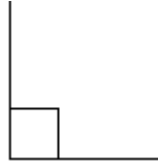


Calculate missing angles on a straight line

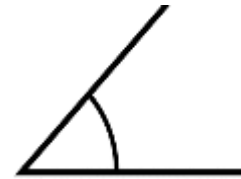
Monday 8th June 2020

Before we get stuck in, let's do a little revision;

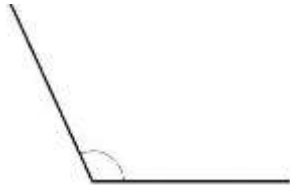
- 1) Angles are measured in 'degrees', shown as 'deg' or a $^{\circ}$ symbol.
- 2) A right angle is exactly 90° , shown thus;



- 3) An acute angle is less than 90° , and can look like this;



- 4) An obtuse angle is greater than 90° and less than 180° , and can look like this;

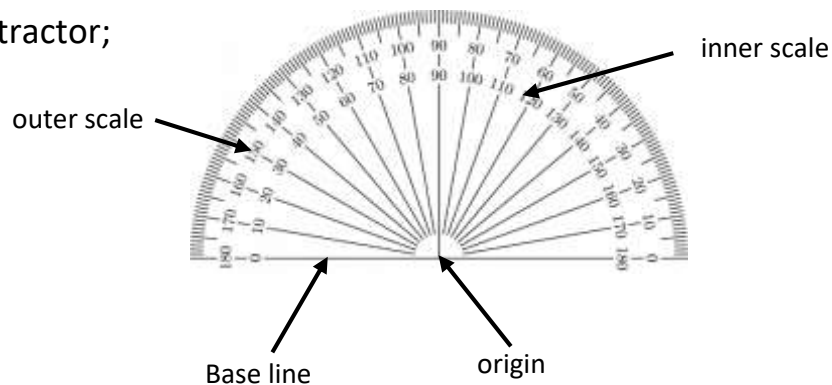


- 5) A protractor can be used to measure and construct angles.

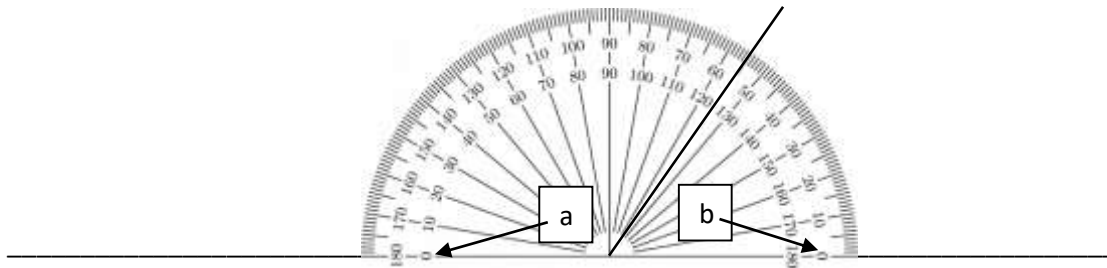
Here's a straight line;



And here's a protractor;



Over the page, we will remind ourselves how to measure an angle.



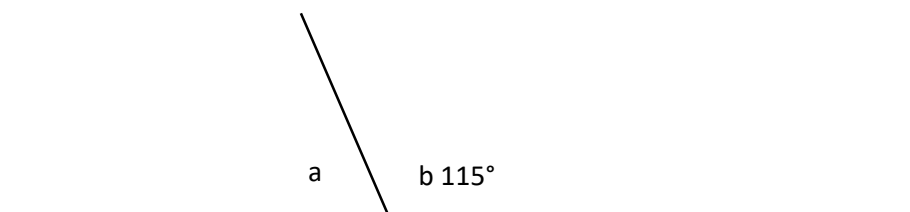
Here we can see the base line of the protractor placed along the straight line, with the origin at the angle.

First of all, let's measure angle a. Starting at zero, we can measure around until we get to 125°. And then angle b, starting at the other zero, we come around to 55°. Angle a is an obtuse angle, and angle b is an acute angle.

We can use these angles to prove that angles on a straight line add to 180°;

$$\begin{array}{rcl}
 \text{Angle a} & 125^\circ & \\
 \text{Angle b} & + 55^\circ & \\
 \hline
 \text{Total} & 180^\circ &
 \end{array}$$

Knowing this, we can now move on to calculating the sizes of angles, where we are given the values of one or more angles on a straight line;

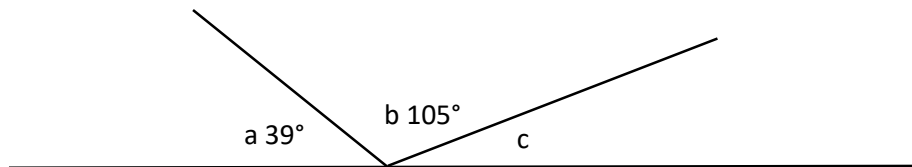


We know that angle b is 115°. We also know that $a + b = 180^\circ$. So angle a must be; $180 - 115$.

$$\begin{array}{r}
 180 \\
 - 115 \\
 \hline
 65
 \end{array}$$

Angle a is 65°.

Over the page, we'll try two known angles and a missing one...



Here we have three angles on a straight line. We have been given the sizes of two of the angles and need to calculate the third. We know that $a + b + c = 180^\circ$.

Let's start with what we know; the sizes of angles a (39°) and b (105°). If we add together angles a and b, we can subtract this number from 180 to give us the size of angle c.

Angle b	105	angle c = $180 - 144$.	178 ¹⁰	angle c = 36° .
Angle a	<u>+ 39</u>		- <u>1 4 4</u>	
Total	144		3 6	

The 'orientation' of the line doesn't matter – it could be horizontal across the page, as we have used here, or it could be vertical or diagonal. The angles could be all above or all below the line. It makes no difference – it is still just a straight line!

Your tasks will be based on this teaching. You might also find it useful to watch the YouTube video that goes with this, as I explain each step and complete the calculations.

Please share your work with us if you can, using the Google Form, or the enquiries@walkley email address.