



Pie Charts and Angles

By Mark Gillan

Angles

A full circle – a pie if you like

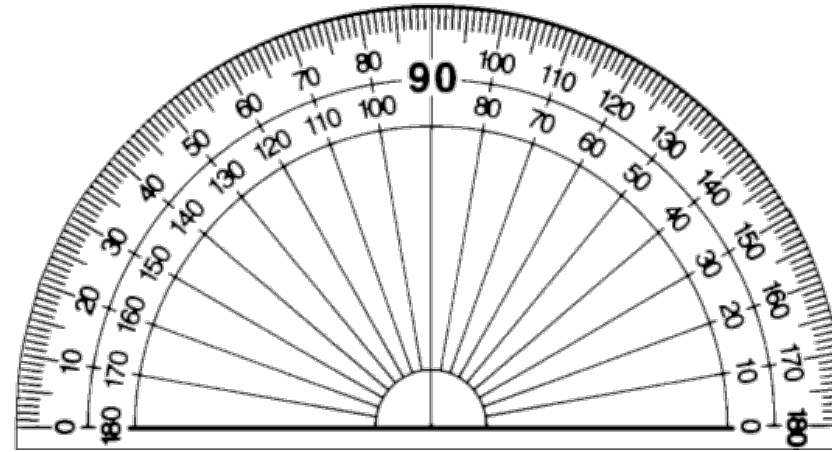
Is ... 360 degrees, written 360°

Half a pie would be $\frac{1}{2}$ of $360 = 180^\circ$

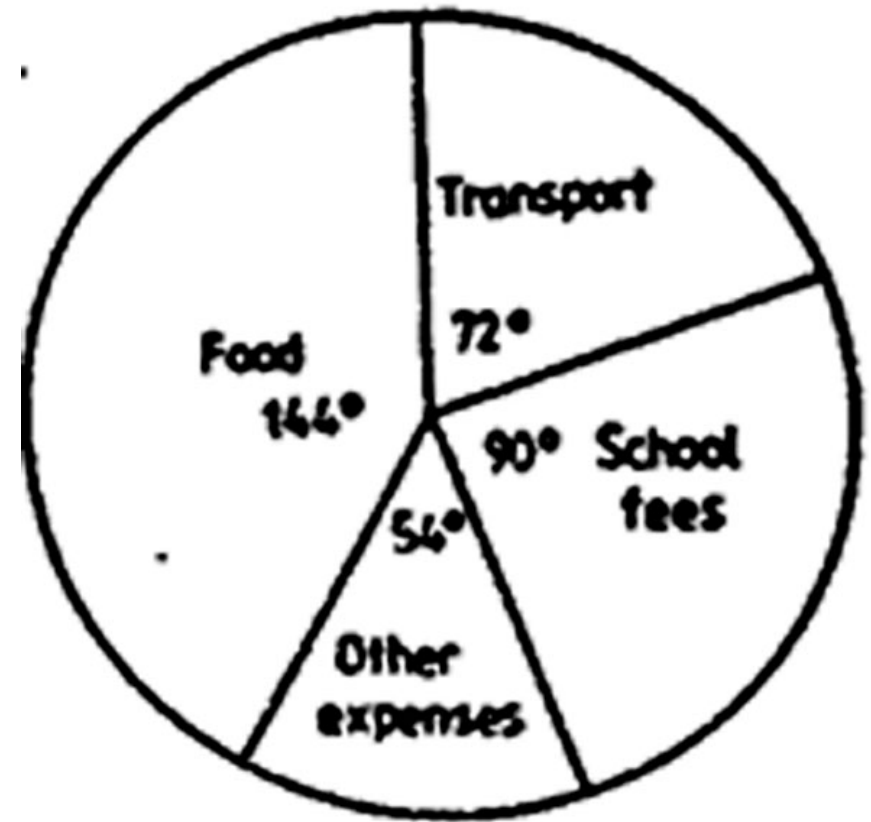
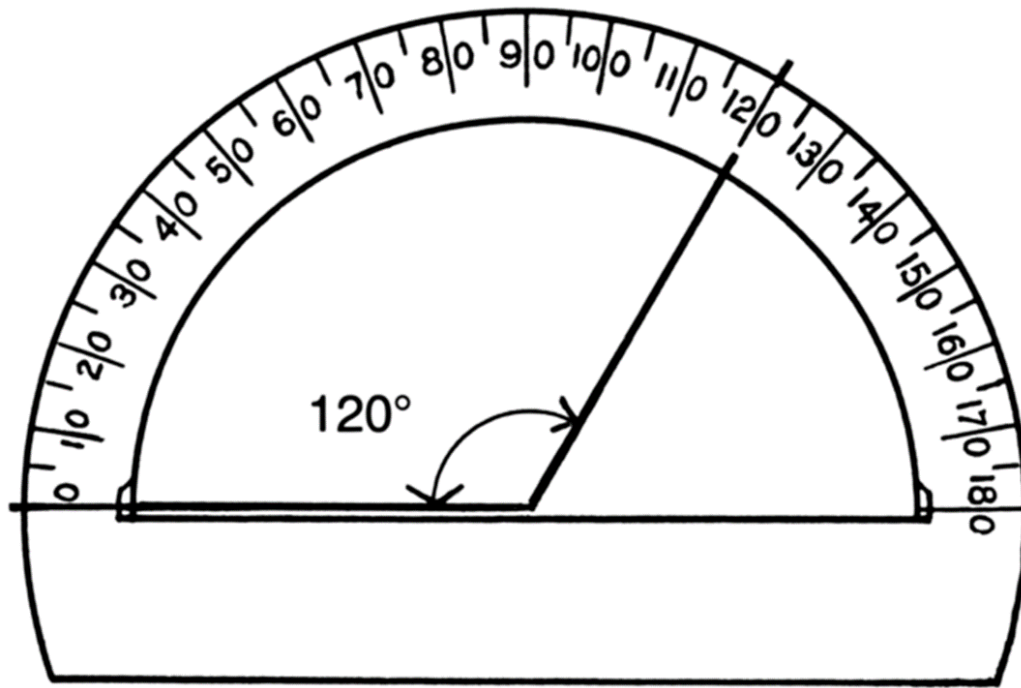
A quarter, being half of the half, that's right, it would be $\frac{1}{2}$ of $180 = 90^\circ$

