

## Maths Week 2

Starters - try doing one every day:

These starters are objectives that you have learnt in Year 5.

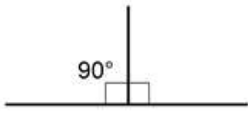
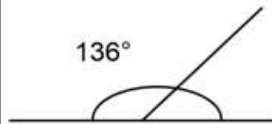
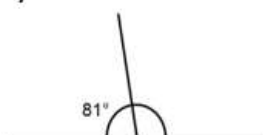
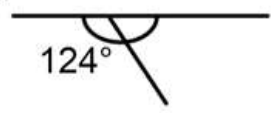
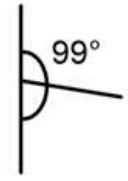


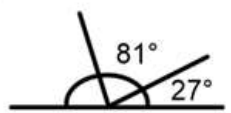

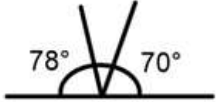
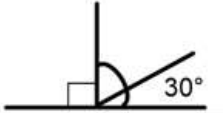

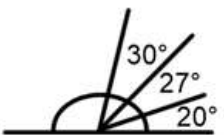
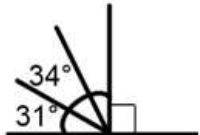
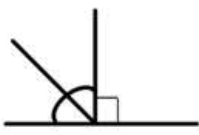
- Revise times tables
- Write down the first 20 prime numbers.
- Write down the first 20 square numbers.
- Write the common factors for 24 and 36. Pick your own numbers.
- Revise Roman numerals.

Week 2 of 'Angles' (No protractor is needed)

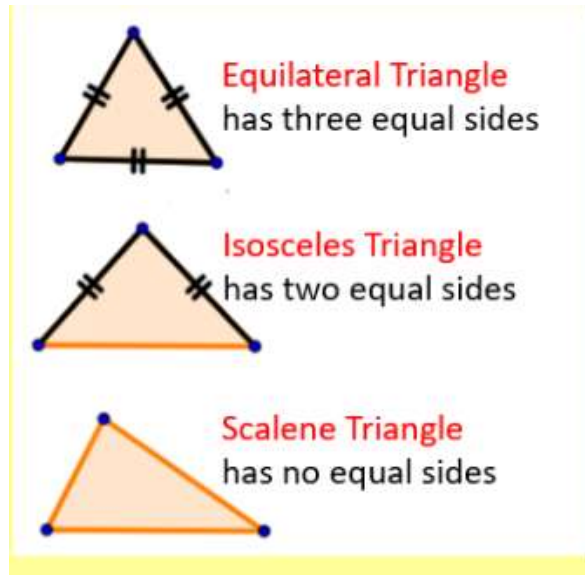
*Knowledge: the angles on a straight line will always add up to 180 degrees.  
A small square box on a straight line indicates a right angle of 90 degrees.*

Task 1: Your task is to find the missing angle without measuring it.

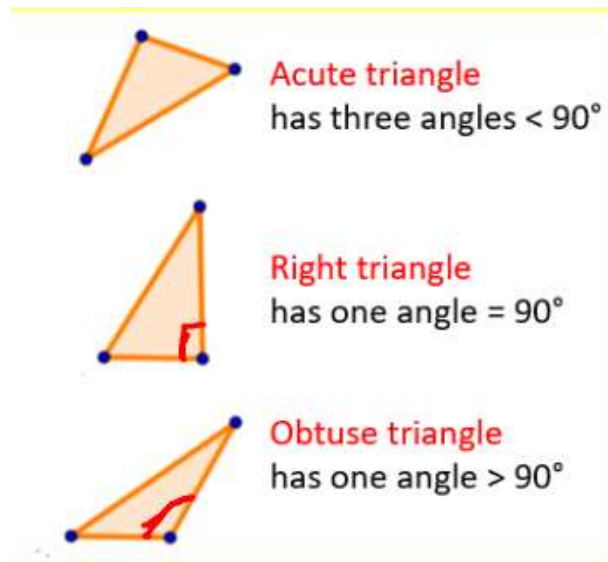
Use the knowledge fact above!

