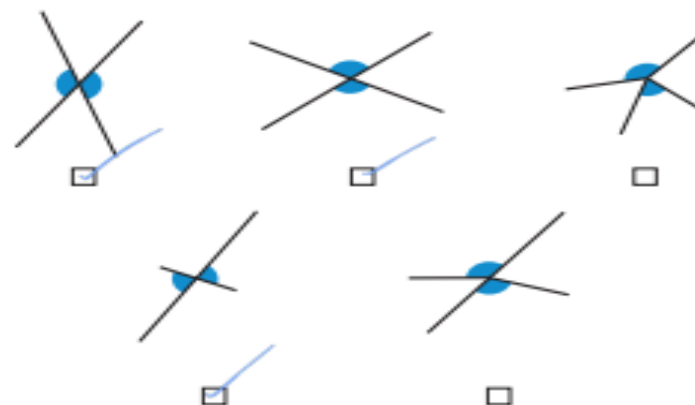
What do you notice about the sizes of angles  $b$  and  $d$ ?

They are equal.

- e) Complete the sentence.

Vertically opposite angles are equal.

- 2 Tick the pairs of angles that are vertically opposite.



Compare answers with a partner.

- 3 Work out the sizes of the unknown angles.

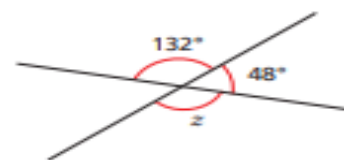
Give reasons for your answers.

- a)



$$y = \boxed{29^\circ} \text{ because } \underline{\text{vertically opposite angles are equal.}}$$

- b)



$$z = \boxed{132^\circ} \text{ because } \underline{\text{vertically opposite angles are equal.}}$$

- 4 Annie is working out the size of angle  $f$ .



Angle  $f$  is equal to  $79^\circ$  because vertically opposite angles are equal.

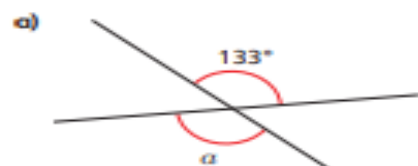


Do you agree with Annie? No

Explain your answer.

The diagram doesn't show two straight lines crossing so the angles are not vertically opposite.

- 5 Work out the unknown angles.



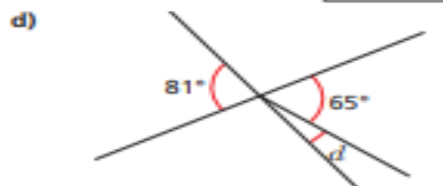
$a = 133^\circ$



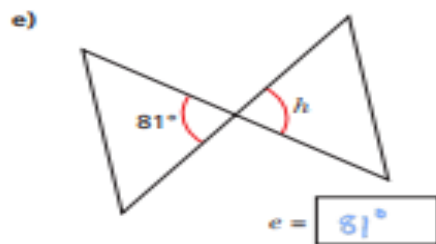
$c = 52^\circ$



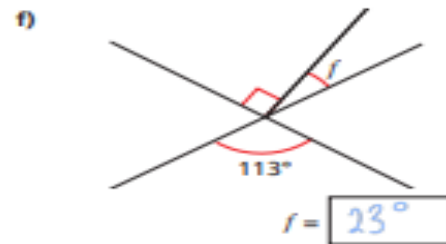
$b = 73^\circ$



$d = 16^\circ$



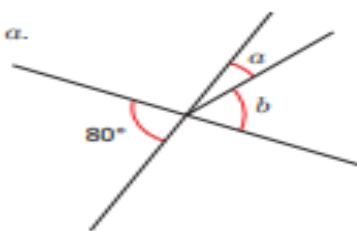
$e = 81^\circ$



$f = 23^\circ$

Talk about your reasons with a partner.

- 6 Angle  $b$  is three times the size of angle  $a$ .



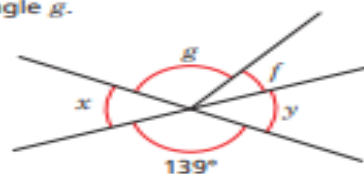
Work out the sizes of angles  $a$  and  $b$ .

$a = 20^\circ$

$b = 60^\circ$

- 7 Angle  $f$  is one quarter of the size of angle  $g$ .