And so on, $\frac{1}{2}$ of $90 = 45^\circ$

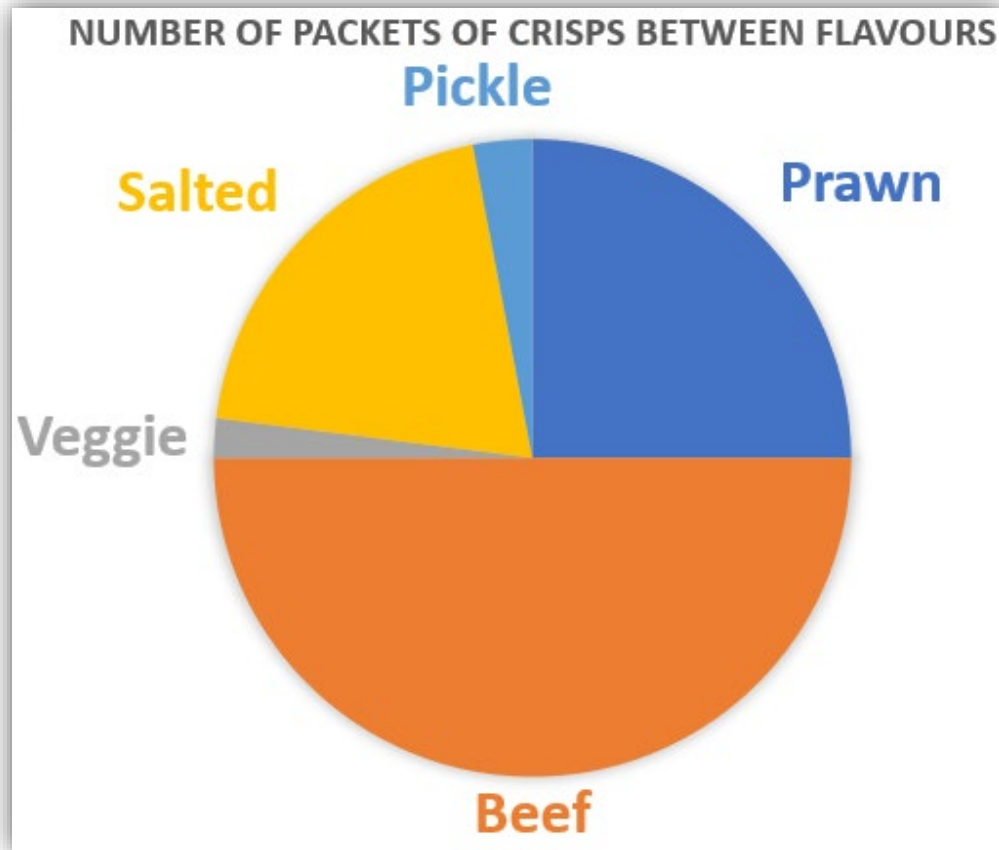
A protractor can be used to measure angles and be precise in calculations



