



# AIXPLORER mach<sup>30</sup>

## Obstetrical References

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# 1 Fetal Growth Equations And Tables



# Abdominal Circumference (AC by GA)

## AC by GA - ASUM2000

**Name:** ASUM 2000

**Author:** ASUM

**Year:** 2000

**Reference:** ASUM and Campbell Westerway S , Ultrasonic fetal Measurement Standards for an Australian Population, ASUM, 2003

**Comments:** Fetal growth table generated from ASUM equations with polynomial interpretation of standard deviations

GA (week)	AC (mm)	+/-2 SD
11 weeks	49.3231 mm	8.9715 mm
12 weeks	61.4484 mm	9.50361 mm
13 weeks	73.4799 mm	10.1216 mm
14 weeks	85.4176 mm	10.8189 mm
15 weeks	97.2615 mm	11.5889 mm
16 weeks	109.012 mm	12.4251 mm
17 weeks	120.668 mm	13.321 mm
18 weeks	132.23 mm	14.2699 mm
19 weeks	143.699 mm	15.2653 mm
20 weeks	155.074 mm	16.3007 mm
21 weeks	166.355 mm	17.3694 mm
22 weeks	177.542 mm	18.465 mm
23 weeks	188.636 mm	19.5808 mm
24 weeks	199.636 mm	20.7104 mm
25 weeks	210.542 mm	21.847 mm
26 weeks	221.354 mm	22.9843 mm
27 weeks	232.072 mm	24.1155 mm
28 weeks	242.696 mm	25.2342 mm
29 weeks	253.227 mm	26.3338 mm

GA (week)	AC (mm)	+/-2 SD
30 weeks	263.664 mm	27.4078 mm
31 weeks	274.007 mm	28.4495 mm
32 weeks	284.256 mm	29.4524 mm
33 weeks	294.412 mm	30.41 mm
34 weeks	304.474 mm	31.3156 mm
35 weeks	314.442 mm	32.1628 mm
36 weeks	324.316 mm	32.945 mm
37 weeks	334.096 mm	33.6555 mm
38 weeks	343.782 mm	34.2879 mm
39 weeks	353.375 mm	34.8356 mm
40 weeks	362.874 mm	35.292 mm
41 weeks	372.279 mm	35.6506 mm

## AC by GA - CFEF2000

**Name:** CFEF 2000

**Author:** CFEF

**Year:** 2000

**Reference:** Crequat J, Duyme M and Brodaty G, Fetal growth charts by the French College of fetal ultrasonography and the Inserm U 155 , Biometry 2000, 28, pp 435-455, 2000

**Comments:** <http://cfef.org/>

GA (week)	AC (mm)	3%	10%	90%	97%
15 weeks	95 mm	80.7 mm	85.3 mm	104.4 mm	108.8 mm
16 weeks	106.4 mm	91.3 mm	96.1 mm	116.8 mm	121.6 mm
17 weeks	118 mm	101.7 mm	106.8 mm	129 mm	134 mm
18 weeks	129.2 mm	111.8 mm	117.4 mm	141 mm	146.6 mm
19 weeks	140.4 mm	122 mm	128 mm	153 mm	158.8 mm
20 weeks	151.4 mm	132 mm	138 mm	164.7 mm	171 mm
21 weeks	162.3 mm	141.6 mm	148.2 mm	176.3 mm	183 mm
22 weeks	173 mm	151.4 mm	158.2 mm	187.8 mm	194.7 mm
23 weeks	183.6 mm	160.9 mm	168.2 mm	199 mm	206.3 mm

GA (week)	AC (mm)	3%	10%	90%	97%
24 weeks	194 mm	170.2 mm	177.8 mm	210.3 mm	218 mm
25 weeks	204.4 mm	179.3 mm	187.3 mm	221.3 mm	229.3 mm
26 weeks	214.5 mm	188.4 mm	196.7 mm	232.3 mm	240.6 mm
27 weeks	224.5 mm	197.3 mm	206 mm	243 mm	251.6 mm
28 weeks	234.4 mm	206.2 mm	215.1 mm	253.6 mm	262.6 mm
29 weeks	244 mm	214.7 mm	224 mm	264 mm	273.3 mm
30 weeks	253.6 mm	223.2 mm	232.8 mm	274.2 mm	283.7 mm
31 weeks	263 mm	231.6 mm	241.6 mm	284.2 mm	294.4 mm
32 weeks	272.2 mm	239.7 mm	250 mm	294.3 mm	304.6 mm
33 weeks	281.2 mm	247.8 mm	258.4 mm	304 mm	314.8 mm
34 weeks	290.2 mm	255.6 mm	266.7 mm	313.8 mm	324.8 mm
35 weeks	298.8 mm	263.2 mm	274.7 mm	323.3 mm	334.5 mm
36 weeks	307.4 mm	271 mm	282.6 mm	332.5 mm	344.3 mm
37 weeks	316 mm	278.3 mm	290.3 mm	341.7 mm	353.8 mm
38 weeks	324.7 mm	285.6 mm	298 mm	350.7 mm	363 mm
39 weeks	332.4 mm	292.7 mm	305.3 mm	359.6 mm	372.2 mm
40 weeks	339 mm	298 mm	311 mm	367 mm	380 mm

## AC by GA - Hadlock1984

**Name:** Hadlock 1984

**Author:** Hadlock

**Year:** 1984

**Reference:** Hadlock F.P, Deter R.L, Harrist R.B. and Park S.K, Estimating fetal age: computer-assisted analysis of multiple fetal growth parameters, Radiology, 152, pp 497-501, 1984

**Comments:**

GA (week)	AC (cm)	+/-1 SD
12 weeks	4.58288 cm	1.34 cm
12.5 weeks	5.26562 cm	1.34 cm
13 weeks	5.94338 cm	1.34 cm
13.5 weeks	6.61615 cm	1.34 cm

GA (week)	AC (cm)	+/-1 SD
14 weeks	7.28392 cm	1.34 cm
14.5 weeks	7.9467 cm	1.34 cm
15 weeks	8.6045 cm	1.34 cm
15.5 weeks	9.25731 cm	1.34 cm
16 weeks	9.90512 cm	1.34 cm
16.5 weeks	10.5479 cm	1.34 cm
17 weeks	11.1858 cm	1.34 cm
17.5 weeks	11.8186 cm	1.34 cm
18 weeks	12.4465 cm	1.34 cm
18.5 weeks	13.0693 cm	1.34 cm
19 weeks	13.6872 cm	1.34 cm
19.5 weeks	14.3001 cm	1.34 cm
20 weeks	14.908 cm	1.34 cm
20.5 weeks	15.5109 cm	1.34 cm
21 weeks	16.1088 cm	1.34 cm
21.5 weeks	16.7017 cm	1.34 cm
22 weeks	17.2897 cm	1.34 cm
22.5 weeks	17.8726 cm	1.34 cm
23 weeks	18.4506 cm	1.34 cm
23.5 weeks	19.0235 cm	1.34 cm
24 weeks	19.5915 cm	1.34 cm
24.5 weeks	20.1545 cm	1.34 cm
25 weeks	20.7125 cm	1.34 cm
25.5 weeks	21.2655 cm	1.34 cm
26 weeks	21.8135 cm	1.34 cm
26.5 weeks	22.3565 cm	1.34 cm
27 weeks	22.8946 cm	1.34 cm
27.5 weeks	23.4276 cm	1.34 cm
28 weeks	23.9557 cm	1.34 cm
28.5 weeks	24.4787 cm	1.34 cm
29 weeks	24.9968 cm	1.34 cm
29.5 weeks	25.5099 cm	1.34 cm

GA (week)	AC (cm)	+/-1 SD
30 weeks	26.018 cm	1.34 cm
30.5 weeks	26.5211 cm	1.34 cm
31 weeks	27.0192 cm	1.34 cm
31.5 weeks	27.5123 cm	1.34 cm
32 weeks	28.0005 cm	1.34 cm
32.5 weeks	28.4836 cm	1.34 cm
33 weeks	28.9618 cm	1.34 cm
33.5 weeks	29.4349 cm	1.34 cm
34 weeks	29.9031 cm	1.34 cm
34.5 weeks	30.3663 cm	1.34 cm
35 weeks	30.8245 cm	1.34 cm
35.5 weeks	31.2777 cm	1.34 cm
36 weeks	31.7259 cm	1.34 cm
36.5 weeks	32.1691 cm	1.34 cm
37 weeks	32.6074 cm	1.34 cm
37.5 weeks	33.0406 cm	1.34 cm
38 weeks	33.4689 cm	1.34 cm
38.5 weeks	33.8921 cm	1.34 cm
39 weeks	34.3104 cm	1.34 cm
39.5 weeks	34.7237 cm	1.34 cm
40 weeks	35.132 cm	1.34 cm

## AC by GA - Merz1988

**Name:** Merz 1988

**Author:** Merz

**Year:** 1988

**Reference:** Merz E, Goldhofer W and Timor-Tritsch E , Ultrasound in Gynecology and Obstetrics, Textbook and Atlas, Georg Thieme Verlag , 1991

**Comments:** From Merz E, Habilitationsschrift, Mainz University Woman's Hospital, 1988

<b>GA (week)</b>	<b>AC (mm)</b>	<b>5%</b>	<b>95%</b>
12 weeks	58 mm	40 mm	76 mm
13 weeks	68 mm	50 mm	87 mm
14 weeks	79 mm	60 mm	98 mm
15 weeks	89 mm	69 mm	109 mm
16 weeks	99 mm	79 mm	119 mm
17 weeks	110 mm	89 mm	130 mm
18 weeks	120 mm	99 mm	141 mm
19 weeks	130 mm	108 mm	152 mm
20 weeks	140 mm	118 mm	162 mm
21 weeks	151 mm	128 mm	173 mm
22 weeks	161 mm	138 mm	184 mm
23 weeks	171 mm	148 mm	195 mm
24 weeks	182 mm	158 mm	205 mm
25 weeks	192 mm	167 mm	216 mm
26 weeks	202 mm	177 mm	227 mm
27 weeks	212 mm	187 mm	238 mm
28 weeks	223 mm	197 mm	248 mm
29 weeks	233 mm	207 mm	259 mm
30 weeks	243 mm	217 mm	270 mm
31 weeks	253 mm	227 mm	280 mm
32 weeks	264 mm	237 mm	291 mm
33 weeks	274 mm	246 mm	302 mm
34 weeks	284 mm	256 mm	312 mm
35 weeks	295 mm	266 mm	323 mm
36 weeks	305 mm	276 mm	334 mm
37 weeks	315 mm	286 mm	344 mm
38 weeks	325 mm	296 mm	355 mm
39 weeks	336 mm	306 mm	365 mm
40 weeks	346 mm	316 mm	376 mm



# Biparietal Diameter (BPD by GA)

## BPD by GA - ASUM2000

**Name:** ASUM 2000

**Author:** ASUM

**Year:** 2000

**Reference:** ASUM and Campbell Westerway S , Ultrasonic fetal Measurement Standards for an Australian Population, ASUM, 2003

**Comments:** Fetal growth table generated from ASUM equations with polynomial interpretation of standard deviations - equivalent to 1989 table

GA (week)	BPD (mm)	+/-2 SD
11 weeks	15.5549 mm	2.92038 mm
12 weeks	19.3916 mm	3.32946 mm
13 weeks	23.1541 mm	3.67624 mm
14 weeks	26.8424 mm	3.96575 mm
15 weeks	30.4565 mm	4.20303 mm
16 weeks	33.9964 mm	4.39311 mm
17 weeks	37.4621 mm	4.54103 mm
18 weeks	40.8536 mm	4.65182 mm
19 weeks	44.1709 mm	4.73052 mm
20 weeks	47.414 mm	4.78216 mm
21 weeks	50.5829 mm	4.81176 mm
22 weeks	53.6776 mm	4.82438 mm
23 weeks	56.6981 mm	4.82504 mm
24 weeks	59.6444 mm	4.81877 mm
25 weeks	62.5165 mm	4.81061 mm
26 weeks	65.3144 mm	4.80559 mm
27 weeks	68.0381 mm	4.80875 mm
28 weeks	70.6876 mm	4.82512 mm

GA (week)	BPD (mm)	+/-2 SD
29 weeks	73.2629 mm	4.85974 mm
30 weeks	75.764 mm	4.91763 mm
31 weeks	78.1909 mm	5.00384 mm
32 weeks	80.5436 mm	5.1234 mm
33 weeks	82.8221 mm	5.28134 mm
34 weeks	85.0264 mm	5.48269 mm
35 weeks	87.1565 mm	5.73249 mm
36 weeks	89.2124 mm	6.03577 mm
37 weeks	91.1941 mm	6.39757 mm
38 weeks	93.1016 mm	6.82292 mm
39 weeks	94.9349 mm	7.31686 mm
40 weeks	96.694 mm	7.88441 mm
41 weeks	98.3789 mm	8.53062 mm

## BPD by GA - CFEF2006

**Name:** CFEF 2006

**Author:** CFEF

**Year:** 2006

**Reference:** L.J. Salomon, M. Duyme, J. Crequat, G. Brodaty, C. Talmant, N. Fries and M. Althuser - CFEF - Collège Français d'Echographie Foetale, Paris, France - Ultrasound Obstet Gynecol 2006

**Comments:**

GA (week)	BPD (mm)	+/-1 SD
11 weeks	26.1896 mm	2.2018 mm
12 weeks	27.8012 mm	2.2654 mm
13 weeks	29.6618 mm	2.329 mm
14 weeks	31.7492 mm	2.3926 mm
15 weeks	34.0412 mm	2.4562 mm
16 weeks	36.5156 mm	2.5198 mm
17 weeks	39.1502 mm	2.5834 mm
18 weeks	41.9228 mm	2.647 mm

GA (week)	BPD (mm)	+/-1 SD
19 weeks	44.8112 mm	2.7106 mm
20 weeks	47.7932 mm	2.7742 mm
21 weeks	50.8466 mm	2.8378 mm
22 weeks	53.9492 mm	2.9014 mm
23 weeks	57.0788 mm	2.965 mm
24 weeks	60.2132 mm	3.0286 mm
25 weeks	63.3302 mm	3.0922 mm
26 weeks	66.4076 mm	3.1558 mm
27 weeks	69.4232 mm	3.2194 mm
28 weeks	72.3548 mm	3.283 mm
29 weeks	75.1802 mm	3.3466 mm
30 weeks	77.8772 mm	3.4102 mm
31 weeks	80.4236 mm	3.4738 mm
32 weeks	82.7972 mm	3.5374 mm
33 weeks	84.9758 mm	3.601 mm
34 weeks	86.9372 mm	3.6646 mm
35 weeks	88.6592 mm	3.7282 mm
36 weeks	90.1196 mm	3.7918 mm
37 weeks	91.2962 mm	3.8554 mm
38 weeks	92.1668 mm	3.919 mm
39 weeks	92.7092 mm	3.9826 mm
40 weeks	92.9012 mm	4.0462 mm
41 weeks	92.7206 mm	4.1098 mm

## BPD by GA - Hadlock1984

**Name:** Hadlock 1984

**Author:** Hadlock

**Year:** 1984

**Reference:** Hadlock F.P, Deter R.L, Harrist R.B. and Park S.K, Estimating fetal age: computer-assisted analysis of multiple fetal growth parameters, Radiology, 152, pp 497-501, 1984

**Comments:**

<b>GA (week)</b>	<b>BPD (cm)</b>	<b>+/-1 SD</b>
12 weeks	1.73459 cm	0.3 cm
12.5 weeks	1.92586 cm	0.3 cm
13 weeks	2.11598 cm	0.3 cm
13.5 weeks	2.30492 cm	0.3 cm
14 weeks	2.49262 cm	0.3 cm
14.5 weeks	2.67903 cm	0.3 cm
15 weeks	2.86413 cm	0.3 cm
15.5 weeks	3.04784 cm	0.3 cm
16 weeks	3.23014 cm	0.3 cm
16.5 weeks	3.41098 cm	0.3 cm
17 weeks	3.59031 cm	0.3 cm
17.5 weeks	3.76808 cm	0.3 cm
18 weeks	3.94425 cm	0.3 cm
18.5 weeks	4.11877 cm	0.3 cm
19 weeks	4.2916 cm	0.3 cm
19.5 weeks	4.46269 cm	0.3 cm
20 weeks	4.632 cm	0.3 cm
20.5 weeks	4.79948 cm	0.3 cm
21 weeks	4.96508 cm	0.3 cm
21.5 weeks	5.12876 cm	0.3 cm
22 weeks	5.29047 cm	0.3 cm
22.5 weeks	5.45017 cm	0.3 cm
23 weeks	5.60781 cm	0.3 cm
23.5 weeks	5.76335 cm	0.3 cm
24 weeks	5.91674 cm	0.3 cm
24.5 weeks	6.06793 cm	0.3 cm
25 weeks	6.21687 cm	0.3 cm
25.5 weeks	6.36354 cm	0.3 cm
26 weeks	6.50786 cm	0.3 cm
26.5 weeks	6.64981 cm	0.3 cm
27 weeks	6.78934 cm	0.3 cm

