

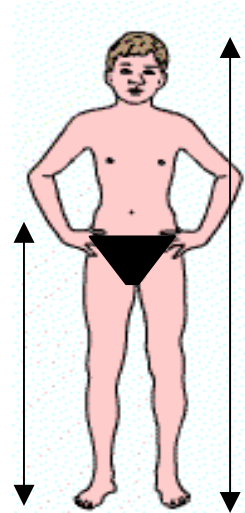
Are you Golden ?

Investigate the relationship between a person's height and the distance from their belly button to the floor.

Either use data collected from your class or the [PHIDATA.xls](#) dataset available from the CensusAtSchool website (reproduced on page 2)

Remember this data is real data entered into our online questionnaires so you will need to keep a look out for any 'dodgy data' or outlier.

You may want to work out some averages, such as the **mean**, **median** and **mode** of the data. Or plot a scatter graph of BellyButtonheight v's Height or a couple of box plots.



...What do you discover?

The ratio $\frac{\text{Height}}{\text{BellyButtonheight}}$ is known as **PHI** Φ

This is often called the Golden Ratio!

It appears in many things such as plants, DNA, the solar system, art and architecture and even the bible!

Who is the most Golden Human Being in your class?

Extension – You can also use the **Trimmed Mean** of the data. This means you trim off the most extreme values and find the mean of the rest. Usually a value of 95% or 0.95 is used to only exclude the most extreme values but you can investigate what happens if you reduce this, and look at 90%, 75% etc. (A separate [help sheet](#) to do this in Excel is available.)

A useful website to explore that more information about the Golden Ratio is <http://goldennumber.net>

Data:

Region	Gender F or M	Age years	Height cm	BellyButton cm	FootLength cm	WristCirc mm	ThumbCirc mm	Phi
West Midlands	F	13	153	97	23	160	50	
South	F	13	161	98	22.5	150	53	
South	M	12	160	80	32	150	60	
South East	F	13	160	92	24	155	62	
North West	F	14	171	103	23	150	60	
South East	F	14	160	99	23	160	80	
East Midlands	F	13	90	50	32	120	20	
North West	F	13	148	100	22	135	60	
West Midlands	M	14	151	97	24	150	50	
East Midlands	F	13	165	135	27	180	65	
South East	M	13	200	50	23	190	23	
East Midlands	F	14	159	93	23	136	53	
West Midlands	F	13	120	70	24	129	47	
North West	F	13	160	102	22	150	50	
South	M	11	152	90	22	160	40.5	
South	M	12	150	103	19	170	50	
South	M	11	140	134	14.6	138	58	
South East	F	13	170	102	23	140	60	
North West	F	13	168	105	23	170	60	
London	M	13	154	96	22	150	60	
London	M	13	155	96	24.7	156	62	
West Midlands	F	13	145	94	24	150	54	
London	M	13	168	102	29	140	20	
London	M	14	168	104	24.5	164	63	
Home Counties	M	14	158	95	24	150	60	
South	F	12	143	88	20	150	50	
South East	F	14	160	95	30	140	50	
East Midlands	F	12	150	95	22	150	60	
South West	F	13	164	101	25	145	70	
North West	M	13	161	102	25	160	70	
South	M	13	166	103	25	180	50	
South West	F	15	90	98	28	198	45	
North West	M	13	156	93	24	170	65	
East	M	13	157	51	19.2	152	60.1	
South East	F	13	150	98	28	200	60	
North West	F	11	167	85	26	180	60	
North West	F	12	164	103	22	150	60	
East	F	11	151	96	22	145	65	
South	M	12	149	98	29	170	65	
North East	M	13	173	108	23.5	167	80	
London	M	13	155	96	21	120	22	
South	M	12	149	94	27.5	160	58	
North West	M	11	141	83.5	21	150	50	
South	F	13	150	100	23.5	120	30	
East Midlands	F	13	159	92	23	160	70	
East	M	13	164	97	26	170	55	
North Wales	F	13	154	96	22	148	60	
East Midlands	F	13	164	98	27.7	165	60	
South	F	13	153	96	21	130	50	
North West	F	11	147	90	23	150	60	