The Protractor and Pie Charts



Reading pie chart angles



Additional info for the chart opposite – the total number of packets of crisps: 500

Prawn has a 90° angle.
Therefore, accounts for a $\frac{1}{4}$ of the pie.
 $\frac{1}{4}$ of 500 = 125

By measuring angles we can calculate the number of packets of crisps for each segment of the pie.

For example, Beef has a 180° angle.
As a fraction: $180/360 \times 500 = 250$
Or, $\frac{1}{2}$ (smallest form) $\times 500 = 250$

If we are to measure all the angles and work on the basis of a $\text{th}/360 \times 500$, we will have the number of packets of crisps

Calculating angle values



Working on this basis, we can say:



Angle of segment

360

x

Total number value



This can be used for any pie chart that is 360° in total.



Angle divided by the total angle of 360 multiplied by the total number value.

Calculating the angles

Grade	A	B	C	D	E
Number of students	8	9	7	5	1

Here we have some grades for a class of students (fictional), with a total number of students being $8+9+7+5+1 = 30$

We need to work out the fraction of the total that got each grade then multiply the fraction by 360 (considering a whole pie would be 360° in total angles)

So, the first one is Grade A:
 $8/30 \times 360 = 96^\circ$

The second one to calculate is Grade B:
 $9/30 \times 360 = 108^\circ$

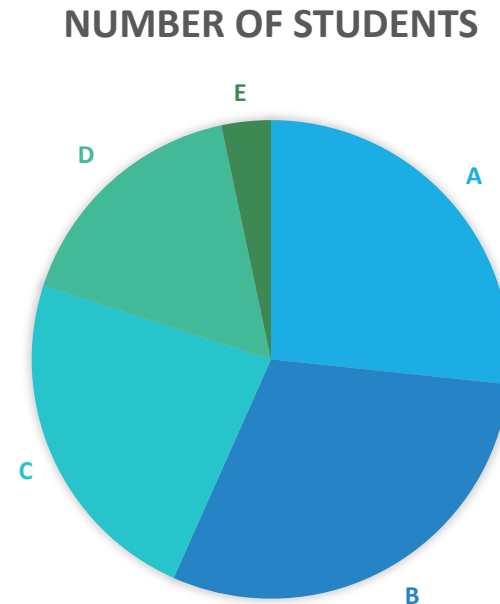
The third one to calculate is Grade C:
 $7/30 \times 360 = 84^\circ$ and so on

Drawn onto a pie chart

THE DATA AGAIN

Grade	A	B	C	D	E
Number of students	8	9	7	5	1
Angles calculated	96°	108°	84°	60°	12°

THE PIE CHART (USING ANGLES)



Thank you

Try drawing a chart using angles to represent your own figures

Ask a friend to draw one for you and calculate their figures

Summary:

Use of a protractor

Total of 360°

Calculate to read and interpret a pie chart representation of data

Calculate to draw and illustrate data