GA (week)	BPD (cm)	+/-1 SD
27.5 weeks	6.92639 cm	0.3 cm
28 weeks	7.06093 cm	0.3 cm
28.5 weeks	7.1929 cm	0.3 cm
29 weeks	7.32227 cm	0.3 cm
29.5 weeks	7.44899 cm	0.3 cm
30 weeks	7.573 cm	0.3 cm
30.5 weeks	7.69427 cm	0.3 cm
31 weeks	7.81275 cm	0.3 cm
31.5 weeks	7.92839 cm	0.3 cm
32 weeks	8.04115 cm	0.3 cm
32.5 weeks	8.15098 cm	0.3 cm
33 weeks	8.25784 cm	0.3 cm
33.5 weeks	8.36168 cm	0.3 cm
34 weeks	8.46246 cm	0.3 cm
34.5 weeks	8.56012 cm	0.3 cm
35 weeks	8.65462 cm	0.3 cm
35.5 weeks	8.74593 cm	0.3 cm
36 weeks	8.83398 cm	0.3 cm
36.5 weeks	8.91875 cm	0.3 cm
37 weeks	9.00017 cm	0.3 cm
37.5 weeks	9.0782 cm	0.3 cm
38 weeks	9.15281 cm	0.3 cm
38.5 weeks	9.22394 cm	0.3 cm
39 weeks	9.29154 cm	0.3 cm
39.5 weeks	9.35558 cm	0.3 cm
40 weeks	9.416 cm	0.3 cm

## BPD by GA - Merz1988

**Name:** Merz 1988

**Author:** Merz

**Year:** 1988

**Reference:** Merz E, Goldhofer W and Timor-Tritsch E , Ultrasound in Gynecology and Obstetrics, Textbook and Atlas, Georg Thieme Verlag , 1991

**Comments:** From Merz E, Habilitationsschrift, Mainz University Woman's Hospital, 1988

GA (week)	BPD (mm)	5%	95%
12 weeks	20 mm	15 mm	24 mm
13 weeks	24 mm	19 mm	28 mm
14 weeks	28 mm	23 mm	32 mm
15 weeks	31 mm	27 mm	36 mm
16 weeks	35 mm	30 mm	40 mm
17 weeks	39 mm	34 mm	44 mm
18 weeks	43 mm	38 mm	48 mm
19 weeks	46 mm	41 mm	51 mm
20 weeks	50 mm	45 mm	55 mm
21 weeks	53 mm	48 mm	58 mm
22 weeks	56 mm	51 mm	62 mm
23 weeks	60 mm	54 mm	65 mm
24 weeks	63 mm	57 mm	68 mm
25 weeks	66 mm	60 mm	71 mm
26 weeks	69 mm	63 mm	74 mm
27 weeks	72 mm	66 mm	77 mm
28 weeks	74 mm	69 mm	80 mm
29 weeks	77 mm	71 mm	83 mm
30 weeks	79 mm	74 mm	85 mm
31 weeks	82 mm	76 mm	88 mm
32 weeks	84 mm	78 mm	90 mm
33 weeks	86 mm	80 mm	92 mm
34 weeks	89 mm	82 mm	95 mm
35 weeks	91 mm	84 mm	97 mm
36 weeks	93 mm	86 mm	99 mm
37 weeks	94 mm	88 mm	101 mm

GA (week)	BPD (mm)	5%	95%
38 weeks	96 mm	90 mm	103 mm
39 weeks	98 mm	91 mm	104 mm
40 weeks	99 mm	93 mm	106 mm

## Biparietal Diameter outer - outer (BPDoo by GA)

### BPD by GA - ISUOG\_Leung2008

**Name:** ISUOG Leung 2008 (BPDoo)

**Author:** ISUOG\_Leung

**Year:** 2008

**Reference:** Fetal biometry in ethnic Chinese: biparietal diameter, head circumference, abdominal circumference and femur length T. N. LEUNG, M. W. PANG, S. S. DALJIT, T. Y. LEUNG, C. F. POON, S. M. WONG and T. K. LAU Fetal Medicine Unit, Department of Obstetrics and Gynaecology, The Chinese University of Hong Kong, The Prince of Wales Hospital, Hong Kong

**Comments:**

Gest Age (week)	BPD (cm)	+/-1 SD
12 weeks	2.0546 cm	0.265289 cm
12.5 weeks	2.21683 cm	0.267016 cm
13 weeks	2.38029 cm	0.268743 cm
13.5 weeks	2.54487 cm	0.270471 cm
14 weeks	2.71044 cm	0.272198 cm
14.5 weeks	2.87687 cm	0.273925 cm
15 weeks	3.04402 cm	0.275652 cm
15.5 weeks	3.21176 cm	0.27738 cm
16 weeks	3.37998 cm	0.279107 cm
16.5 weeks	3.54853 cm	0.280834 cm
17 weeks	3.71728 cm	0.282562 cm

Gest Age (week)	BPD (cm)	+/-1 SD
17.5 weeks	3.88612 cm	0.284289 cm
18 weeks	4.0549 cm	0.286016 cm
18.5 weeks	4.2235 cm	0.287743 cm
19 weeks	4.39179 cm	0.289471 cm
19.5 weeks	4.55964 cm	0.291198 cm
20 weeks	4.72692 cm	0.292925 cm
20.5 weeks	4.89349 cm	0.294652 cm
21 weeks	5.05924 cm	0.29638 cm
21.5 weeks	5.22402 cm	0.298107 cm
22 weeks	5.38771 cm	0.299834 cm
22.5 weeks	5.55019 cm	0.301561 cm
23 weeks	5.71131 cm	0.303289 cm
23.5 weeks	5.87096 cm	0.305016 cm
24 weeks	6.02899 cm	0.306743 cm
24.5 weeks	6.18529 cm	0.30847 cm
25 weeks	6.33972 cm	0.310198 cm
25.5 weeks	6.49215 cm	0.311925 cm
26 weeks	6.64245 cm	0.313652 cm
26.5 weeks	6.79049 cm	0.315379 cm
27 weeks	6.93614 cm	0.317107 cm
27.5 weeks	7.07928 cm	0.318834 cm
28 weeks	7.21977 cm	0.320561 cm
28.5 weeks	7.35749 cm	0.322289 cm
29 weeks	7.49229 cm	0.324016 cm
29.5 weeks	7.62406 cm	0.325743 cm
30 weeks	7.75267 cm	0.32747 cm
30.5 weeks	7.87797 cm	0.329198 cm
31 weeks	7.99986 cm	0.330925 cm
31.5 weeks	8.11818 cm	0.332652 cm
32 weeks	8.23282 cm	0.334379 cm
32.5 weeks	8.34365 cm	0.336107 cm
33 weeks	8.45053 cm	0.337834 cm



Gest Age (week)	BPD (cm)	+/-1 SD
33.5 weeks	8.55334 cm	0.339561 cm
34 weeks	8.65194 cm	0.341288 cm
34.5 weeks	8.74621 cm	0.343016 cm
35 weeks	8.83602 cm	0.344743 cm
35.5 weeks	8.92123 cm	0.34647 cm
36 weeks	9.00172 cm	0.348197 cm
36.5 weeks	9.07735 cm	0.349925 cm
37 weeks	9.148 cm	0.351652 cm
37.5 weeks	9.21354 cm	0.353379 cm
38 weeks	9.27384 cm	0.355106 cm
38.5 weeks	9.32877 cm	0.356834 cm
39 weeks	9.37819 cm	0.358561 cm
39.5 weeks	9.42198 cm	0.360288 cm
40 weeks	9.46002 cm	0.362016 cm
40.5 weeks	9.49216 cm	0.363743 cm
41 weeks	9.51828 cm	0.36547 cm
41.5 weeks	9.53825 cm	0.367197 cm
42 weeks	9.55193 cm	0.368925 cm

## Biparietal Diameter outer - inner (BPD<sub>oi</sub> by GA)

### BPD by GA - ISUOG\_Leung2008

**Name:** ISUOG Leung 2008 (BPD<sub>oi</sub>)

**Author:** ISUOG\_Leung

**Year:** 2008

**Reference:** Fetal biometry in ethnic Chinese: biparietal diameter, head circumference, abdominal circumference and femur length T. N. LEUNG, M. W. PANG, S. S. DALJIT, T. Y. LEUNG, C. F. POON,

S. M. WONG and T. K. LAU Fetal Medicine Unit, Department of Obstetrics and Gynaecology, The Chinese University of Hong Kong, The Prince of Wales Hospital, Hong Kong

**Comments:**

Gest Age (week)	BPD (cm)	+/-1 SD
12 weeks	1.97522 cm	0.262384 cm
12.5 weeks	2.13807 cm	0.264085 cm
13 weeks	2.30199 cm	0.265785 cm
13.5 weeks	2.46685 cm	0.267485 cm
14 weeks	2.63254 cm	0.269186 cm
14.5 weeks	2.79892 cm	0.270886 cm
15 weeks	2.96589 cm	0.272586 cm
15.5 weeks	3.13331 cm	0.274287 cm
16 weeks	3.30106 cm	0.275987 cm
16.5 weeks	3.46903 cm	0.277687 cm
17 weeks	3.63709 cm	0.279388 cm
17.5 weeks	3.80511 cm	0.281088 cm
18 weeks	3.97298 cm	0.282788 cm
18.5 weeks	4.14057 cm	0.284489 cm
19 weeks	4.30776 cm	0.286189 cm
19.5 weeks	4.47442 cm	0.287889 cm
20 weeks	4.64045 cm	0.28959 cm
20.5 weeks	4.80571 cm	0.29129 cm
21 weeks	4.97007 cm	0.29299 cm
21.5 weeks	5.13343 cm	0.294691 cm
22 weeks	5.29566 cm	0.296391 cm
22.5 weeks	5.45662 cm	0.298091 cm
23 weeks	5.61622 cm	0.299792 cm
23.5 weeks	5.77431 cm	0.301492 cm
24 weeks	5.93078 cm	0.303192 cm
24.5 weeks	6.0855 cm	0.304892 cm
25 weeks	6.23836 cm	0.306593 cm
25.5 weeks	6.38923 cm	0.308293 cm

Gest Age (week)	BPD (cm)	+/-1 SD
26 weeks	6.53798 cm	0.309993 cm
26.5 weeks	6.68451 cm	0.311694 cm
27 weeks	6.82868 cm	0.313394 cm
27.5 weeks	6.97037 cm	0.315094 cm
28 weeks	7.10946 cm	0.316795 cm
28.5 weeks	7.24582 cm	0.318495 cm
29 weeks	7.37935 cm	0.320195 cm
29.5 weeks	7.5099 cm	0.321896 cm
30 weeks	7.63737 cm	0.323596 cm
30.5 weeks	7.76162 cm	0.325296 cm
31 weeks	7.88254 cm	0.326997 cm
31.5 weeks	8.00001 cm	0.328697 cm
32 weeks	8.1139 cm	0.330397 cm
32.5 weeks	8.22408 cm	0.332098 cm
33 weeks	8.33045 cm	0.333798 cm
33.5 weeks	8.43286 cm	0.335498 cm
34 weeks	8.53122 cm	0.337199 cm
34.5 weeks	8.62538 cm	0.338899 cm
35 weeks	8.71523 cm	0.340599 cm
35.5 weeks	8.80064 cm	0.3423 cm
36 weeks	8.8815 cm	0.344 cm
36.5 weeks	8.95769 cm	0.3457 cm
37 weeks	9.02907 cm	0.347401 cm
37.5 weeks	9.09552 cm	0.349101 cm
38 weeks	9.15694 cm	0.350801 cm
38.5 weeks	9.21318 cm	0.352501 cm
39 weeks	9.26414 cm	0.354202 cm
39.5 weeks	9.30968 cm	0.355902 cm
40 weeks	9.34969 cm	0.357602 cm
40.5 weeks	9.38404 cm	0.359303 cm
41 weeks	9.41261 cm	0.361003 cm
41.5 weeks	9.43529 cm	0.362703 cm

Gest Age (week)	BPD (cm)	+/-1 SD
42 weeks	9.45194 cm	0.364404 cm

## Crown-Rump Length (CRL by GA)

### CRL by GA - Hadlock1992

**Name:** Hadlock\_1992

**Author:** Hadlock

**Year:** 1992

**Reference:** Fetal Crown-Rump Length: Reevaluation of Relation to Menstrual Age (5-18 weeks) with High-Resolution Real-Time US

**Comments:**

GA (week)	CRL (cm)	+/-1 SD
5 weeks	0.222017 cm	0.132 cm
5.5 weeks	0.323257 cm	0.132 cm
6 weeks	0.458221 cm	0.132 cm
6.5 weeks	0.633076 cm	0.132 cm
7 weeks	0.853455 cm	0.132 cm
7.5 weeks	1.12393 cm	0.132 cm
8 weeks	1.44749 cm	0.132 cm
8.5 weeks	1.82517 cm	0.132 cm
9 weeks	2.25575 cm	0.132 cm
9.5 weeks	2.73569 cm	0.132 cm
10 weeks	3.25926 cm	0.132 cm
10.5 weeks	3.81889 cm	0.132 cm
11 weeks	4.40564 cm	0.132 cm
11.5 weeks	5.00986 cm	0.132 cm
12 weeks	5.62178 cm	0.132 cm
12.5 weeks	6.23223 cm	0.132 cm

GA (week)	CRL (cm)	+/-1 SD
13 weeks	6.83319 cm	0.132 cm
13.5 weeks	7.41828 cm	0.132 cm
14 weeks	7.98308 cm	0.132 cm
14.5 weeks	8.5254 cm	0.132 cm
15 weeks	9.04534 cm	0.132 cm
15.5 weeks	9.54531 cm	0.132 cm
16 weeks	10.03 cm	0.132 cm
16.5 weeks	10.5061 cm	0.132 cm
17 weeks	10.9826 cm	0.132 cm
17.5 weeks	11.4704 cm	0.132 cm
18 weeks	11.9826 cm	0.132 cm
18.5 weeks	12.5346 cm	0.132 cm
19 weeks	13.1446 cm	0.132 cm
19.5 weeks	13.8342 cm	0.132 cm

## CRL by GA - Hansmann1986

**Name:** Hansmann\_1986

**Author:** Hansmann

**Year:** 1986

**Reference:** Hansmann, Hackeloer, Staudach and Wittman, Ultrasound Diagnosis in Obstetrics and Gynecology, Springer-Verlag, New York, 1986

**Comments:**

GA (wd)	CRL (mm)	+/-2 SD
7w1d	6.9 mm	4.6 mm
7w2d	7.6 mm	4.85 mm
7w3d	8.3 mm	5.1 mm
7w4d	9 mm	5.35 mm
7w5d	9.6 mm	5.65 mm
7w6d	10.2 mm	5.9 mm
8w0d	10.8 mm	6.1 mm

<b>GA (wd)</b>	<b>CRL (mm)</b>	<b>+/-2 SD</b>
8w1d	11.4 mm	6.4 mm
8w2d	12.1 mm	6.65 mm
8w3d	12.7 mm	6.9 mm
8w4d	13.3 mm	7.15 mm
8w5d	14 mm	7.4 mm
8w6d	14.7 mm	7.7 mm
9w0d	15.4 mm	7.95 mm
9w1d	16.2 mm	8.2 mm
9w3d	17.8 mm	8.7 mm
9w5d	19.6 mm	9.25 mm
10w0d	21.5 mm	9.75 mm
10w2d	23.6 mm	10.3 mm
10w4d	25.9 mm	10.75 mm
10w6d	28.3 mm	11.3 mm
11w2d	32.4 mm	12.05 mm
11w4d	35.3 mm	12.6 mm
11w6d	38.3 mm	13.1 mm
12w2d	43.2 mm	13.9 mm
12w4d	46.6 mm	14.55 mm
12w6d	50.2 mm	14.9 mm
13w2d	55.6 mm	15.65 mm
13w4d	59.4 mm	16.15 mm
13w6d	63.1 mm	16.7 mm
14w2d	68.8 mm	17.5 mm
14w4d	72.6 mm	17.5 mm
14w6d	76.3 mm	18.5 mm
15w2d	81.8 mm	19.3 mm
15w4d	85.4 mm	19.8 mm
15w6d	88.9 mm	20.3 mm
16w2d	93.9 mm	21.1 mm
16w4d	97.1 mm	21.6 mm
16w6d	100.1 mm	22.1 mm