1) The angles on a straight line add up to.....	2) 	3) 	4) 
5) 	6) 	7) 	8) 
9) 	10) 	11) 	12) 
13) 	14) 	15) 	16) 

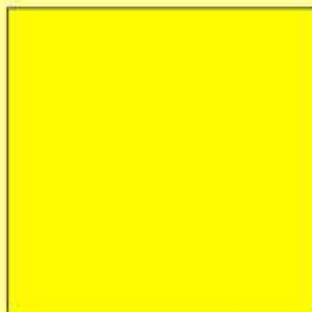
Knowledge:



*In every triangle, all the three internal angles always add up to 180 degrees.*



How many degrees does a square have in total?

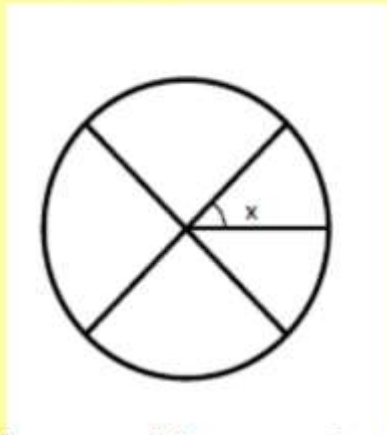


*In a square or rectangle each internal angle is a right angle (90 degrees) so in total it has 360 degrees.*

*A full turn or circle has 360 degrees.*

Now can you do the following tasks?

Talk task:

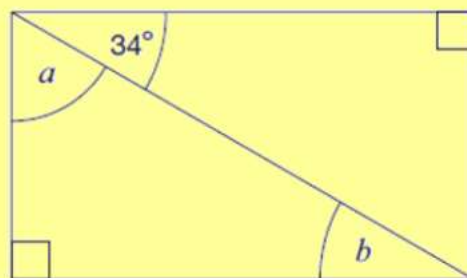


How could you solve the missing angle without measuring it?

What knowledge can you use about angles to help you?

Task 1

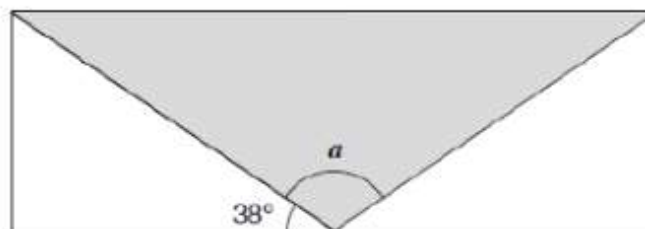
Here is a rectangle.



Not  
to  
scale

Calculate the size of angles  $a$  and  $b$ . Do not measure the angles.

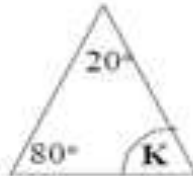
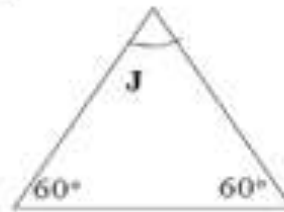
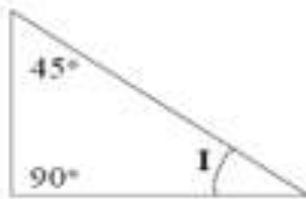
A shaded **isosceles** triangle is drawn inside a rectangle.



Not  
to  
scale

Calculate the size of angle  $a$ .

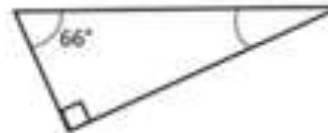
Angles in a triangle also total  $180^\circ$ . What are the missing angles in these triangles?  
Can you work out the angles in a square?



1. Daisy calculated that the acute angle was  $34^\circ$ .  
Is she correct?

**Yes**

**No**

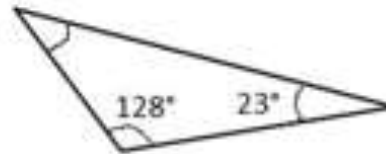


Explain your reasoning

2. Lucy calculated that the missing angle was  $19^\circ$ .  
Is she correct?

**Yes**

**No**



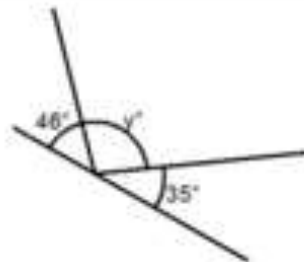
Explain your reasoning

3. Harry said, "The missing angle has to be an obtuse angle."

Is he correct?