Angle  $f$  is  $28^\circ$ .



Are angles  $x$  and  $y$  vertically opposite? No

Explain your answer.

$28 \times 4 = 112$  so  $g = 112^\circ$   
 $112 + 28 = 140$

$139 \neq 140$  therefore the diagram does not show vertically opposite angles.

# Tuesday

## Angles in a triangle – missing angles

1 Match each diagram to the correct rule.



Angles on a straight line sum to  $180^\circ$



Angles around a point sum to  $360^\circ$



Angles in a triangle sum to  $180^\circ$



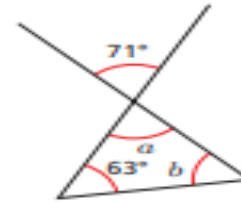
In an isosceles triangle, two angles are equal



Vertically opposite angles are equal

2 Work out the sizes of the unknown angles.  
Give reasons for each stage of your working.

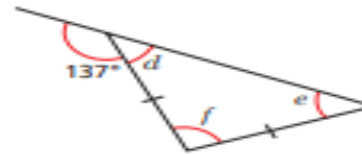
a)



$a = 71^\circ$  because vertically opposite angles are equal

$b = 46^\circ$  because angles in a triangle sum to  $180^\circ$

b)

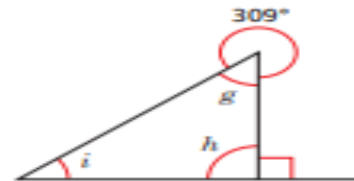


$d = 43^\circ$  because angles on a straight line sum to  $180^\circ$

$e = 43^\circ$  because in an isosceles triangle two angles are equal

$f = 94^\circ$  because angles in a triangle sum to  $180^\circ$

c)

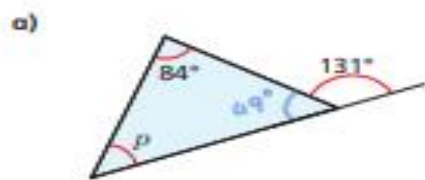


$g = 51^\circ$  because angles around a point sum to  $360^\circ$

$h = 90^\circ$  because angles on a straight line sum to  $180^\circ$

$i = 39^\circ$  because angles in a triangle sum to  $180^\circ$

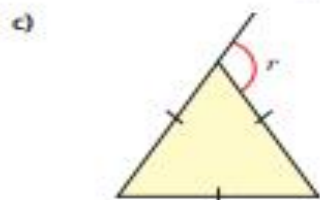
3 Work out the sizes of the angles marked with letters.



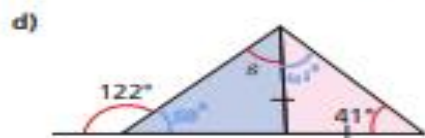
$$p = 47^\circ$$



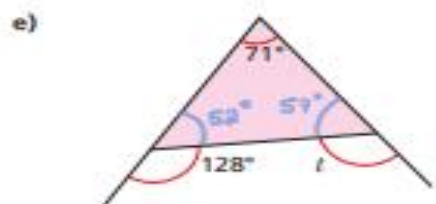
$$q = 124^\circ$$



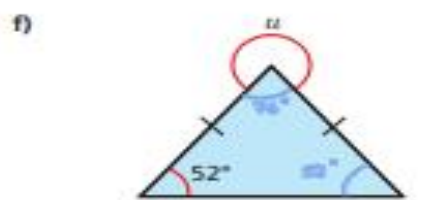
$$r = 120^\circ$$



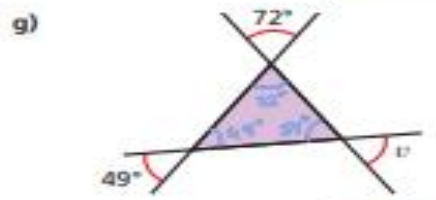
$$s = 40^\circ$$



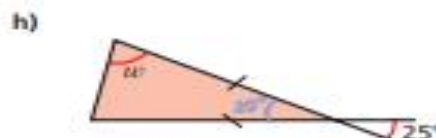
$$t = 123^\circ$$



$$u = 284^\circ$$



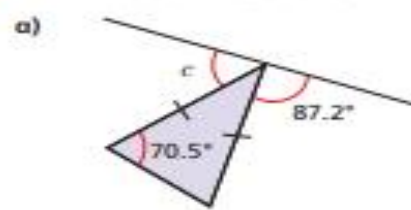
$$v = 59^\circ$$



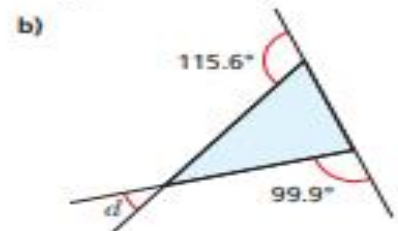
$$w = 77.5^\circ$$

Talk about your reasons with a partner.