GA (wd)	CRL (mm)	+/-2 SD
17w2d	104.4 mm	22.9 mm
17w4d	107 mm	23.4 mm
17w6d	109.5 mm	23.9 mm
18w2d	113 mm	24.7 mm
18w4d	115.1 mm	25.25 mm
18w6d	117.2 mm	25.7 mm
19w2d	120 mm	26.5 mm
19w4d	121.9 mm	27.05 mm
19w6d	123.7 mm	27.5 mm
20w1d	125.5 mm	28.05 mm
20w3d	127.4 mm	28.55 mm
20w5d	129.4 mm	29.1 mm
21w0d	131.6 mm	29.6 mm
21w1d	132.8 mm	29.85 mm
21w2d	134 mm	30.05 mm

## Femur Length (FL by GA)

### FL by GA - ASUM2000

**Name:** ASUM 2000

**Author:** ASUM

**Year:** 2000

**Reference:** ASUM and Campbell Westerway S , Ultrasonic fetal Measurement Standards for an Australian Population, ASUM, 2003

**Comments:** Fetal growth table generated from ASUM equations with polynomial interpretation of standard deviations

GA (week)	FL (mm)	+/-2 SD
11 weeks	5.7551 mm	1.90788 mm
12 weeks	8.7962 mm	2.42423 mm

<b>GA (week)</b>	<b>FL (mm)</b>	<b>+/-2 SD</b>
13 weeks	11.8149 mm	2.88716 mm
14 weeks	14.8088 mm	3.2994 mm
15 weeks	17.7755 mm	3.66367 mm
16 weeks	20.7126 mm	3.98271 mm
17 weeks	23.6177 mm	4.25924 mm
18 weeks	26.4884 mm	4.49599 mm
19 weeks	29.3223 mm	4.6957 mm
20 weeks	32.117 mm	4.8611 mm
21 weeks	34.8701 mm	4.99491 mm
22 weeks	37.5792 mm	5.09986 mm
23 weeks	40.2419 mm	5.17869 mm
24 weeks	42.8558 mm	5.23413 mm
25 weeks	45.4185 mm	5.2689 mm
26 weeks	47.9276 mm	5.28574 mm
27 weeks	50.3807 mm	5.28737 mm
28 weeks	52.7754 mm	5.27652 mm
29 weeks	55.1093 mm	5.25593 mm
30 weeks	57.38 mm	5.22833 mm
31 weeks	59.5851 mm	5.19644 mm
32 weeks	61.7222 mm	5.16299 mm
33 weeks	63.7889 mm	5.13072 mm
34 weeks	65.7828 mm	5.10236 mm
35 weeks	67.7015 mm	5.08063 mm
36 weeks	69.5426 mm	5.06827 mm
37 weeks	71.3037 mm	5.068 mm
38 weeks	72.9824 mm	5.08255 mm
39 weeks	74.5763 mm	5.11466 mm
40 weeks	76.083 mm	5.16706 mm
41 weeks	77.5001 mm	5.24247 mm



## FL by GA - CFEF2000

**Name:** CFEF 2000

**Author:** CFEF

**Year:** 2000

**Reference:** Crequat J, Duyme M and Brodaty G, Fetal growth charts by the French College of fetal ultrasonography and the Inserm U 155 , Biometry 2000, 28, pp 435-455, 2000

**Comments:** <http://cfef.org/>

GA (week)	FL (mm)	3%	10%	90%	97%
12 weeks	6.33 mm	2.76 mm	3.89 mm	8.79 mm	10 mm
13 weeks	9.88 mm	6.09 mm	7.29 mm	12.42 mm	13.65 mm
14 weeks	13.33 mm	9.4 mm	10.65 mm	16 mm	17.27 mm
15 weeks	16.66 mm	12.56 mm	13.87 mm	19.44 mm	20.77 mm
16 weeks	19.95 mm	15.7 mm	17 mm	22.8 mm	24.18 mm
17 weeks	23.12 mm	18.74 mm	20.12 mm	26.13 mm	27.53 mm
18 weeks	26.23 mm	21.69 mm	23.14 mm	29.3 mm	30.8 mm
19 weeks	29.25 mm	24.59 mm	26.06 mm	32.44 mm	33.91 mm
20 weeks	32.23 mm	27.42 mm	28.94 mm	35.48 mm	37.03 mm
21 weeks	35.05 mm	30.12 mm	31.72 mm	38.41 mm	40 mm
22 weeks	37.87 mm	32.83 mm	34.39 mm	41.3 mm	42.91 mm
23 weeks	40.5 mm	35.34 mm	37 mm	44.03 mm	45.71 mm
24 weeks	43.16 mm	37.89 mm	39.58 mm	46.75 mm	48.42 mm
25 weeks	45.69 mm	40.33 mm	42.04 mm	49.36 mm	51.08 mm
26 weeks	48.17 mm	42.66 mm	44.4 mm	51.88 mm	53.62 mm
27 weeks	50.53 mm	44.95 mm	46.72 mm	54.32 mm	56.09 mm
28 weeks	52.8 mm	47.13 mm	48.94 mm	56.64 mm	58.45 mm
29 weeks	54.94 mm	49.22 mm	51.06 mm	58.91 mm	60.72 mm
30 weeks	57.13 mm	51.3 mm	53.14 mm	61.08 mm	62.92 mm
31 weeks	59.15 mm	53.26 mm	55.13 mm	63.14 mm	65.04 mm
32 weeks	61.11 mm	55.12 mm	57.04 mm	65.19 mm	67.07 mm
33 weeks	63 mm	56.96 mm	58.87 mm	67.1 mm	69.03 mm
34 weeks	64.76 mm	58.69 mm	60.62 mm	68.88 mm	70.84 mm

GA (week)	FL (mm)	3%	10%	90%	97%
35 weeks	66.47 mm	60.33 mm	62.29 mm	70.65 mm	72.63 mm
36 weeks	68.13 mm	61.9 mm	63.89 mm	72.34 mm	74.3 mm
37 weeks	69.63 mm	63.4 mm	65.36 mm	73.91 mm	75.89 mm
38 weeks	71.11 mm	64.81 mm	66.79 mm	75.38 mm	77.41 mm
39 weeks	72.48 mm	66.16 mm	68.19 mm	76.81 mm	78.84 mm
40 weeks	73.79 mm	67.42 mm	69.47 mm	78.14 mm	80.17 mm
41 weeks	74 mm	68 mm	70 mm	79 mm	81 mm

## FL by GA - Hadlock1984

**Name:** Hadlock 1984

**Author:** Hadlock

**Year:** 1984

**Reference:** Hadlock F.P, Deter R.L, Harrist R.B. and Park S.K, Estimating fetal age: computer-assisted analysis of multiple fetal growth parameters, Radiology, 152, pp 497-501, 1984

**Comments:**

GA (week)	FL (cm)	+/-1 SD
12 weeks	0.7244 cm	0.3 cm
12.5 weeks	0.89625 cm	0.3 cm
13 weeks	1.0664 cm	0.3 cm
13.5 weeks	1.23485 cm	0.3 cm
14 weeks	1.4016 cm	0.3 cm
14.5 weeks	1.56665 cm	0.3 cm
15 weeks	1.73 cm	0.3 cm
15.5 weeks	1.89165 cm	0.3 cm
16 weeks	2.0516 cm	0.3 cm
16.5 weeks	2.20985 cm	0.3 cm
17 weeks	2.3664 cm	0.3 cm
17.5 weeks	2.52125 cm	0.3 cm
18 weeks	2.6744 cm	0.3 cm
18.5 weeks	2.82585 cm	0.3 cm

<b>GA (week)</b>	<b>FL (cm)</b>	<b>+/-1 SD</b>
19 weeks	2.9756 cm	0.3 cm
19.5 weeks	3.12365 cm	0.3 cm
20 weeks	3.27 cm	0.3 cm
20.5 weeks	3.41465 cm	0.3 cm
21 weeks	3.5576 cm	0.3 cm
21.5 weeks	3.69885 cm	0.3 cm
22 weeks	3.8384 cm	0.3 cm
22.5 weeks	3.97625 cm	0.3 cm
23 weeks	4.1124 cm	0.3 cm
23.5 weeks	4.24685 cm	0.3 cm
24 weeks	4.3796 cm	0.3 cm
24.5 weeks	4.51065 cm	0.3 cm
25 weeks	4.64 cm	0.3 cm
25.5 weeks	4.76765 cm	0.3 cm
26 weeks	4.8936 cm	0.3 cm
26.5 weeks	5.01785 cm	0.3 cm
27 weeks	5.1404 cm	0.3 cm
27.5 weeks	5.26125 cm	0.3 cm
28 weeks	5.3804 cm	0.3 cm
28.5 weeks	5.49785 cm	0.3 cm
29 weeks	5.6136 cm	0.3 cm
29.5 weeks	5.72765 cm	0.3 cm
30 weeks	5.84 cm	0.3 cm
30.5 weeks	5.95065 cm	0.3 cm
31 weeks	6.0596 cm	0.3 cm
31.5 weeks	6.16685 cm	0.3 cm
32 weeks	6.2724 cm	0.3 cm
32.5 weeks	6.37625 cm	0.3 cm
33 weeks	6.4784 cm	0.3 cm
33.5 weeks	6.57885 cm	0.3 cm
34 weeks	6.6776 cm	0.3 cm
34.5 weeks	6.77465 cm	0.3 cm

GA (week)	FL (cm)	+/-1 SD
35 weeks	6.87 cm	0.3 cm
35.5 weeks	6.96365 cm	0.3 cm
36 weeks	7.0556 cm	0.3 cm
36.5 weeks	7.14585 cm	0.3 cm
37 weeks	7.2344 cm	0.3 cm
37.5 weeks	7.32125 cm	0.3 cm
38 weeks	7.4064 cm	0.3 cm
38.5 weeks	7.48985 cm	0.3 cm
39 weeks	7.5716 cm	0.3 cm
39.5 weeks	7.65165 cm	0.3 cm
40 weeks	7.73 cm	0.3 cm

## FL by GA - ISUOG\_Leung2008

**Name:** ISUOG Leung 2008

**Author:** ISUOG\_Leung

**Year:** 2008

**Reference:** Fetal biometry in ethnic Chinese: biparietal diameter, head circumference, abdominal circumference and femur length T. N. LEUNG, M. W. PANG, S. S. DALJIT, T. Y. LEUNG, C. F. POON, S. M. WONG and T. K. LAU Fetal Medicine Unit, Department of Obstetrics and Gynaecology, The Chinese University of Hong Kong, The Prince of Wales Hospital, Hong Kong

**Comments:**

Gest Age (week)	FL (cm)	+/-1 SD
12 weeks	0.56757 cm	0.167466 cm
12.5 weeks	0.740987 cm	0.169057 cm
13 weeks	0.911841 cm	0.170647 cm
13.5 weeks	1.08016 cm	0.172238 cm
14 weeks	1.24599 cm	0.173829 cm
14.5 weeks	1.40934 cm	0.175419 cm
15 weeks	1.57026 cm	0.17701 cm

Gest Age (week)	FL (cm)	+/-1 SD
15.5 weeks	1.72878 cm	0.178601 cm
16 weeks	1.88492 cm	0.180191 cm
16.5 weeks	2.03872 cm	0.181782 cm
17 weeks	2.19021 cm	0.183373 cm
17.5 weeks	2.33941 cm	0.184963 cm
18 weeks	2.48638 cm	0.186554 cm
18.5 weeks	2.63112 cm	0.188145 cm
19 weeks	2.77368 cm	0.189736 cm
19.5 weeks	2.91409 cm	0.191326 cm
20 weeks	3.05238 cm	0.192917 cm
20.5 weeks	3.18857 cm	0.194508 cm
21 weeks	3.32271 cm	0.196098 cm
21.5 weeks	3.45482 cm	0.197689 cm
22 weeks	3.58494 cm	0.19928 cm
22.5 weeks	3.71309 cm	0.20087 cm
23 weeks	3.83931 cm	0.202461 cm
23.5 weeks	3.96363 cm	0.204052 cm
24 weeks	4.08608 cm	0.205642 cm
24.5 weeks	4.20669 cm	0.207233 cm
25 weeks	4.32549 cm	0.208824 cm
25.5 weeks	4.44252 cm	0.210414 cm
26 weeks	4.55781 cm	0.212005 cm
26.5 weeks	4.67138 cm	0.213596 cm
27 weeks	4.78327 cm	0.215186 cm
27.5 weeks	4.89352 cm	0.216777 cm
28 weeks	5.00215 cm	0.218368 cm
28.5 weeks	5.10919 cm	0.219959 cm
29 weeks	5.21467 cm	0.221549 cm
29.5 weeks	5.31864 cm	0.22314 cm
30 weeks	5.42111 cm	0.224731 cm
30.5 weeks	5.52212 cm	0.226321 cm
31 weeks	5.6217 cm	0.227912 cm

Gest Age (week)	FL (cm)	+/-1 SD
31.5 weeks	5.71989 cm	0.229503 cm
32 weeks	5.81671 cm	0.231093 cm
32.5 weeks	5.9122 cm	0.232684 cm
33 weeks	6.00638 cm	0.234275 cm
33.5 weeks	6.09929 cm	0.235865 cm
34 weeks	6.19097 cm	0.237456 cm
34.5 weeks	6.28143 cm	0.239047 cm
35 weeks	6.37072 cm	0.240637 cm
35.5 weeks	6.45887 cm	0.242228 cm
36 weeks	6.5459 cm	0.243819 cm
36.5 weeks	6.63185 cm	0.245409 cm
37 weeks	6.71675 cm	0.247 cm
37.5 weeks	6.80062 cm	0.248591 cm
38 weeks	6.88352 cm	0.250181 cm
38.5 weeks	6.96545 cm	0.251772 cm
39 weeks	7.04646 cm	0.253363 cm
39.5 weeks	7.12658 cm	0.254954 cm
40 weeks	7.20584 cm	0.256544 cm
40.5 weeks	7.28426 cm	0.258135 cm
41 weeks	7.36189 cm	0.259726 cm
41.5 weeks	7.43875 cm	0.261316 cm
42 weeks	7.51488 cm	0.262907 cm

## FL by GA - Jeanty1982

**Name:** Jeanty 1982

**Author:** Jeanty

**Year:** 1982

**Reference:** Ultrasonic Evaluation of Fetal Limb Growth, Jeanty et al., June 1982, Radiology 143: 751-754

**Comments:**

Gest Age (week)	FL (mm)	+/-1 SD
12 weeks	8 mm	0 mm
13 weeks	12 mm	4 mm
14 weeks	15 mm	4 mm
15 weeks	18 mm	4 mm
16 weeks	21 mm	4 mm
17 weeks	24 mm	2 mm
18 weeks	27 mm	2 mm
19 weeks	30 mm	4 mm
20 weeks	33 mm	4 mm
21 weeks	36 mm	5 mm
22 weeks	38 mm	5 mm
23 weeks	41 mm	3 mm
24 weeks	43 mm	3 mm
25 weeks	46 mm	4 mm
26 weeks	48 mm	4 mm
27 weeks	51 mm	3 mm
28 weeks	53 mm	3 mm
29 weeks	55 mm	3 mm
30 weeks	57 mm	3 mm
31 weeks	59 mm	4 mm
32 weeks	61 mm	4 mm
33 weeks	63 mm	4 mm
34 weeks	65 mm	4 mm
35 weeks	67 mm	3 mm
36 weeks	68 mm	3 mm
37 weeks	70 mm	4 mm
38 weeks	72 mm	4 mm
39 weeks	73 mm	5 mm
40 weeks	75 mm	5 mm

## FL by GA - Merz1988

**Name:** Merz 1988

**Author:** Merz

**Year:** 1988

**Reference:** Merz E, Goldhofer W and Timor-Tritsch E , Ultrasound in Gynecology and Obstetrics, Textbook and Atlas, Georg Thieme Verlag , 1991

**Comments:** From Merz E, Habilitationsschrift, Mainz University Woman's Hospital, 1988

GA (week)	FL (mm)	5%	95%
12 weeks	9 mm	5 mm	13 mm
13 weeks	12 mm	8 mm	16 mm
14 weeks	15 mm	11 mm	19 mm
15 weeks	18 mm	14 mm	22 mm
16 weeks	21 mm	17 mm	25 mm
17 weeks	24 mm	20 mm	28 mm
18 weeks	27 mm	22 mm	31 mm
19 weeks	30 mm	25 mm	34 mm
20 weeks	32 mm	28 mm	37 mm
21 weeks	35 mm	31 mm	40 mm
22 weeks	38 mm	34 mm	42 mm
23 weeks	41 mm	36 mm	45 mm
24 weeks	43 mm	39 mm	48 mm
25 weeks	46 mm	41 mm	51 mm
26 weeks	49 mm	44 mm	53 mm
27 weeks	51 mm	46 mm	56 mm
28 weeks	53 mm	49 mm	58 mm
29 weeks	56 mm	51 mm	61 mm
30 weeks	58 mm	53 mm	63 mm
31 weeks	60 mm	56 mm	65 mm
32 weeks	63 mm	58 mm	68 mm
33 weeks	65 mm	60 mm	70 mm
34 weeks	67 mm	62 mm	72 mm



GA (week)	FL (mm)	5%	95%
35 weeks	69 mm	64 mm	74 mm
36 weeks	71 mm	66 mm	76 mm
37 weeks	73 mm	68 mm	78 mm
38 weeks	75 mm	69 mm	80 mm
39 weeks	76 mm	71 mm	82 mm
40 weeks	78 mm	73 mm	84 mm

## Gestational Sac (GS by GA)

### GS by GA - Hellman 1969

**Name:** Hellman 1969 GS by GA

**Author:** Hellman

**Year:** 1969

**Reference:** HELLMAN, L. Mh, KOBAYASHI, M., FILLISTI, L., et al. Growth and development of the human fetus prior to the twentieth week of gestation. American Journal of Obstetrics and Gynecology, 1969, vol. 103, no 6, p. 789-798.