**Yes**

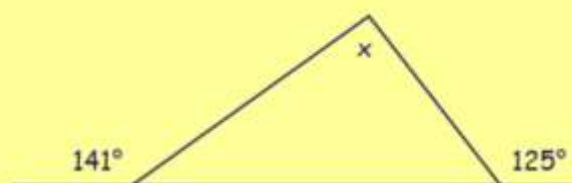
**No**



Explain your reasoning

4. Peter says, "I can work out that this is a three step question."

Explain the three steps you must go through to solve this problem.



Not to scale

Calculate the size of angle  $p$  in the diagram.

Do **not** use a protractor (angle measurer).

*Knowledge:*

*1/4 turn is 90 degrees.*

*1/2 or 2/4 turn is 180 degrees.*

*3/4 turn is 270 degrees.*

*A full turn is 360 degrees.*

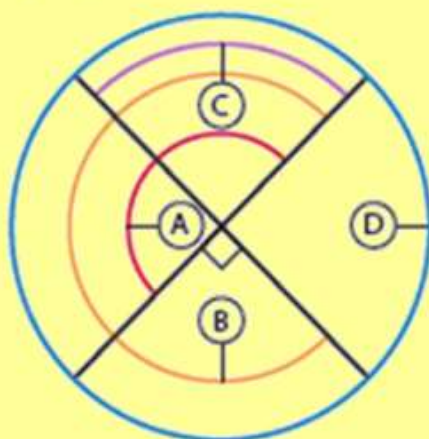
### Mastery

The circle is divided into quarters by the two diameter lines and four angles A, B, C and D are marked.

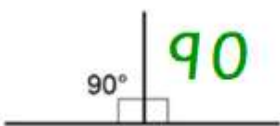



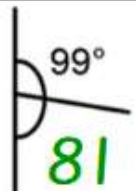




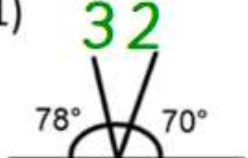



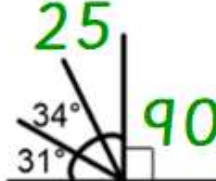
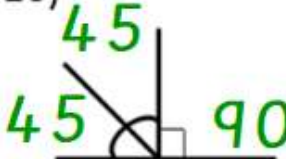
Are the statements below true or false?

- Angle C is the smallest angle.
- Angle D is the largest angle.
- All the angles are the same size.
- Angle B is a right angle.
- Angle B is an obtuse angle.

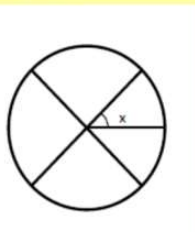
Explain your reasoning.



## Answers:

1) The angles on a straight line add up to..... <b>180</b>	2)  <b>90</b>	3)  <b>44</b>	4)  <b>99</b>
5)  <b>56</b>	6)  <b>81</b>	7)  <b>129</b>	8)  <b>105</b>
9)  <b>72</b>	10)  <b>14</b>	11)  <b>32</b>	12)  <b>60</b>
13)  <b>73</b>	14)  <b>103</b>	15)  <b>25</b>	16)  <b>90</b>

*Talk task:*



*How could you solve the missing angle without measuring it?*

*What knowledge can you use about angles to help you?*

A whole turn is 360 degrees. So, 360 divided by 4 = 90, as split into 4 sections. Then divide 90 by 2 = 45 degrees.

Task 1

Here is a rectangle.



Not to scale

Calculate the size of angles  $a$  and  $b$ . Do not measure the angles.