4 Work out the sizes of the unknown angles.

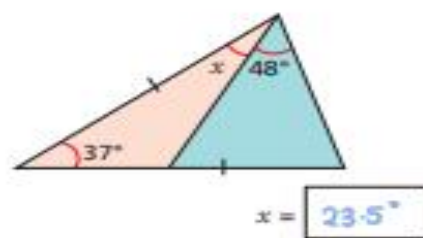


$$c = 53.8^\circ$$



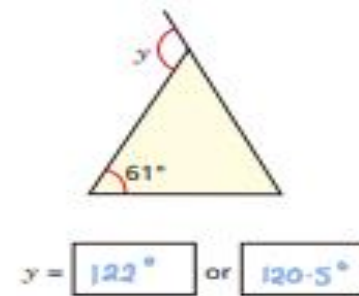
$$d = 35.5^\circ$$

5 Work out the size of angle x.



$$x = 23.5^\circ$$

6 Here is an isosceles triangle. Find two possible sizes of angle y.



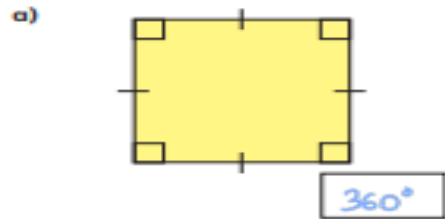
$$y = 122^\circ \text{ or } 120.5^\circ$$



# Wednesday

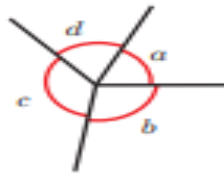
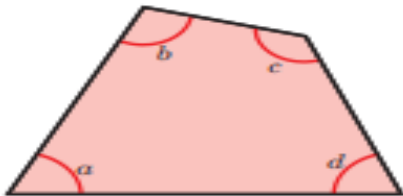
## Angles in special quadrilaterals

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



What do you notice?

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

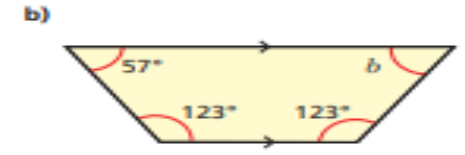
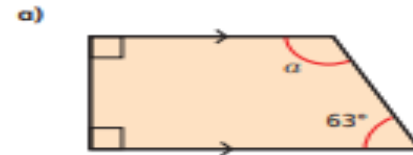


What do the diagrams illustrate about the sum of the angles in a quadrilateral?

Complete the sentence.

Angles in a quadrilateral sum to 360°

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

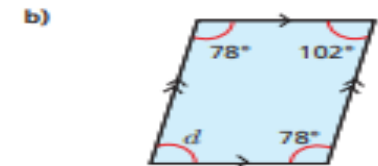
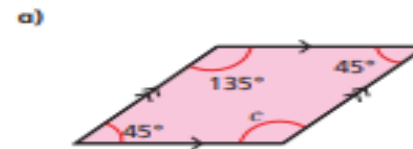


$a = 117^\circ$

$b = 57^\circ$

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

4 Work out the sizes of the unknown angles.



$c = 135^\circ$

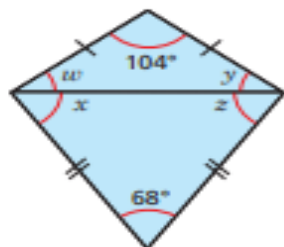
$d = 102^\circ$

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.



$$w = 38^\circ \quad y = 38^\circ \quad x = 56^\circ \quad z = 56^\circ$$

b) Work out  $w + x$ .

$$94^\circ$$

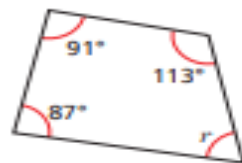
c) Work out  $y + z$ .

$$94^\circ$$

What do you notice? Talk about it with a partner.