**Comments:**

Gest Age (wd)	Gestational Sac (cm)	+/-2 SD
6w0d	1.67 cm	0.64 cm
6w4d	2.02 cm	0.64 cm
7w0d	2.37 cm	0.64 cm
7w4d	2.72 cm	0.64 cm
8w0d	3.07 cm	0.64 cm
8w4d	3.42 cm	0.64 cm
9w0d	3.78 cm	0.64 cm
9w4d	4.13 cm	0.64 cm
10w0d	4.48 cm	0.64 cm
10w4d	4.83 cm	0.64 cm
11w0d	5.18 cm	0.64 cm

Gest Age (wd)	Gestational Sac (cm)	+/-2 SD
11w4d	5.53 cm	0.64 cm
12w0d	5.88 cm	0.64 cm

## GS by GA - Rempen1991

**Name:** Rempen 1991 GS by GA

**Author:** Rempen

**Year:** 1991

**Reference:** REMPEN, A. "Biometrie in der Fruhgraviditat (I. Trimenon)" Der Frauenarzt, 1991, 32, 4, p 425-430.

**Comments:**

Gest Age (wd)	Gestational Sac (cm)	+/-2 SD
4w4d	0.05 cm	1.05 cm
4w5d	0.18 cm	1.05 cm
4w6d	0.32 cm	1.05 cm
5w0d	0.45 cm	1.05 cm
5w1d	0.58 cm	1.05 cm
5w2d	0.71 cm	1.05 cm
5w3d	0.84 cm	1.05 cm
5w4d	0.97 cm	1.05 cm
5w5d	1.09 cm	1.05 cm
5w6d	1.22 cm	1.05 cm
6w0d	1.34 cm	1.05 cm
6w1d	1.46 cm	1.05 cm
6w2d	1.59 cm	1.05 cm
6w3d	1.71 cm	1.05 cm
6w4d	1.83 cm	1.05 cm
6w5d	1.94 cm	1.05 cm
6w6d	2.06 cm	1.05 cm
7w0d	2.17 cm	1.05 cm
7w1d	2.29 cm	1.05 cm

Gest Age (wd)	Gestational Sac (cm)	+/-2 SD
7w2d	2.4 cm	1.05 cm
7w3d	2.51 cm	1.05 cm
7w4d	2.62 cm	1.05 cm
7w5d	2.73 cm	1.05 cm
7w6d	2.84 cm	1.05 cm
8w0d	2.95 cm	1.05 cm
8w1d	3.05 cm	1.05 cm
8w2d	3.16 cm	1.05 cm
8w3d	3.26 cm	1.05 cm
8w4d	3.36 cm	1.05 cm
8w5d	3.46 cm	1.05 cm
8w6d	3.56 cm	1.05 cm
9w0d	3.66 cm	1.05 cm
9w1d	3.76 cm	1.05 cm
9w2d	3.85 cm	1.05 cm
9w3d	3.95 cm	1.05 cm
9w4d	4.04 cm	1.05 cm
9w5d	4.13 cm	1.05 cm
9w6d	4.22 cm	1.05 cm
10w0d	4.31 cm	1.05 cm
10w1d	4.4 cm	1.05 cm
10w2d	4.49 cm	1.05 cm
10w3d	4.57 cm	1.05 cm
10w4d	4.66 cm	1.05 cm
10w5d	4.74 cm	1.05 cm
10w6d	4.82 cm	1.05 cm
11w0d	4.9 cm	1.05 cm
11w1d	4.98 cm	1.05 cm
11w2d	5.06 cm	1.05 cm
11w3d	5.14 cm	1.05 cm
11w4d	5.21 cm	1.05 cm
11w5d	5.29 cm	1.05 cm

Gest Age (wd)	Gestational Sac (cm)	+/-2 SD
11w6d	5.36 cm	1.05 cm
12w0d	5.43 cm	1.05 cm
12w1d	5.51 cm	1.05 cm
12w2d	5.58 cm	1.05 cm
12w3d	5.64 cm	1.05 cm
12w4d	5.71 cm	1.05 cm
12w5d	5.78 cm	1.05 cm
12w6d	5.84 cm	1.05 cm
13w0d	5.91 cm	1.05 cm
13w1d	5.97 cm	1.05 cm
13w2d	6.03 cm	1.05 cm

## Head Circumference (HC by GA)

### HC by GA - ASUM2000

**Name:** ASUM 2000

**Author:** ASUM

**Year:** 2000

**Reference:** ASUM and Campbell Westerway S , Ultrasonic fetal Measurement Standards for an Australian Population, ASUM, 2003

**Comments:** Fetal growth table generated from ASUM equations with polynomial interpretation of standard deviations

GA (week)	HC (mm)	+/-2 SD
11 weeks	54.9661 mm	14.4875 mm
12 weeks	69.5524 mm	14.7958 mm
13 weeks	83.7989 mm	15.1475 mm
14 weeks	97.7056 mm	15.5381 mm

GA (week)	HC (mm)	+/-2 SD
15 weeks	111.272 mm	15.9634 mm
16 weeks	124.5 mm	16.4189 mm
17 weeks	137.387 mm	16.9003 mm
18 weeks	149.934 mm	17.4032 mm
19 weeks	162.142 mm	17.9232 mm
20 weeks	174.01 mm	18.4561 mm
21 weeks	185.538 mm	18.9973 mm
22 weeks	196.726 mm	19.5426 mm
23 weeks	207.575 mm	20.0877 mm
24 weeks	218.084 mm	20.628 mm
25 weeks	228.252 mm	21.1593 mm
26 weeks	238.082 mm	21.6772 mm
27 weeks	247.571 mm	22.1773 mm
28 weeks	256.72 mm	22.6553 mm
29 weeks	265.53 mm	23.1068 mm
30 weeks	274 mm	23.5274 mm
31 weeks	282.13 mm	23.9128 mm
32 weeks	289.92 mm	24.2586 mm
33 weeks	297.371 mm	24.5604 mm
34 weeks	304.482 mm	24.8139 mm
35 weeks	311.252 mm	25.0148 mm
36 weeks	317.684 mm	25.1585 mm
37 weeks	323.775 mm	25.2409 mm
38 weeks	329.526 mm	25.2574 mm
39 weeks	334.938 mm	25.2039 mm
40 weeks	340.01 mm	25.0758 mm
41 weeks	344.742 mm	24.8688 mm

## HC by GA - CFEF2000

**Name:** CFEF 2000

**Author:** CFEF

**Year:** 2000

**Reference:** Crequat J, Duyme M and Brodaty G, Fetal growth charts by the French College of fetal ultrasonography and the Inserm U 155 , Biometry 2000, 28, pp 435-455, 2000

**Comments:** <http://cfef.org/>

GA (week)	HC (mm)	3%	10%	90%	97%
16 weeks	120.86 mm	105.8 mm	110.58 mm	131.25 mm	136.11 mm
17 weeks	134.49 mm	118.67 mm	123.78 mm	145.38 mm	150.39 mm
18 weeks	147.55 mm	131.08 mm	136.36 mm	158.92 mm	164.11 mm
19 weeks	160.29 mm	143 mm	148.53 mm	172.14 mm	177.48 mm
20 weeks	172.47 mm	154.53 mm	160.21 mm	184.86 mm	190.54 mm
21 weeks	184.21 mm	165.41 mm	171.49 mm	197.12 mm	203.09 mm
22 weeks	195.74 mm	176.12 mm	182.35 mm	208.91 mm	215.15 mm
23 weeks	206.64 mm	186.32 mm	192.31 mm	220.26 mm	226.76 mm
24 weeks	217.18 mm	196.19 mm	203 mm	231.39 mm	238 mm
25 weeks	227.32 mm	205.5 mm	212.4 mm	241.91 mm	248.81 mm
26 weeks	236.72 mm	214.44 mm	221.57 mm	252 mm	259.23 mm
27 weeks	246 mm	222.87 mm	230.33 mm	261.75 mm	269.13 mm
28 weeks	254.77 mm	231 mm	238.56 mm	271 mm	278.57 mm
29 weeks	263 mm	238.4 mm	246.35 mm	279.71 mm	287.56 mm
30 weeks	270.84 mm	245.86 mm	253.74 mm	288.13 mm	296 mm
31 weeks	278.33 mm	252.54 mm	260.81 mm	296 mm	304.27 mm
32 weeks	285.29 mm	258.86 mm	267.22 mm	303.54 mm	312 mm
33 weeks	292 mm	264.62 mm	273.38 mm	310.4 mm	319.1 mm
34 weeks	298.1 mm	270.14 mm	279 mm	317 mm	325.91 mm
35 weeks	303.62 mm	275.33 mm	284.23 mm	323 mm	332.16 mm
36 weeks	308.81 mm	279.79 mm	289 mm	328.75 mm	338 mm
37 weeks	313.52 mm	283.9 mm	293.32 mm	334 mm	343.34 mm
38 weeks	317.88 mm	287.63 mm	297.29 mm	338.64 mm	348.29 mm
39 weeks	321.86 mm	290.88 mm	300.76 mm	343 mm	352.67 mm
40 weeks	324 mm	293 mm	303 mm	346 mm	356 mm

## HC by GA - Hadlock1984

**Name:** Hadlock 1984

**Author:** Hadlock

**Year:** 1984

**Reference:** Hadlock F.P, Deter R.L, Harrist R.B. and Park S.K, Estimating fetal age: computer-assisted analysis of multiple fetal growth parameters, Radiology, 152, pp 497-501, 1984

**Comments:**

GA (week)	HC (cm)	+/-1 SD
12 weeks	6.79971 cm	1 cm
12.5 weeks	7.52234 cm	1 cm
13 weeks	8.2402 cm	1 cm
13.5 weeks	8.9531 cm	1 cm
14 weeks	9.66083 cm	1 cm
14.5 weeks	10.3632 cm	1 cm
15 weeks	11.0601 cm	1 cm
15.5 weeks	11.7512 cm	1 cm
16 weeks	12.4363 cm	1 cm
16.5 weeks	13.1154 cm	1 cm
17 weeks	13.7882 cm	1 cm
17.5 weeks	14.4544 cm	1 cm
18 weeks	15.114 cm	1 cm
18.5 weeks	15.7667 cm	1 cm
19 weeks	16.4123 cm	1 cm
19.5 weeks	17.0507 cm	1 cm
20 weeks	17.6816 cm	1 cm
20.5 weeks	18.3049 cm	1 cm
21 weeks	18.9203 cm	1 cm
21.5 weeks	19.5277 cm	1 cm
22 weeks	20.1269 cm	1 cm
22.5 weeks	20.7177 cm	1 cm
23 weeks	21.2998 cm	1 cm

<b>GA (week)</b>	<b>HC (cm)</b>	<b>+/-1 SD</b>
23.5 weeks	21.8732 cm	1 cm
24 weeks	22.4376 cm	1 cm
24.5 weeks	22.9929 cm	1 cm
25 weeks	23.5388 cm	1 cm
25.5 weeks	24.0751 cm	1 cm
26 weeks	24.6016 cm	1 cm
26.5 weeks	25.1183 cm	1 cm
27 weeks	25.6248 cm	1 cm
27.5 weeks	26.121 cm	1 cm
28 weeks	26.6066 cm	1 cm
28.5 weeks	27.0816 cm	1 cm
29 weeks	27.5457 cm	1 cm
29.5 weeks	27.9987 cm	1 cm
30 weeks	28.4404 cm	1 cm
30.5 weeks	28.8707 cm	1 cm
31 weeks	29.2893 cm	1 cm
31.5 weeks	29.696 cm	1 cm
32 weeks	30.0907 cm	1 cm
32.5 weeks	30.4732 cm	1 cm
33 weeks	30.8433 cm	1 cm
33.5 weeks	31.2007 cm	1 cm
34 weeks	31.5453 cm	1 cm
34.5 weeks	31.877 cm	1 cm
35 weeks	32.1955 cm	1 cm
35.5 weeks	32.5005 cm	1 cm
36 weeks	32.7921 cm	1 cm
36.5 weeks	33.0698 cm	1 cm
37 weeks	33.3336 cm	1 cm
37.5 weeks	33.5833 cm	1 cm
38 weeks	33.8186 cm	1 cm
38.5 weeks	34.0394 cm	1 cm
39 weeks	34.2455 cm	1 cm



GA (week)	HC (cm)	+/-1 SD
39.5 weeks	34.4367 cm	1 cm
40 weeks	34.6128 cm	1 cm

## HC by GA - ISUOG\_Leung2008

**Name:** ISUOG Leung 2008

**Author:** ISUOG\_Leung

**Year:** 2008

**Reference:** Fetal biometry in ethnic Chinese: biparietal diameter, head circumference, abdominal circumference and femur length T. N. LEUNG, M. W. PANG, S. S. DALJIT, T. Y. LEUNG, C. F. POON, S. M. WONG and T. K. LAU Fetal Medicine Unit, Department of Obstetrics and Gynaecology, The Chinese University of Hong Kong, The Prince of Wales Hospital, Hong Kong

**Comments:**

Gest Age (week)	HC (cm)	+/-1 SD
12 weeks	6.97451 cm	0.783146 cm
12.5 weeks	7.58893 cm	0.787589 cm
13 weeks	8.20665 cm	0.792033 cm
13.5 weeks	8.82717 cm	0.796476 cm
14 weeks	9.45002 cm	0.800919 cm
14.5 weeks	10.0747 cm	0.805362 cm
15 weeks	10.7008 cm	0.809805 cm
15.5 weeks	11.3277 cm	0.814248 cm
16 weeks	11.955 cm	0.818691 cm
16.5 weeks	12.5823 cm	0.823135 cm
17 weeks	13.209 cm	0.827578 cm
17.5 weeks	13.8346 cm	0.832021 cm
18 weeks	14.4587 cm	0.836464 cm
18.5 weeks	15.0808 cm	0.840907 cm
19 weeks	15.7003 cm	0.84535 cm
19.5 weeks	16.317 cm	0.849793 cm

Gest Age (week)	HC (cm)	+/-1 SD
20 weeks	16.9301 cm	0.854237 cm
20.5 weeks	17.5393 cm	0.85868 cm
21 weeks	18.1441 cm	0.863123 cm
21.5 weeks	18.744 cm	0.867566 cm
22 weeks	19.3384 cm	0.872009 cm
22.5 weeks	19.9271 cm	0.876452 cm
23 weeks	20.5093 cm	0.880895 cm
23.5 weeks	21.0847 cm	0.885338 cm
24 weeks	21.6528 cm	0.889782 cm
24.5 weeks	22.2131 cm	0.894225 cm
25 weeks	22.7651 cm	0.898668 cm
25.5 weeks	23.3084 cm	0.903111 cm
26 weeks	23.8424 cm	0.907554 cm
26.5 weeks	24.3667 cm	0.911997 cm
27 weeks	24.8807 cm	0.91644 cm
27.5 weeks	25.3841 cm	0.920884 cm
28 weeks	25.8763 cm	0.925327 cm
28.5 weeks	26.3568 cm	0.92977 cm
29 weeks	26.8252 cm	0.934213 cm
29.5 weeks	27.281 cm	0.938656 cm
30 weeks	27.7236 cm	0.943099 cm
30.5 weeks	28.1527 cm	0.947542 cm
31 weeks	28.5677 cm	0.951986 cm
31.5 weeks	28.9682 cm	0.956429 cm
32 weeks	29.3536 cm	0.960872 cm
32.5 weeks	29.7235 cm	0.965315 cm
33 weeks	30.0774 cm	0.969758 cm
33.5 weeks	30.4148 cm	0.974201 cm
34 weeks	30.7352 cm	0.978644 cm
34.5 weeks	31.0382 cm	0.983088 cm
35 weeks	31.3233 cm	0.987531 cm
35.5 weeks	31.59 cm	0.991974 cm