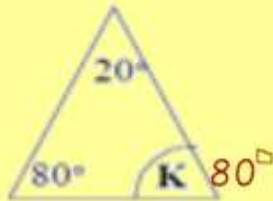
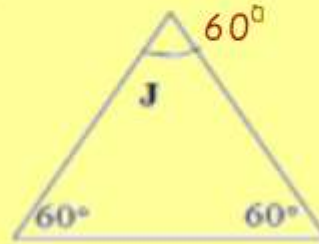
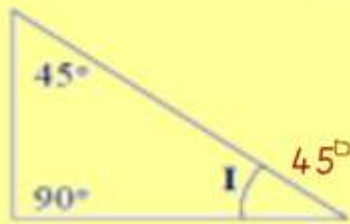
$$a = 90 - 34 = 56 \text{ degrees}$$

$$56 + 90 = 146 \text{ degrees}$$

So, because of the triangle:  $180 - 146 = 34$  degrees, so  $b = 34$  degrees



Angles in a triangle also total  $180^\circ$ . What are the missing angles in these triangles?  
Can you work out the angles in a square?

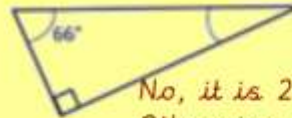


1. Daisy calculated that the acute angle was  $34^\circ$ .  
Is she correct?

**Yes**

**No**

Explain your reasoning



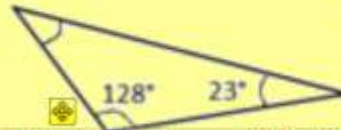
*No, it is 24 degrees.  
Otherwise does not total 180 degrees.*

2. Lucy calculated that the missing angle was  $19^\circ$ .  
Is she correct?

**Yes**

**No**

Explain your reasoning



*No, it is 29 degrees.  $180 - 128 - 23 = 29$*

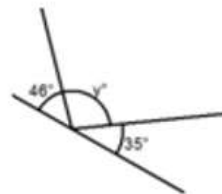
3. Harry said, "The missing angle has to be an obtuse angle."

Is he correct?

**Yes**

**No**

Explain your reasoning



**Angles on a straight line = 180 degrees.**

**So,  $46 + 35 = 81$**

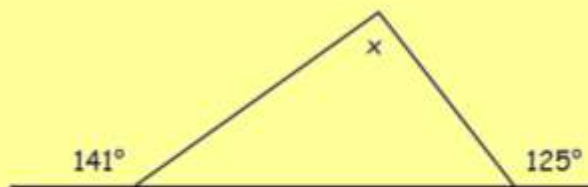
**$180 - 81 = 99$  degrees =  $y$**

4. Peter says, "I can work out that this is a three step question."

Explain the three steps you must go through to solve this problem.



- 1)  $180 - 141 = 39$
- 2)  $180 - 125 = 55$
- 3)  $180 - (55 + 39)$



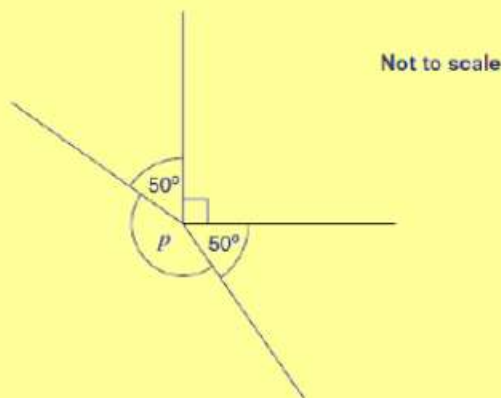
A shaded **isosceles** triangle is drawn inside a rectangle.



Calculate the size of angle  $a$ .

I know a straight angle is 180 degrees - the opposite angle will be 38 degrees.  $38 + 38 = 76$

$$180 - 76 = 104 \text{ degrees.}$$



Calculate the size of angle  $p$  in the diagram.

Do **not** use a protractor (angle measurer).

A whole turn (circle) = 360 degrees

$$50 + 50 = 100 \text{ degrees} \quad 100 + 90 = 190 \text{ degrees}$$

$$\text{So, } p = 360 - 190 = 170 \text{ degrees}$$



### Mastery

The circle is divided into quarters by the two diameter lines and four angles A, B, C and D are marked.

Are the statements below true or false?

- Angle C is the smallest angle. *True - Right angle 90 degrees*
- Angle D is the largest angle. *True - Full turn 360 degrees*
- All the angles are the same size. *False - They are all different, for e.g. see above.*
- Angle B is a right angle. *False - It is 270 degrees  $\frac{3}{4}$  turn.*
- Angle B is an obtuse angle. *False - It is larger than 180 degrees. Obtuse is less than 180 but larger than 90 degrees.*

Explain your reasoning.