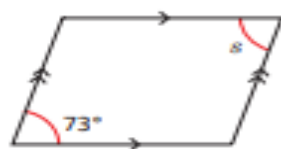
- 6 Work out the sizes of the unknown angles.

a)



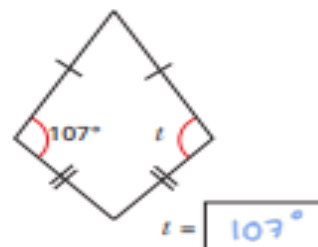
$$r = 69^\circ$$

b)



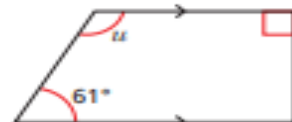
$$s = 73^\circ$$

c)



$$t = 107^\circ$$

d)



$$u = 119^\circ$$

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.

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

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



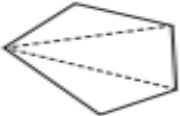
# Thursday

## Angles in regular polygons


White  
Rose  
Maths

- 1 The sum of the interior angles of a triangle is  $180^\circ$ .  
Split the polygons into triangles to work out the sum of their interior angles. Your lines should not overlap.

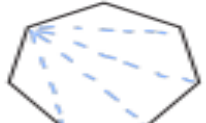
The first one has been done for you.

a)  number of sides =   
number of triangles =   
 $3 \times 180 =$

The sum of the interior angles of a pentagon is

b)  number of sides =   
number of triangles =   
  $\times 180 =$

The sum of the interior angles of a hexagon is

c)  number of sides =   
number of triangles =   
  $\times 180 =$

The sum of the interior angles of a heptagon is

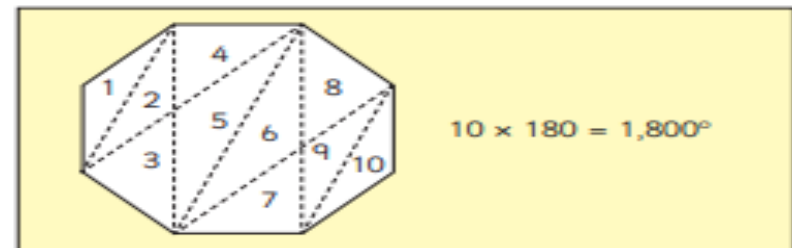
What do you notice about the number of sides compared to the number of triangles?

- 2 Complete the table.

Shape	Number of sides	Number of triangles	Sum of interior angles
quadrilateral	4	2	$360^\circ$
pentagon	5	3	$540^\circ$
nonagon	9	7	$1,260^\circ$
decagon	10	8	$1,440^\circ$
hexagon	6	4	$720^\circ$
octagon	8	6	$1,080^\circ$
dodecagon	12	10	$1,800^\circ$

Compare answers with a partner.

- 3 Dani is working out the sum of the interior angles of a polygon. Here are her workings.



Do you agree with Dani? NO

Explain your answer.

- 4 Rosie, Amir and Eva are drawing polygons.

a)



Rosie

I have split my polygon into four triangles.

What polygon has Rosie drawn?

hexagon

b)

The sum of the interior angles of my polygon is  $1,080^\circ$ .



Amir

What polygon has Amir drawn?

octagon

c)



Eva

My polygon has more sides than Rosie's but fewer than Amir's.

What is the sum of the interior angles of Eva's polygon?

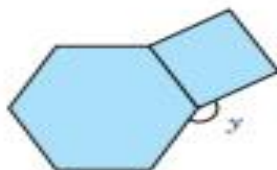
$900^\circ$



- 5 Each compound shape is made up of regular polygons.

Work out angle  $y$  in each case.

a)



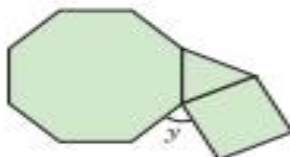
$y = 150^\circ$

c)



$y = 48^\circ$

b)



$y = 75^\circ$

d)



$y = 27^\circ$

- 6 The pentagons shown are regular.

Work out the size of angle  $y$  in each case.

a)



$y = 36^\circ$

b)



$y = 72^\circ$