Gest Age (week)	HC (cm)	+/-1 SD
36 weeks	31.8378 cm	0.996417 cm
36.5 weeks	32.0662 cm	1.00086 cm
37 weeks	32.2747 cm	1.0053 cm
37.5 weeks	32.4629 cm	1.00975 cm
38 weeks	32.6303 cm	1.01419 cm
38.5 weeks	32.7764 cm	1.01863 cm
39 weeks	32.9007 cm	1.02308 cm
39.5 weeks	33.0027 cm	1.02752 cm
40 weeks	33.082 cm	1.03196 cm
40.5 weeks	33.138 cm	1.03641 cm
41 weeks	33.1703 cm	1.04085 cm
41.5 weeks	33.1785 cm	1.04529 cm
42 weeks	33.1619 cm	1.04973 cm

## HC by GA - Merz1988

**Name:** Merz 1988

**Author:** Merz

**Year:** 1988

**Reference:** Merz E, Goldhofer W and Timor-Tritsch E , Ultrasound in Gynecology and Obstetrics, Textbook and Atlas, Georg Thieme Verlag , 1991

**Comments:** From Merz E, Habilitationsschrift, Mainz University Woman's Hospital, 1988

GA (week)	HC (mm)	5%	95%
12 weeks	76 mm	63 mm	90 mm
13 weeks	90 mm	77 mm	104 mm
14 weeks	104 mm	90 mm	118 mm
15 weeks	117 mm	104 mm	132 mm
16 weeks	131 mm	117 mm	146 mm
17 weeks	144 mm	130 mm	159 mm
18 weeks	157 mm	142 mm	172 mm

GA (week)	HC (mm)	5%	95%
19 weeks	169 mm	155 mm	185 mm
20 weeks	182 mm	167 mm	197 mm
21 weeks	194 mm	179 mm	210 mm
22 weeks	205 mm	190 mm	222 mm
23 weeks	217 mm	201 mm	233 mm
24 weeks	228 mm	212 mm	245 mm
25 weeks	239 mm	223 mm	256 mm
26 weeks	249 mm	233 mm	266 mm
27 weeks	259 mm	243 mm	277 mm
28 weeks	269 mm	253 mm	287 mm
29 weeks	279 mm	262 mm	296 mm
30 weeks	288 mm	271 mm	306 mm
31 weeks	296 mm	279 mm	315 mm
32 weeks	305 mm	288 mm	323 mm
33 weeks	313 mm	296 mm	332 mm
34 weeks	321 mm	303 mm	340 mm
35 weeks	328 mm	311 mm	347 mm
36 weeks	336 mm	318 mm	355 mm
37 weeks	342 mm	324 mm	362 mm
38 weeks	349 mm	331 mm	368 mm
39 weeks	355 mm	337 mm	375 mm
40 weeks	361 mm	343 mm	381 mm

## Humerus Length (HL by GA)

### HL by GA - ASUM2000

**Name:** ASUM 2000

**Author:** ASUM

**Year:** 2000

**Reference:** ASUM and Campbell Westerway S , Ultrasonic fetal Measurement Standards for an Australian Population, ASUM, 2003

**Comments:** Fetal growth table generated from ASUM equations with polynomial interpretation of standard deviations

GA (week)	HL (mm)	+/-2 SD
11 weeks	6.496 mm	2.5658 mm
12 weeks	9.4544 mm	3.03711 mm
13 weeks	12.3586 mm	3.44905 mm
14 weeks	15.208 mm	3.80497 mm
15 weeks	18.002 mm	4.10823 mm
16 weeks	20.74 mm	4.36216 mm
17 weeks	23.4214 mm	4.57012 mm
18 weeks	26.0456 mm	4.73545 mm
19 weeks	28.612 mm	4.8615 mm
20 weeks	31.12 mm	4.95163 mm
21 weeks	33.569 mm	5.00917 mm
22 weeks	35.9584 mm	5.03748 mm
23 weeks	38.2876 mm	5.0399 mm
24 weeks	40.556 mm	5.01978 mm
25 weeks	42.763 mm	4.98048 mm
26 weeks	44.908 mm	4.92533 mm
27 weeks	46.9904 mm	4.85769 mm
28 weeks	49.0096 mm	4.7809 mm
29 weeks	50.965 mm	4.69831 mm
30 weeks	52.856 mm	4.61328 mm
31 weeks	54.682 mm	4.52914 mm
32 weeks	56.4424 mm	4.44925 mm
33 weeks	58.1366 mm	4.37695 mm
34 weeks	59.764 mm	4.31559 mm
35 weeks	61.324 mm	4.26853 mm
36 weeks	62.816 mm	4.2391 mm
37 weeks	64.2394 mm	4.23066 mm
38 weeks	65.5936 mm	4.24655 mm

GA (week)	HL (mm)	+/-2 SD
39 weeks	66.878 mm	4.29012 mm
40 weeks	68.092 mm	4.36473 mm
41 weeks	69.235 mm	4.47371 mm

## HL by GA - Jeanty1982

**Name:** Jeanty 1982

**Author:** Jeanty

**Year:** 1982

**Reference:** Ultrasonic Evaluation of Fetal Limb Growth, Jeanty et al., June 1982, Radiology 143: 751-754

**Comments:**

Gest Age (week)	HL (mm)	+/-1 SD
12 weeks	9 mm	0 mm
13 weeks	12 mm	4 mm
14 weeks	15 mm	4 mm
15 weeks	18 mm	4 mm
16 weeks	21 mm	4 mm
17 weeks	23 mm	3 mm
18 weeks	26 mm	3 mm
19 weeks	29 mm	4 mm
20 weeks	31 mm	4 mm
21 weeks	33 mm	3 mm
22 weeks	36 mm	3 mm
23 weeks	38 mm	3 mm
24 weeks	40 mm	3 mm
25 weeks	42 mm	4 mm
26 weeks	44 mm	4 mm
27 weeks	46 mm	3 mm
28 weeks	48 mm	3 mm
29 weeks	49 mm	3 mm

Gest Age (week)	HL (mm)	+/-1 SD
30 weeks	51 mm	3 mm
31 weeks	53 mm	3 mm
32 weeks	54 mm	3 mm
33 weeks	55 mm	3 mm
34 weeks	57 mm	3 mm
35 weeks	58 mm	3 mm
36 weeks	59 mm	3 mm
37 weeks	60 mm	2 mm
38 weeks	61 mm	2 mm
39 weeks	62 mm	4 mm
40 weeks	63 mm	4 mm

## Occipito-Frontal Diameter (OFD by GA)

### OFD by GA - ASUM2000

**Name:** ASUM 2000

**Author:** ASUM

**Year:** 2000

**Reference:** ASUM and Campbell Westerway S , Ultrasonic fetal Measurement Standards for an Australian Population, ASUM, 2003

**Comments:** Fetal growth table generated from ASUM equations with polynomial interpretation of standard deviations

GA (week)	OFD (mm)	+/-2 SD
11 weeks	18.6426 mm	2.20666 mm
12 weeks	24.0012 mm	2.36762 mm
13 weeks	29.2268 mm	2.52938 mm
14 weeks	34.3194 mm	2.6916 mm
15 weeks	39.279 mm	2.85394 mm

<b>GA (week)</b>	<b>OFD (mm)</b>	<b>+/-2 SD</b>
16 weeks	44.1056 mm	3.01606 mm
17 weeks	48.7992 mm	3.1776 mm
18 weeks	53.3598 mm	3.33824 mm
19 weeks	57.7874 mm	3.49763 mm
20 weeks	62.082 mm	3.65542 mm
21 weeks	66.2436 mm	3.81128 mm
22 weeks	70.2722 mm	3.96486 mm
23 weeks	74.1678 mm	4.11583 mm
24 weeks	77.9304 mm	4.26383 mm
25 weeks	81.56 mm	4.40853 mm
26 weeks	85.0566 mm	4.54958 mm
27 weeks	88.4202 mm	4.68665 mm
28 weeks	91.6508 mm	4.81939 mm
29 weeks	94.7484 mm	4.94745 mm
30 weeks	97.713 mm	5.07051 mm
31 weeks	100.545 mm	5.18821 mm
32 weeks	103.243 mm	5.30021 mm
33 weeks	105.809 mm	5.40617 mm
34 weeks	108.241 mm	5.50575 mm
35 weeks	110.541 mm	5.59861 mm
36 weeks	112.708 mm	5.68441 mm
37 weeks	114.741 mm	5.76279 mm
38 weeks	116.642 mm	5.83343 mm
39 weeks	118.409 mm	5.89598 mm
40 weeks	120.044 mm	5.95009 mm
41 weeks	121.546 mm	5.99543 mm



# Trans-Abdominal Diameter (TAD by GA)

## TAD by GA - CFEF2000

**Name:** CFEF 2000

**Author:** CFEF

**Year:** 2000

**Reference:** Crequat J, Duyme M and Brodaty G, Fetal growth charts by the French College of fetal ultrasonography and the Inserm U 155 , Biometry 2000, 28, pp 435-455, 2000

**Comments:** <http://cfef.org/>

GA (week)	TAD (mm)	3%	10%	90%	97%
11 weeks	13.5 mm	9.68 mm	11 mm	16 mm	17.25 mm
12 weeks	17 mm	12.68 mm	14 mm	20 mm	21.46 mm
13 weeks	20.56 mm	15.6 mm	17.25 mm	24 mm	25.51 mm
14 weeks	24 mm	18.69 mm	20.41 mm	27.84 mm	29.56 mm
15 weeks	27.69 mm	21.76 mm	23.64 mm	31.74 mm	33.61 mm
16 weeks	31.21 mm	25 mm	27 mm	35.53 mm	37.48 mm
17 weeks	34.7 mm	28.23 mm	30.34 mm	39.21 mm	41.39 mm
18 weeks	38.31 mm	31.54 mm	33.64 mm	42.89 mm	45.14 mm
19 weeks	41.69 mm	34.78 mm	37 mm	46.42 mm	48.59 mm
20 weeks	45.21 mm	38.16 mm	40.26 mm	50 mm	52.2 mm
21 weeks	48.34 mm	41.14 mm	43.46 mm	53.22 mm	55.63 mm
22 weeks	51.57 mm	44.21 mm	46.61 mm	56.75 mm	59.08 mm
23 weeks	54.72 mm	47 mm	49.47 mm	60 mm	62.46 mm
24 weeks	57.88 mm	49.77 mm	52.39 mm	63.43 mm	66 mm
25 weeks	61 mm	52.54 mm	55.18 mm	66.74 mm	69.44 mm
26 weeks	64 mm	55.17 mm	58 mm	70.12 mm	72.89 mm
27 weeks	67.11 mm	57.72 mm	60.73 mm	73.42 mm	76.42 mm
28 weeks	70.27 mm	60.43 mm	63.58 mm	76.8 mm	79.87 mm
29 weeks	73.27 mm	63.13 mm	66.36 mm	80.17 mm	83.33 mm

GA (week)	TAD (mm)	3%	10%	90%	97%
30 weeks	76.17 mm	65.8 mm	69.17 mm	83.45 mm	86.75 mm
31 weeks	79.25 mm	68.35 mm	71.88 mm	86.68 mm	90.13 mm
32 weeks	82.1 mm	70.9 mm	74.43 mm	89.76 mm	93.36 mm
33 weeks	84.78 mm	73.08 mm	76.75 mm	92.89 mm	96.64 mm
34 weeks	87.55 mm	75.25 mm	79.08 mm	95.89 mm	99.86 mm
35 weeks	90 mm	77 mm	81.1 mm	99 mm	103 mm
36 weeks	92.36 mm	78.48 mm	82.9 mm	102 mm	106.31 mm
37 weeks	94.81 mm	79.79 mm	84.6 mm	105 mm	109.67 mm
38 weeks	97 mm	80.92 mm	86.1 mm	108.19 mm	113.29 mm
39 weeks	99.33 mm	81.85 mm	87.41 mm	111.34 mm	117 mm
40 weeks	101.64 mm	82.58 mm	88.59 mm	114.52 mm	120.7 mm
41 weeks	103 mm	82.8 mm	89.2 mm	117 mm	123 mm

## Transverse Cerebellar Diameter (TCD by GA)

### TCD by GA - Hill1990

**Name:** Hill 1990 TCD by GA

**Author:** Hill

**Year:** 1990

**Reference:** HILL, LYNDON M., GUZICK, DAVID, FRIES, JOANNE, et al. The transverse cerebellar diameter in estimating gestational age in the large for gestational age fetus. *Obstetrics and Gynecology*, 1990, vol. 75, no 6, p. 981-985.

**Comments:**

Gest Age (wd)	Transverse Cerebellar Diameter (cm)	+/-2 SD
15w0d	1.5 cm	0.3 cm
16w0d	1.6 cm	0.2 cm

Gest Age (wd)	Transverse Cerebellar Diameter (cm)	+/-2 SD
17w0d	1.7 cm	0.2 cm
18w0d	1.8 cm	0.2 cm
19w0d	2 cm	0.2 cm
20w0d	2 cm	0.3 cm
21w0d	2.2 cm	0.3 cm
22w0d	2.3 cm	0.3 cm
23w0d	2.4 cm	0.3 cm
24w0d	2.6 cm	0.4 cm
25w0d	2.8 cm	0.4 cm
26w0d	3 cm	0.4 cm
27w0d	3 cm	0.4 cm
28w0d	3.3 cm	0.4 cm
29w0d	3.4 cm	0.4 cm
30w0d	3.7 cm	0.4 cm
31w0d	3.9 cm	0.4 cm
32w0d	4.1 cm	0.5 cm
33w0d	4.3 cm	0.5 cm
34w0d	4.6 cm	0.9 cm
35w0d	4.7 cm	0.7 cm
36w0d	4.9 cm	0.9 cm
37w0d	5.1 cm	1.1 cm
38w0d	5.1 cm	1.2 cm
39w0d	5.2 cm	1 cm
40w0d	5.2 cm	0.8 cm

# Tibia by GA (TIB by GA)

## TIB by GA - Jeanty1982

**Name:** Jeanty 1982

**Author:** Jeanty

**Year:** 1982

**Reference:** Ultrasonic Evaluation of Fetal Limb Growth, Jeanty et al., June 1982, Radiology 143: 751-754

**Comments:**

Gest Age (week)	TIB (mm)	+/-1 SD
12 weeks	7 mm	3 mm
13 weeks	10 mm	3 mm
14 weeks	13 mm	3 mm
15 weeks	16 mm	6 mm
16 weeks	19 mm	6 mm
17 weeks	22 mm	4 mm
18 weeks	24 mm	4 mm
19 weeks	27 mm	4 mm
20 weeks	29 mm	4 mm
21 weeks	32 mm	4 mm
22 weeks	34 mm	4 mm
23 weeks	36 mm	4 mm
24 weeks	39 mm	4 mm
25 weeks	41 mm	5 mm
26 weeks	43 mm	5 mm
27 weeks	45 mm	3 mm
28 weeks	47 mm	3 mm
29 weeks	49 mm	5 mm
30 weeks	51 mm	5 mm
31 weeks	52 mm	3 mm
32 weeks	54 mm	3 mm

<b>Gest Age (week)</b>	<b>TIB (mm)</b>	<b>+/-1 SD</b>
33 weeks	56 mm	4 mm
34 weeks	57 mm	4 mm
35 weeks	59 mm	6 mm
36 weeks	60 mm	6 mm
37 weeks	61 mm	5 mm
38 weeks	62 mm	5 mm
39 weeks	64 mm	3 mm
40 weeks	65 mm	3 mm



# **2 Gestational Age Equations and Tables**





# Abdominal Circumference (GA by AC)

## GA by AC - ASUM2000

**Name:** ASUM 2000

**Author:** ASUM

**Year:** 2000

**Reference:** ASUM and Campbell Westerway S , Ultrasonic fetal Measurement Standards for an Australian Population, ASUM, 2003

**Comments:**

Input parameter: AC (mm)

Min limit: 52

Max limit: 367

Output: GA (week)

Equation:

$$0.0000367 * \_AC * \_AC + 0.07715 * \_AC + 7.192$$

## GA by AC - CFEF2000

**Name:** CFEF 2000

**Author:** CFEF

**Year:** 2000

**Reference:** Crequat J, Duyme M and Brodaty G, Fetal growth charts by the French College of fetal ultrasonography and the Inserm U 155 , Biometry 2000, 28, pp 435-455, 2000

**Comments:** <http://cfef.org/>

AC (mm)	GA (week)
95 mm	15 weeks

AC (mm)	GA (week)
106.4 mm	16 weeks
118 mm	17 weeks
129.2 mm	18 weeks
140.4 mm	19 weeks
151.4 mm	20 weeks
162.3 mm	21 weeks
173 mm	22 weeks
183.6 mm	23 weeks
194 mm	24 weeks
204.4 mm	25 weeks
214.5 mm	26 weeks
224.5 mm	27 weeks
234.4 mm	28 weeks
244 mm	29 weeks
253.6 mm	30 weeks
263 mm	31 weeks
272.2 mm	32 weeks
281.2 mm	33 weeks
290.2 mm	34 weeks
298.8 mm	35 weeks
307.4 mm	36 weeks
316 mm	37 weeks
324.7 mm	38 weeks
332.4 mm	39 weeks
339 mm	40 weeks

## GA by AC - Hadlock1984

**Name:** Hadlock 1984

**Author:** Hadlock

**Year:** 1984

**Reference:** Hadlock F.P, Deter R.L, Harrist R.B. and Park S.K, Estimating fetal age: computer-assisted analysis of multiple fetal growth parameters, Radiology,152, pp 497-501, 1984

**Comments:**

AC (cm)	GA (week)	+/-2 SD
4.6 cm	11.68 weeks	1.66 weeks
5.3 cm	12.232 weeks	1.66 weeks
6 cm	12.7876 weeks	1.66 weeks
6.7 cm	13.3467 weeks	1.66 weeks
7.3 cm	13.8287 weeks	1.66 weeks
8 cm	14.3944 weeks	1.66 weeks
8.6 cm	14.8821 weeks	1.66 weeks
9.3 cm	15.4543 weeks	1.66 weeks
9.9 cm	15.9475 weeks	1.66 weeks
10.6 cm	16.5263 weeks	1.66 weeks
11.2 cm	17.0252 weeks	1.66 weeks
11.9 cm	17.6105 weeks	1.66 weeks
12.5 cm	18.115 weeks	2.06 weeks
13.1 cm	18.6221 weeks	2.06 weeks
13.7 cm	19.1318 weeks	2.06 weeks
14.4 cm	19.7297 weeks	2.06 weeks
15 cm	20.245 weeks	2.06 weeks
15.6 cm	20.7629 weeks	2.06 weeks
16.2 cm	21.2834 weeks	2.06 weeks
16.8 cm	21.8065 weeks	2.06 weeks
17.4 cm	22.3321 weeks	2.06 weeks
17.9 cm	22.7722 weeks	2.06 weeks
18.5 cm	23.3026 weeks	2.06 weeks
19.1 cm	23.8356 weeks	2.06 weeks
19.7 cm	24.3712 weeks	2.18 weeks
20.2 cm	24.8195 weeks	2.18 weeks
20.8 cm	25.3599 weeks	2.18 weeks
21.3 cm	25.8122 weeks	2.18 weeks

AC (cm)	GA (week)	+/-2 SD
21.9 cm	26.3573 weeks	2.18 weeks
22.4 cm	26.8135 weeks	2.18 weeks
23 cm	27.3634 weeks	2.18 weeks
23.5 cm	27.8236 weeks	2.18 weeks
24 cm	28.2856 weeks	2.18 weeks
24.6 cm	28.8424 weeks	2.18 weeks
25.1 cm	29.3083 weeks	2.18 weeks
25.6 cm	29.7761 weeks	2.18 weeks
26.1 cm	30.2457 weeks	2.96 weeks
26.6 cm	30.717 weeks	2.96 weeks
27.1 cm	31.1902 weeks	2.96 weeks
27.6 cm	31.6651 weeks	2.96 weeks
28.1 cm	32.1419 weeks	2.96 weeks
28.6 cm	32.6205 weeks	2.96 weeks
29.1 cm	33.1008 weeks	2.96 weeks
29.5 cm	33.4864 weeks	2.96 weeks
30 cm	33.97 weeks	2.96 weeks
30.5 cm	34.4554 weeks	2.96 weeks
30.9 cm	34.845 weeks	2.96 weeks
31.4 cm	35.3337 weeks	2.96 weeks
31.8 cm	35.7259 weeks	3.04 weeks
32.3 cm	36.2177 weeks	3.04 weeks
32.7 cm	36.6125 weeks	3.04 weeks
33.2 cm	37.1077 weeks	3.04 weeks
33.6 cm	37.5051 weeks	3.04 weeks
34 cm	37.9036 weeks	3.04 weeks
34.4 cm	38.3033 weeks	3.04 weeks
34.8 cm	38.7041 weeks	3.04 weeks
35.3 cm	39.2068 weeks	3.04 weeks
35.7 cm	39.6103 weeks	3.04 weeks
36.1 cm	40.0149 weeks	3.04 weeks
36.5 cm	40.4206 weeks	3.04 weeks

AC (cm)	GA (week)	+/-2 SD
36.9 cm	40.8275 weeks	3.04 weeks
37.3 cm	41.2355 weeks	3.04 weeks
37.7 cm	41.6447 weeks	3.04 weeks
38.1 cm	42.0551 weeks	3.04 weeks

## GA by AC - Hansmann1986

**Name:** Hansmann\_1986

**Author:** Hansmann

**Year:** 1986

**Reference:** Hansmann, Hackeloer, Staudach and Wittman, Ultrasound Diagnosis in Obstetrics and Gynecology, Springer-Verlag, New York, 1986

**Comments:**

AC (cm)	GA (week)
5.3 cm	12 weeks
6.3 cm	13 weeks
7.5 cm	14 weeks
8.5 cm	15 weeks
9.7 cm	16 weeks
10.7 cm	17 weeks
11.6 cm	18 weeks
12.6 cm	19 weeks
13.5 cm	20 weeks
14.5 cm	21 weeks
15.5 cm	22 weeks
16.5 cm	23 weeks
17.3 cm	24 weeks
18.3 cm	25 weeks
19.1 cm	26 weeks
20.2 cm	27 weeks
21.1 cm	28 weeks

AC (cm)	GA (week)
22.2 cm	29 weeks
23 cm	30 weeks
24 cm	31 weeks
24.9 cm	32 weeks
25.8 cm	33 weeks
26.8 cm	34 weeks
27.7 cm	35 weeks
28.7 cm	36 weeks
29.6 cm	37 weeks
30.6 cm	38 weeks
31.5 cm	39 weeks
32 cm	40 weeks

## GA by AC - Merz1988

**Name:** Merz 1988

**Author:** Merz

**Year:** 1988

**Reference:** Merz E, Goldhofer W and Timor-Tritsch E , Ultrasound in Gynecology and Obstetrics, Textbook and Atlas, Georg Thieme Verlag , 1991

**Comments:** From Merz E, Habilitationsschrift, Mainz University Woman's Hospital, 1988

AC (mm)	GA (wd)	5%	95%
56 mm	12w1d	10w6d	13w2d
58 mm	12w2d	11w1d	13w4d
60 mm	12w4d	11w2d	13w5d
62 mm	12w5d	11w4d	13w6d
64 mm	12w6d	11w5d	14w1d
66 mm	13w1d	11w6d	14w2d
68 mm	13w2d	12w0d	14w4d
70 mm	13w4d	12w1d	14w5d

AC (mm)	GA (wd)	5%	95%
72 mm	13w4d	12w3d	14w6d
74 mm	13w6d	12w4d	15w1d
76 mm	14w0d	12w6d	15w2d
78 mm	14w1d	12w6d	15w4d
80 mm	14w3d	13w1d	15w5d
82 mm	14w4d	13w2d	15w6d
84 mm	14w6d	13w4d	16w1d
86 mm	15w0d	13w5d	16w2d
88 mm	15w1d	13w6d	16w4d
90 mm	15w3d	14w0d	16w5d
92 mm	15w4d	14w1d	16w6d
94 mm	15w5d	14w3d	17w1d
96 mm	15w6d	14w4d	17w2d
98 mm	16w1d	14w6d	17w4d
100 mm	16w2d	14w6d	17w5d
102 mm	16w4d	15w1d	17w6d
104 mm	16w5d	15w2d	18w1d
106 mm	16w6d	15w4d	18w2d
108 mm	17w1d	15w5d	18w3d
110 mm	17w2d	15w6d	18w4d
112 mm	17w3d	16w0d	18w6d
114 mm	17w4d	16w1d	19w0d
116 mm	17w6d	16w3d	19w1d
118 mm	18w0d	16w4d	19w3d
120 mm	18w1d	16w6d	19w4d
122 mm	18w3d	17w0d	19w6d
124 mm	18w4d	17w1d	20w0d
126 mm	18w6d	17w2d	20w1d
128 mm	19w0d	17w4d	20w3d
130 mm	19w1d	17w5d	20w4d
132 mm	19w2d	17w6d	20w6d
134 mm	19w4d	18w0d	21w0d

AC (mm)	GA (wd)	5%	95%
136 mm	19w5d	18w1d	21w1d
138 mm	19w6d	18w3d	21w3d
140 mm	20w1d	18w4d	21w4d
142 mm	20w2d	18w6d	21w6d
144 mm	20w4d	19w0d	22w0d
146 mm	20w5d	19w1d	22w1d
148 mm	20w6d	19w2d	22w3d
150 mm	21w1d	19w4d	22w4d
152 mm	21w1d	19w5d	22w6d
154 mm	21w3d	19w6d	23w0d
156 mm	21w4d	20w1d	23w1d
158 mm	21w6d	20w1d	23w3d
160 mm	22w0d	20w3d	23w4d
162 mm	22w1d	20w4d	23w6d
164 mm	22w3d	20w6d	24w0d
166 mm	22w4d	21w0d	24w1d
168 mm	22w6d	21w1d	24w3d
170 mm	23w0d	21w2d	24w4d
172 mm	23w1d	21w4d	24w6d
174 mm	23w2d	21w5d	25w0d
176 mm	23w4d	21w6d	25w1d
178 mm	23w5d	22w1d	25w3d
180 mm	23w6d	22w1d	25w4d
182 mm	24w1d	22w3d	25w6d
184 mm	24w2d	22w4d	26w0d
186 mm	24w4d	22w6d	26w1d
188 mm	24w5d	23w0d	26w3d
190 mm	24w6d	23w1d	26w4d
192 mm	25w0d	23w2d	26w6d
194 mm	25w1d	23w4d	27w0d
196 mm	25w3d	23w5d	27w1d
198 mm	25w4d	23w6d	27w3d



AC (mm)	GA (wd)	5%	95%
200 mm	25w6d	24w1d	27w4d
202 mm	26w0d	24w2d	27w6d
204 mm	26w1d	24w3d	27w6d
206 mm	26w3d	24w4d	28w1d
208 mm	26w4d	24w6d	28w2d
210 mm	26w6d	25w0d	28w4d
212 mm	27w0d	25w1d	28w5d
214 mm	27w1d	25w2d	28w6d
216 mm	27w2d	25w4d	29w1d
218 mm	27w4d	25w5d	29w2d
220 mm	27w5d	25w6d	29w4d
222 mm	27w6d	26w1d	29w5d
224 mm	28w1d	26w2d	29w6d
226 mm	28w2d	26w3d	30w1d
228 mm	28w4d	26w4d	30w2d
230 mm	28w5d	26w6d	30w4d
232 mm	28w6d	27w0d	30w5d
234 mm	29w0d	27w1d	30w6d
236 mm	29w1d	27w3d	31w1d
238 mm	29w3d	27w4d	31w2d
240 mm	29w4d	27w5d	31w4d
242 mm	29w6d	27w6d	31w5d
244 mm	30w0d	28w1d	31w6d
246 mm	30w1d	28w2d	32w1d
248 mm	30w3d	28w3d	32w2d
250 mm	30w4d	28w4d	32w4d
252 mm	30w6d	28w6d	32w5d
254 mm	30w6d	29w0d	32w6d
256 mm	31w1d	29w1d	33w1d
258 mm	31w2d	29w3d	33w2d
260 mm	31w4d	29w4d	33w4d
262 mm	31w5d	29w5d	33w5d

AC (mm)	GA (wd)	5%	95%
264 mm	31w6d	29w6d	33w6d
266 mm	32w1d	30w1d	34w1d
268 mm	32w2d	30w2d	34w2d
270 mm	32w4d	30w4d	34w4d
272 mm	32w5d	30w4d	34w5d
274 mm	32w6d	30w6d	34w6d
276 mm	33w0d	31w0d	35w1d
278 mm	33w1d	31w1d	35w2d
280 mm	33w3d	31w3d	35w4d
282 mm	33w4d	31w4d	35w5d
284 mm	33w6d	31w5d	35w6d
286 mm	34w0d	31w6d	36w1d
288 mm	34w1d	32w1d	36w2d
290 mm	34w3d	32w2d	36w4d
292 mm	34w4d	32w4d	36w5d
294 mm	34w5d	32w4d	36w6d
296 mm	34w6d	32w6d	37w1d
298 mm	35w1d	33w0d	37w1d
300 mm	35w2d	33w1d	37w3d
302 mm	35w4d	33w3d	37w4d
304 mm	35w5d	33w4d	37w6d
306 mm	35w6d	33w5d	38w0d
308 mm	36w1d	33w6d	38w1d
310 mm	36w2d	34w1d	38w3d
312 mm	36w4d	34w2d	38w4d
314 mm	36w4d	34w4d	38w6d
316 mm	36w6d	34w4d	39w0d
318 mm	37w0d	34w6d	39w1d
320 mm	37w1d	35w0d	39w3d
322 mm	37w3d	35w1d	39w4d
324 mm	37w4d	35w3d	39w6d
326 mm	37w6d	35w4d	40w0d

AC (mm)	GA (wd)	5%	95%
328 mm	38w0d	35w5d	40w1d
330 mm	38w1d	35w6d	40w3d
332 mm	38w3d	36w1d	40w4d
334 mm	38w4d	36w2d	40w6d
336 mm	38w5d	36w4d	41w0d
338 mm	38w6d	36w5d	41w1d
340 mm	39w1d	36w6d	41w3d
342 mm	39w2d	37w0d	41w4d
344 mm	39w4d	37w1d	41w6d
346 mm	39w5d	37w3d	42w0d
348 mm	39w6d	37w4d	42w1d

## Biparietal Diameter (GA by BPD)

### GA by BPD - ASUM2000

**Name:** ASUM 2000

**Author:** ASUM

**Year:** 2000

**Reference:** ASUM and Campbell Westerway S , Ultrasonic fetal Measurement Standards for an Australian Population, ASUM, 2003

**Comments:** Equivalent to 1989 table

Input parameter: BPD (mm)

Min limit: 16

Max limit: 98

Output: GA (week)

Equation:

$$0.397 * \_BPD - 0.00306 * \_BPD^2 + 0.00002788 * \_BPD^3 + 4.933$$

## GA by BPD - CFEF2000

**Name:** CFEF 2000

**Author:** CFEF

**Year:** 2000

**Reference:** Crequat J, Duyme M and Brodaty G, Fetal growth charts by the French College of fetal ultrasonography and the Inserm U 155 , Biometry 2000, 28, pp 435-455, 2000

**Comments:** <http://cfef.org/>

BPD (mm)	GA (week)
15.36 mm	11 weeks
19.4 mm	12 weeks
23.3 mm	13 weeks
27.14 mm	14 weeks
30.89 mm	15 weeks
34.53 mm	16 weeks
38.12 mm	17 weeks
41.58 mm	18 weeks
45 mm	19 weeks
48.22 mm	20 weeks
51.43 mm	21 weeks
54.53 mm	22 weeks
57.51 mm	23 weeks
60.42 mm	24 weeks
63.25 mm	25 weeks
65.94 mm	26 weeks
68.55 mm	27 weeks
71.03 mm	28 weeks
73.5 mm	29 weeks
75.8 mm	30 weeks
78 mm	31 weeks

BPD (mm)	GA (week)
80.16 mm	32 weeks
82.14 mm	33 weeks
84.07 mm	34 weeks
85.9 mm	35 weeks
87.61 mm	36 weeks
89.24 mm	37 weeks
90.7 mm	38 weeks
92.1 mm	39 weeks
93.45 mm	40 weeks
94 mm	41 weeks

## GA by BPD - Hadlock1984

**Name:** Hadlock 1984

**Author:** Hadlock

**Year:** 1984

**Reference:** Hadlock F.P, Deter R.L, Harrist R.B. and Park S.K, Estimating fetal age: computer-assisted analysis of multiple fetal growth parameters, Radiology,152, pp 497-501, 1984

**Comments:**

BPD (cm)	GA (week)	+/-2 SD
1.7 cm	12.5438 weeks	1.19 weeks
1.9 cm	12.9608 weeks	1.19 weeks
2.1 cm	13.3913 weeks	1.19 weeks
2.3 cm	13.8352 weeks	1.19 weeks
2.5 cm	14.2925 weeks	1.19 weeks
2.7 cm	14.7632 weeks	1.19 weeks
2.9 cm	15.2473 weeks	1.19 weeks
3.1 cm	15.7448 weeks	1.19 weeks
3.2 cm	15.9986 weeks	1.19 weeks
3.4 cm	16.5163 weeks	1.19 weeks
3.6 cm	17.0473 weeks	1.19 weeks

<b>BPD (cm)</b>	<b>GA (week)</b>	<b>+/-2 SD</b>
3.8 cm	17.5917 weeks	1.19 weeks
3.9 cm	17.869 weeks	1.73 weeks
4.1 cm	18.4336 weeks	1.73 weeks
4.3 cm	19.0115 weeks	1.73 weeks
4.5 cm	19.6029 weeks	1.73 weeks
4.6 cm	19.9036 weeks	1.73 weeks
4.8 cm	20.5151 weeks	1.73 weeks
5 cm	21.14 weeks	1.73 weeks
5.1 cm	21.4575 weeks	1.73 weeks
5.3 cm	22.1025 weeks	1.73 weeks
5.5 cm	22.7609 weeks	1.73 weeks
5.6 cm	23.0951 weeks	1.73 weeks
5.8 cm	23.7737 weeks	1.73 weeks
5.9 cm	24.118 weeks	2.18 weeks
6.1 cm	24.8166 weeks	2.18 weeks
6.2 cm	25.1709 weeks	2.18 weeks
6.4 cm	25.8897 weeks	2.18 weeks
6.5 cm	26.2541 weeks	2.18 weeks
6.7 cm	26.993 weeks	2.18 weeks
6.8 cm	27.3674 weeks	2.18 weeks
6.9 cm	27.7452 weeks	2.18 weeks
7.1 cm	28.5109 weeks	2.18 weeks
7.2 cm	28.8988 weeks	2.18 weeks
7.3 cm	29.29 weeks	2.18 weeks
7.5 cm	30.0825 weeks	2.18 weeks
7.6 cm	30.4838 weeks	3.08 weeks
7.7 cm	30.8884 weeks	3.08 weeks
7.8 cm	31.2964 weeks	3.08 weeks
7.9 cm	31.7077 weeks	3.08 weeks
8.1 cm	32.5404 weeks	3.08 weeks
8.2 cm	32.9618 weeks	3.08 weeks
8.3 cm	33.3866 weeks	3.08 weeks

BPD (cm)	GA (week)	+/-2 SD
8.4 cm	33.8147 weeks	3.08 weeks
8.5 cm	34.2461 weeks	3.08 weeks
8.6 cm	34.6809 weeks	3.08 weeks
8.7 cm	35.119 weeks	3.08 weeks
8.8 cm	35.5605 weeks	3.08 weeks
8.9 cm	36.0054 weeks	3.2 weeks
9 cm	36.4536 weeks	3.2 weeks
9.1 cm	36.9052 weeks	3.2 weeks
9.2 cm	37.3601 weeks	3.2 weeks
9.3 cm	37.8183 weeks	3.2 weeks
9.4 cm	38.2799 weeks	3.2 weeks
9.5 cm	38.7449 weeks	3.2 weeks
9.6 cm	39.2132 weeks	3.2 weeks
9.7 cm	39.6849 weeks	3.2 weeks
9.8 cm	40.1599 weeks	3.2 weeks
9.9 cm	40.6383 weeks	3.2 weeks
10 cm	41.12 weeks	3.2 weeks
10.1 cm	41.6051 weeks	3.2 weeks
10.2 cm	42.0935 weeks	3.2 weeks

## GA by BPD - Hansmann 1986

**Name:** Hansmann\_1986

**Author:** Hansmann

**Year:** 1986

**Reference:** Hansmann, Hackeloer, Staudach and Wittman, Ultrasound Diagnosis in Obstetrics and Gynecology, Springer-Verlag, New York, 1986

**Comments:**

BPD (mm)	GA (day)	5%	95%
29 mm	94 days	86 days	101 days
30 mm	96 days	89 days	103 days

<b>BPD (mm)</b>	<b>GA (day)</b>	<b>5%</b>	<b>95%</b>
31 mm	98 days	90 days	106 days
32 mm	100 days	93 days	108 days
33 mm	102 days	94 days	111 days
34 mm	105 days	96 days	114 days
35 mm	107 days	99 days	115 days
36 mm	109 days	101 days	118 days
37 mm	112 days	104 days	120 days
38 mm	114 days	105 days	123 days
39 mm	116 days	108 days	125 days
40 mm	119 days	110 days	127 days
41 mm	121 days	112 days	130 days
42 mm	123 days	115 days	132 days
43 mm	125 days	116 days	134 days
44 mm	127 days	118 days	136 days
45 mm	130 days	121 days	139 days
46 mm	132 days	123 days	141 days
47 mm	134 days	125 days	144 days
48 mm	136 days	126 days	146 days
49 mm	138 days	127 days	148 days
50 mm	140 days	130 days	148 days
51 mm	143 days	133 days	153 days
52 mm	145 days	135 days	155 days
53 mm	147 days	136 days	158 days
54 mm	150 days	140 days	160 days
55 mm	152 days	142 days	161 days
56 mm	154 days	145 days	163 days
57 mm	156 days	147 days	165 days
58 mm	159 days	150 days	167 days
59 mm	161 days	151 days	171 days
60 mm	163 days	153 days	172 days
61 mm	165 days	155 days	175 days
62 mm	168 days	158 days	178 days



<b>BPD (mm)</b>	<b>GA (day)</b>	<b>5%</b>	<b>95%</b>
63 mm	170 days	160 days	179 days
64 mm	172 days	162 days	182 days
65 mm	174 days	165 days	184 days
66 mm	176 days	167 days	187 days
67 mm	178 days	169 days	190 days
68 mm	181 days	171 days	191 days
69 mm	183 days	174 days	193 days
70 mm	185 days	175 days	195 days
71 mm	187 days	177 days	199 days
72 mm	190 days	179 days	200 days
73 mm	192 days	182 days	205 days
74 mm	195 days	183 days	207 days
75 mm	197 days	185 days	209 days
76 mm	200 days	187 days	212 days
77 mm	202 days	190 days	215 days
78 mm	205 days	191 days	220 days
79 mm	208 days	192 days	224 days
80 mm	210 days	195 days	225 days
81 mm	213 days	198 days	228 days
82 mm	217 days	202 days	232 days
83 mm	219 days	203 days	236 days
84 mm	223 days	206 days	240 days
85 mm	226 days	209 days	242 days
86 mm	229 days	211 days	246 days
87 mm	233 days	212 days	253 days
88 mm	236 days	217 days	255 days
89 mm	240 days	221 days	259 days
90 mm	243 days	224 days	262 days
91 mm	246 days	225 days	271 days
92 mm	251 days	233 days	275 days
93 mm	257 days	236 days	278 days
94 mm	262 days	243 days	281 days

BPD (mm)	GA (day)	5%	95%
95 mm	269 days	247 days	287 days
96 mm	272 days	247 days	290 days
97 mm	273 days	251 days	294 days
98 mm	275 days	255 days	294 days
99 mm	276 days	256 days	298 days
100 mm	277 days	257 days	296 days
101 mm	278 days	260 days	298 days
102 mm	279 days	260 days	296 days
103 mm	280 days	261 days	296 days
104 mm	281 days	262 days	296 days
105 mm	282 days	265 days	296 days

## GA by BPD - Merz1988

**Name:** Merz 1988

**Author:** Merz

**Year:** 1988

**Reference:** Merz E, Goldhofer W and Timor-Tritsch E , Ultrasound in Gynecology and Obstetrics, Textbook and Atlas, Georg Thieme Verlag , 1991

**Comments:** From Merz E, Habilitationsschrift, Mainz University Woman's Hospital, 1988

BPD (mm)	GA (wd)	5%	95%
21 mm	12w1d	10w5d	13w5d
22 mm	12w3d	10w6d	13w6d
23 mm	12w5d	11w1d	14w1d
24 mm	13w0d	11w4d	14w4d
25 mm	13w1d	11w5d	14w5d
26 mm	13w4d	12w0d	15w0d
27 mm	13w6d	12w1d	15w3d
28 mm	14w1d	12w4d	15w5d
29 mm	14w2d	12w5d	15w6d

<b>BPD (mm)</b>	<b>GA (wd)</b>	<b>5%</b>	<b>95%</b>
30 mm	14w4d	13w0d	16w1d
31 mm	14w6d	13w2d	16w4d
32 mm	15w1d	13w4d	16w6d
33 mm	15w3d	13w6d	17w0d
34 mm	15w5d	14w0d	17w3d
35 mm	16w0d	14w2d	17w5d
36 mm	16w2d	14w4d	18w0d
37 mm	16w4d	14w6d	18w1d
38 mm	16w6d	15w1d	18w4d
39 mm	17w1d	15w3d	18w6d
40 mm	17w3d	15w5d	19w1d
41 mm	17w5d	15w6d	19w4d
42 mm	18w0d	16w1d	19w6d
43 mm	18w2d	16w4d	20w1d
44 mm	18w4d	16w6d	20w3d
45 mm	18w6d	17w1d	20w5d
46 mm	19w1d	17w3d	21w0d
47 mm	19w3d	17w4d	21w1d
48 mm	19w5d	17w6d	21w4d
49 mm	20w0d	18w1d	21w6d
50 mm	20w3d	18w4d	22w1d
51 mm	20w5d	18w6d	22w4d
52 mm	21w0d	19w1d	22w6d
53 mm	21w2d	19w3d	23w1d
54 mm	21w4d	19w5d	23w4d
55 mm	21w6d	20w0d	23w6d
56 mm	22w1d	20w2d	24w1d
57 mm	22w4d	20w4d	24w3d
58 mm	22w6d	20w6d	24w5d
59 mm	23w1d	21w1d	25w1d
60 mm	23w4d	21w4d	25w4d
61 mm	23w6d	21w6d	25w6d

BPD (mm)	GA (wd)	5%	95%
62 mm	24w1d	22w1d	26w1d
63 mm	24w4d	22w4d	26w4d
64 mm	24w6d	22w6d	26w6d
65 mm	25w1d	23w1d	27w1d
66 mm	25w4d	23w4d	27w4d
67 mm	25w6d	23w6d	27w6d
68 mm	26w1d	24w1d	28w2d
69 mm	26w4d	24w3d	28w4d
70 mm	26w6d	24w5d	28w6d
71 mm	27w1d	25w1d	29w2d
72 mm	27w4d	25w4d	29w5d
73 mm	27w6d	25w6d	30w0d
74 mm	28w2d	26w1d	30w3d
75 mm	28w4d	26w4d	30w5d
76 mm	29w0d	26w6d	31w1d
77 mm	29w3d	27w1d	31w4d
78 mm	29w6d	27w4d	32w0d
79 mm	30w1d	27w6d	32w2d
80 mm	30w4d	28w2d	32w5d
81 mm	30w6d	28w5d	33w1d
82 mm	31w2d	29w1d	33w4d
83 mm	31w5d	29w4d	33w6d
84 mm	32w1d	29w6d	34w2d
85 mm	32w4d	30w2d	34w5d
86 mm	32w6d	30w5d	35w1d
87 mm	33w2d	31w0d	35w4d
88 mm	33w6d	31w4d	36w1d
89 mm	34w1d	31w6d	36w4d
90 mm	34w4d	32w2d	36w6d
91 mm	35w1d	32w6d	37w3d
92 mm	35w4d	33w1d	37w6d
93 mm	35w6d	33w4d	38w1d

BPD (mm)	GA (wd)	5%	95%
94 mm	36w3d	34w0d	38w6d
95 mm	36w6d	34w4d	39w2d
96 mm	37w2d	34w6d	39w5d
97 mm	37w6d	35w3d	40w1d
98 mm	38w2d	35w6d	40w5d
99 mm	38w6d	36w3d	41w1d
100 mm	39w2d	36w6d	41w6d
101 mm	39w6d	37w2d	42w2d
102 mm	40w2d	37w6d	42w6d

## GA by BPD - Osaka 1989

**Name:** Osaka 1989

**Author:** Osaka

**Year:** 1989

**Reference:** Osaka University, Perinatal Care, vol.9, no 5, pp 407-422.

**Comments:**

Biparietal Diameter (cm)	Gest Age (week)	+/-1 SD
1.33 cm	10 weeks	0.19 week
1.72 cm	11 weeks	0.2 week
2.09 cm	12 weeks	0.21 week
2.46 cm	13 weeks	0.22 week
2.82 cm	14 weeks	0.23 week
3.18 cm	15 weeks	0.24 week
3.52 cm	16 weeks	0.25 week
3.86 cm	17 weeks	0.26 week
4.2 cm	18 weeks	0.27 week
4.53 cm	19 weeks	0.28 week
4.85 cm	20 weeks	0.29 week
5.17 cm	21 weeks	0.29 week
5.48 cm	22 weeks	0.3 week

Biparietal Diameter (cm)	Gest Age (week)	+/-1 SD
5.79 cm	23 weeks	0.31 week
6.09 cm	24 weeks	0.32 week
6.39 cm	25 weeks	0.32 week
6.67 cm	26 weeks	0.33 week
6.95 cm	27 weeks	0.34 week
7.23 cm	28 weeks	0.34 week
7.49 cm	29 weeks	0.35 week
7.74 cm	30 weeks	0.35 week
7.98 cm	31 weeks	0.36 week
8.21 cm	32 weeks	0.36 week
8.43 cm	33 weeks	0.37 week
8.62 cm	34 weeks	0.37 week
8.8 cm	35 weeks	0.37 week
8.96 cm	36 weeks	0.38 week
9.1 cm	37 weeks	0.38 week
9.21 cm	38 weeks	0.38 week
9.3 cm	39 weeks	0.39 week
9.36 cm	40 weeks	0.39 week

## Biparietal Diameter outer - outer (GA by BPDoo)

### GA by BPD - ISUOG\_Leung2008

**Name:** ISUOG Leung 2008 (BPDoo)

**Author:** ISUOG\_Leung

**Year:** 2008

**Reference:** "Fetal biometry in ethnic Chinese: biparietal diameter, head circumference, abdominal circumference and femur length. T. N. LEUNG, M. W. PANG, S. S. DALJIT, T. Y. LEUNG, C. F. POON,

S. M. WONG and T. K. LAU Fetal. Medicine Unit, Department of Obstetrics and Gynaecology, The Chinese University of Hong Kong, The Prince of Wales Hospital, Hong Kong"

**Comments:**

Input parameter: BPD (cm)

Min limit: 1.73471

Max limit: 9.72529

Output: Gest Age (week)

Equation:

$$7.717964+2.339119*\_BPD+0.010324*\_BPD^2+0.008511*\_BPD^3$$

## Biparietal Diameter outer - inner (GA by BPDoi)

### GA by BPD - ISUOG\_Leung2008

**Name:** ISUOG Leung 2008 (BPDoi)

**Author:** ISUOG\_Leung

**Year:** 2008

**Reference:** "Fetal biometry in ethnic Chinese: biparietal diameter, head circumference, abdominal circumference and femur length. T. N. LEUNG, M. W. PANG, S. S. DALJIT, T. Y. LEUNG, C. F. POON, S. M. WONG and T. K. LAU. Fetal Medicine Unit, Department of Obstetrics and Gynaecology, The Chinese University of Hong Kong, The Prince of Wales Hospital, Hong Kong"

**Comments:**

Input parameter: BPD (cm)

Min limit: 1.71283

Max limit: 11.5873

Output: Gest Age (week)

Equation:

$$7.996225 + 2.277074 * \_BPD + 0.025200 * \_BPD^2 + 0.008007 * \_BPD^3$$

## Crown-Rump Length (GA by CRL)

### GA by CRL - ASUM2000

**Name:** ASUM 2000

**Author:** ASUM

**Year:** 2000

**Reference:** ASUM and Campbell Westerway S , Ultrasonic fetal Measurement Standards for an Australian Population, ASUM, 2003

**Comments:**

Input parameter: CRL (mm)

Min limit: 1

Max limit: 87

Output: GA (week)

Equation:

$$-0.0007 * \_CRL * \_CRL + 0.1584 * \_CRL + 5.2876$$

### GA by CRL - Hadlock1992

**Name:** Hadlock 1992

**Author:** Hadlock

**Year:** 1992



**Reference:** Hadlock F.P, Shah Y.P.,Kanon D.J. and lindsay J.V., Fetal crown-rump length: reevaluation of relation to menstrual age (5-18 weeks) with high-resolution real-time US, Radiology, 182 pp 501-505, 1992

**Comments:**

CRL (cm)	GA (week)	5%	95%
0.2 cm	5.7 weeks	5.244 weeks	6.156 weeks
0.3 cm	5.9 weeks	5.428 weeks	6.372 weeks
0.4 cm	6.1 weeks	5.612 weeks	6.588 weeks
0.5 cm	6.2 weeks	5.704 weeks	6.696 weeks
0.6 cm	6.4 weeks	5.888 weeks	6.912 weeks
0.7 cm	6.6 weeks	6.072 weeks	7.128 weeks
0.8 cm	6.7 weeks	6.164 weeks	7.236 weeks
0.9 cm	6.9 weeks	6.348 weeks	7.452 weeks
1 cm	7.2 weeks	6.624 weeks	7.776 weeks
1.1 cm	7.2 weeks	6.624 weeks	7.776 weeks
1.2 cm	7.4 weeks	6.808 weeks	7.992 weeks
1.3 cm	7.5 weeks	6.9 weeks	8.1 weeks
1.4 cm	7.7 weeks	7.084 weeks	8.316 weeks
1.5 cm	7.9 weeks	7.268 weeks	8.532 weeks
1.6 cm	8 weeks	7.36 weeks	8.64 weeks
1.7 cm	8.1 weeks	7.452 weeks	8.748 weeks
1.8 cm	8.3 weeks	7.636 weeks	8.964 weeks
1.9 cm	8.4 weeks	7.728 weeks	9.072 weeks
2 cm	8.6 weeks	7.912 weeks	9.288 weeks
2.1 cm	8.7 weeks	8.004 weeks	9.396 weeks
2.2 cm	8.9 weeks	8.188 weeks	9.612 weeks
2.3 cm	9 weeks	8.28 weeks	9.72 weeks
2.4 cm	9.1 weeks	8.372 weeks	9.828 weeks
2.5 cm	9.2 weeks	8.464 weeks	9.936 weeks
2.6 cm	9.4 weeks	8.648 weeks	10.152 weeks
2.7 cm	9.5 weeks	8.74 weeks	10.26 weeks
2.8 cm	9.6 weeks	8.832 weeks	10.368 weeks

<b>CRL (cm)</b>	<b>GA (week)</b>	<b>5%</b>	<b>95%</b>
2.9 cm	9.7 weeks	8.924 weeks	10.476 weeks
3 cm	9.9 weeks	9.108 weeks	10.692 weeks
3.1 cm	10 weeks	9.2 weeks	10.8 weeks
3.2 cm	10.1 weeks	9.292 weeks	10.908 weeks
3.3 cm	10.2 weeks	9.384 weeks	11.016 weeks
3.4 cm	10.3 weeks	9.476 weeks	11.124 weeks
3.5 cm	10.4 weeks	9.568 weeks	11.232 weeks
3.6 cm	10.5 weeks	9.66 weeks	11.34 weeks
3.7 cm	10.6 weeks	9.752 weeks	11.448 weeks
3.8 cm	10.7 weeks	9.844 weeks	11.556 weeks
3.9 cm	10.8 weeks	9.936 weeks	11.664 weeks
4 cm	10.9 weeks	10.028 weeks	11.772 weeks
4.1 cm	11 weeks	10.12 weeks	11.88 weeks
4.2 cm	11.1 weeks	10.212 weeks	11.988 weeks
4.3 cm	11.2 weeks	10.304 weeks	12.096 weeks
4.4 cm	11.2 weeks	10.304 weeks	12.096 weeks
4.5 cm	11.3 weeks	10.396 weeks	12.204 weeks
4.6 cm	11.4 weeks	10.488 weeks	12.312 weeks
4.7 cm	11.5 weeks	10.58 weeks	12.42 weeks
4.8 cm	11.6 weeks	10.672 weeks	12.528 weeks
4.9 cm	11.7 weeks	10.764 weeks	12.636 weeks
5 cm	11.7 weeks	10.764 weeks	12.636 weeks
5.1 cm	11.8 weeks	10.856 weeks	12.744 weeks
5.2 cm	11.9 weeks	10.948 weeks	12.852 weeks
5.3 cm	12 weeks	11.04 weeks	12.96 weeks
5.4 cm	12 weeks	11.04 weeks	12.96 weeks
5.5 cm	12.1 weeks	11.132 weeks	13.068 weeks
5.6 cm	12.2 weeks	11.224 weeks	13.176 weeks
5.7 cm	12.3 weeks	11.316 weeks	13.284 weeks
5.8 cm	12.3 weeks	11.316 weeks	13.284 weeks
5.9 cm	12.4 weeks	11.408 weeks	13.392 weeks
6 cm	12.5 weeks	11.5 weeks	13.5 weeks

<b>CRL (cm)</b>	<b>GA (week)</b>	<b>5%</b>	<b>95%</b>
6.1 cm	12.6 weeks	11.592 weeks	13.608 weeks
6.2 cm	12.6 weeks	11.592 weeks	13.608 weeks
6.3 cm	12.7 weeks	11.684 weeks	13.716 weeks
6.4 cm	12.8 weeks	11.776 weeks	13.824 weeks
6.5 cm	12.8 weeks	11.776 weeks	13.824 weeks
6.6 cm	12.9 weeks	11.868 weeks	13.932 weeks
6.7 cm	13 weeks	11.96 weeks	14.04 weeks
6.8 cm	13.1 weeks	12.052 weeks	14.148 weeks
6.9 cm	13.1 weeks	12.052 weeks	14.148 weeks
7 cm	13.2 weeks	12.144 weeks	14.256 weeks
7.1 cm	13.3 weeks	12.236 weeks	14.364 weeks
7.2 cm	13.4 weeks	12.328 weeks	14.472 weeks
7.3 cm	13.4 weeks	12.328 weeks	14.472 weeks
7.4 cm	13.5 weeks	12.42 weeks	14.58 weeks
7.5 cm	13.6 weeks	12.512 weeks	14.688 weeks
7.6 cm	13.7 weeks	12.604 weeks	14.796 weeks
7.7 cm	13.8 weeks	12.696 weeks	14.904 weeks
7.8 cm	13.8 weeks	12.696 weeks	14.904 weeks
7.9 cm	13.9 weeks	12.788 weeks	15.012 weeks
8 cm	14 weeks	12.88 weeks	15.12 weeks
8.1 cm	14.1 weeks	12.972 weeks	15.228 weeks
8.2 cm	14.2 weeks	13.064 weeks	15.336 weeks
8.3 cm	14.2 weeks	13.064 weeks	15.336 weeks
8.4 cm	14.3 weeks	13.156 weeks	15.444 weeks
8.5 cm	14.4 weeks	13.248 weeks	15.552 weeks
8.6 cm	14.5 weeks	13.34 weeks	15.66 weeks
8.7 cm	14.6 weeks	13.432 weeks	15.768 weeks
8.8 cm	14.7 weeks	13.524 weeks	15.876 weeks
8.9 cm	14.8 weeks	13.616 weeks	15.984 weeks
9 cm	14.9 weeks	13.708 weeks	16.092 weeks
9.1 cm	15 weeks	13.8 weeks	16.2 weeks
9.2 cm	15.1 weeks	13.892 weeks	16.308 weeks

<b>CRL (cm)</b>	<b>GA (week)</b>	<b>5%</b>	<b>95%</b>
9.3 cm	15.2 weeks	13.984 weeks	16.416 weeks
9.4 cm	15.3 weeks	14.076 weeks	16.524 weeks
9.5 cm	15.3 weeks	14.076 weeks	16.524 weeks
9.6 cm	15.4 weeks	14.168 weeks	16.632 weeks
9.7 cm	15.5 weeks	14.26 weeks	16.74 weeks
9.8 cm	15.6 weeks	14.352 weeks	16.848 weeks
9.9 cm	15.7 weeks	14.444 weeks	16.956 weeks
10 cm	15.9 weeks	14.628 weeks	17.172 weeks
10.1 cm	16 weeks	14.72 weeks	17.28 weeks
10.2 cm	16.1 weeks	14.812 weeks	17.388 weeks
10.3 cm	16.2 weeks	14.904 weeks	17.496 weeks
10.4 cm	16.3 weeks	14.996 weeks	17.604 weeks
10.5 cm	16.4 weeks	15.088 weeks	17.712 weeks
10.6 cm	16.5 weeks	15.18 weeks	17.82 weeks
10.7 cm	16.6 weeks	15.272 weeks	17.928 weeks
10.8 cm	16.7 weeks	15.364 weeks	18.036 weeks
10.9 cm	16.8 weeks	15.456 weeks	18.144 weeks
11 cm	16.9 weeks	15.548 weeks	18.252 weeks
11.1 cm	17 weeks	15.64 weeks	18.36 weeks
11.2 cm	17.1 weeks	15.732 weeks	18.468 weeks
11.3 cm	17.2 weeks	15.824 weeks	18.576 weeks
11.4 cm	17.3 weeks	15.916 weeks	18.684 weeks
11.5 cm	17.4 weeks	16.008 weeks	18.792 weeks
11.6 cm	17.5 weeks	16.1 weeks	18.9 weeks
11.7 cm	17.6 weeks	16.192 weeks	19.008 weeks
11.8 cm	17.7 weeks	16.284 weeks	19.116 weeks
11.9 cm	17.8 weeks	16.376 weeks	19.224 weeks
12 cm	17.9 weeks	16.468 weeks	19.332 weeks
12.1 cm	18 weeks	16.56 weeks	19.44 weeks

# GA by CRL - Hansmann1986

**Name:** Hansmann\_1986

**Author:** Hansmann

**Year:** 1986

**Reference:** Hansmann, Hackeloer, Staudach and Wittman, Ultrasound Diagnosis in Obstetrics and Gynecology, Springer-Verlag, New York, 1986

**Comments:**

CRL (mm)	GA (wd)
6 mm	6w1d
7 mm	6w2d
8 mm	6w4d
9 mm	6w6d
10 mm	7w0d
11 mm	7w2d
12 mm	7w3d
13 mm	7w4d
14 mm	7w6d
15 mm	8w0d
16 mm	8w2d
17 mm	8w3d
18 mm	8w4d
19 mm	8w5d
20 mm	8w6d
21 mm	9w0d
22 mm	9w1d
23 mm	9w2d
24 mm	9w3d
26 mm	9w5d
28 mm	10w0d
30 mm	10w2d
32 mm	10w3d

<b>CRL (mm)</b>	<b>GA (wd)</b>
34 mm	10w5d
36 mm	10w6d
38 mm	11w1d
40 mm	11w2d
42 mm	11w3d
44 mm	11w4d
46 mm	11w6d
48 mm	12w0d
50 mm	12w1d
52 mm	12w2d
54 mm	12w3d
56 mm	12w4d
58 mm	12w5d
60 mm	12w6d
63 mm	13w0d
66 mm	13w2d
70 mm	13w3d
73 mm	13w5d
76 mm	13w6d
80 mm	14w1d
83 mm	14w2d
86 mm	14w4d
90 mm	14w6d
93 mm	15w1d
96 mm	15w3d
100 mm	15w5d
103 mm	16w0d
106 mm	16w2d
110 mm	16w4d
113 mm	17w0d
116 mm	17w2d
120 mm	17w4d

CRL (mm)	GA (wd)
123 mm	18w0d
126 mm	18w2d
130 mm	18w6d
133 mm	19w1d
136 mm	19w4d
140 mm	20w0d
143 mm	20w3d
146 mm	20w6d
150 mm	21w3d

## GA by CRL - ISUOG\_Sahota2009

**Name:** ISUOG Sahota 2009

**Author:** ISUOG\_Sahota

**Year:** 2009

**Reference:** "Sahota DS, Leung TY, Leung TN, Chan OK, Lau TK. Fetal crown-rump length and estimation of gestational age in an ethnic Chinese population. Ultrasound Obstet Gynecol 2009

**Comments:** Revision 3

Input parameter: CRL (mm)

Min limit: 5

Max limit: 85

Output: Gest Age (day)

Equation:

$$26.643 + 7.822 * \_CRL^{0.5}$$

## GA by CRL - McLeannan\_Schluter2008

**Name:** McLennan Schluter 2008

**Author:** McLeannan\_Schluter

**Year:** 2008

**Reference:** "McLennan AC, Schluter PJ. Construction of modern Australian first trimester ultrasound dating and growth charts. J Med Imaging Radiat Oncol 2008

**Comments:** Revision 5

CRL (mm)	Gest Age (wd)
5 mm	6w0d
10 mm	7w0d
15 mm	7w6d
20 mm	8w4d
25 mm	9w1d
30 mm	9w5d
35 mm	10w2d
40 mm	10w5d
45 mm	11w1d
50 mm	11w4d
55 mm	12w0d
60 mm	12w2d
65 mm	12w5d
70 mm	13w0d
75 mm	13w2d
80 mm	13w3d

## GA by CRL - Osaka1989

**Name:** Osaka 1989

**Author:** Osaka



**Year:** 1989

**Reference:** Osaka University, Perinatal Care, vol.9, no 5, pp 407-422.

**Comments:**

Crown Rump Length (cm)	Gest Age (week)	+/-1 SD
0.87 cm	7 weeks	0.16 week
1.3 cm	8 weeks	0.26 week
2.04 cm	9 weeks	0.37 week
3 cm	10 weeks	0.48 week
4.12 cm	11 weeks	0.58 week
5.3 cm	12 weeks	0.69 week
6.49 cm	13 weeks	0.79 week

## GA by CRL - Robinson\_Fleming1975

**Name:** Robinson Fleming 1975

**Author:** Robinson\_Fleming

**Year:** 1975

**Reference:** "Robinson HP, Fleming JE. A critical evaluation of sonar crown-rump length measurements. Br J Obstet Gynaecol 1975

**Comments:** Rev 3 - Derived by R Napolitano, J Dhami, EO Ohuma, C Ioannou, A Conde-Agudelo, SH Kennedy, J Villar, AT Papageorghioua, from Robinson HP, Fleming JE. A critical evaluation of sonar crown-rump length measurements. Br J Obstet Gynaecol. 1975

Input parameter: CRL (mm)

Min limit: 5

Max limit: 85

Output: Gest Age (day)

Equation:

$$8.052*(\_CRL*1.037)^{0.5}+23.73$$

## GA by CRL - Verburg2008

**Name:** Verburg\_2008

**Author:** Verburg

**Year:** 2008

**Reference:** "Verburg BO, Steegers EA, De Ridder M, Snijders RJ, Smith E, Hofman A, et al. New charts for ultrasound dating of pregnancy and assessment of fetal growth: longitudinal data from a population-based cohort study. Ultrasound Obstet Gynecol 2008

**Comments:** Rev3

CRL (mm)	Gest Age (wd)
5 mm	6w2d
10 mm	7w4d
15 mm	8w2d
20 mm	9w0d
25 mm	9w4d
30 mm	10w0d
35 mm	10w3d
40 mm	10w6d
45 mm	11w2d
50 mm	11w5d
55 mm	12w0d
60 mm	12w3d
65 mm	12w5d
70 mm	13w0d
75 mm	13w3d
80 mm	13w5d
85 mm	14w0d

# Femur Length (GA by FL)

## GA by FL - ASUM2000

**Name:** ASUM 2000

**Author:** ASUM

**Year:** 2000

**Reference:** ASUM and Campbell Westerway S , Ultrasonic fetal Measurement Standards for an Australian Population, ASUM, 2003

**Comments:**

Input parameter: FL (mm)

Min limit: 8

Max limit: 77

Output: GA (week)

Equation:

$$0.41 * \_FL - 0.002884 * \_FL * \_FL + 0.00003924 * \_FL * \_FL * \_FL + 8.284$$

## GA by FL - CFEF2000

**Name:** CFEF 2000

**Author:** CFEF

**Year:** 2000

**Reference:** Crequat J, Duyme M and Brodaty G, Fetal growth charts by the French College of fetal ultrasonography and the Inserm U 155 , Biometry 2000, 28, pp 435-455, 2000

**Comments:** <http://cfef.org/>

FL (mm)	GA (week)
6.33 mm	12 weeks
9.88 mm	13 weeks

<b>FL (mm)</b>	<b>GA (week)</b>
13.33 mm	14 weeks
16.66 mm	15 weeks
19.95 mm	16 weeks
23.12 mm	17 weeks
26.23 mm	18 weeks
29.25 mm	19 weeks
32.23 mm	20 weeks
35.05 mm	21 weeks
37.87 mm	22 weeks
40.5 mm	23 weeks
43.16 mm	24 weeks
45.69 mm	25 weeks
48.17 mm	26 weeks
50.53 mm	27 weeks
52.8 mm	28 weeks
54.94 mm	29 weeks
57.13 mm	30 weeks
59.15 mm	31 weeks
61.11 mm	32 weeks
63 mm	33 weeks
64.76 mm	34 weeks
66.47 mm	35 weeks
68.13 mm	36 weeks
69.63 mm	37 weeks
71.11 mm	38 weeks
72.48 mm	39 weeks
73.79 mm	40 weeks
74 mm	41 weeks

## GA by FL - Chitty1997

**Name:** Chitty 1997

**Author:** Chitty

**Year:** 1997

**Reference:** Altman D.G and Chitty L.S, New charts for ultrasound dating of pregnancy, Ultrasound Obstet. Gynecol, Vol 10, pp 174-191, 1997

**Comments:**

FL (mm)	GA (wd)	5%	95%
10 mm	13w0d	12w1d	13w6d
11 mm	13w2d	12w3d	14w1d
12 mm	13w4d	12w5d	14w4d
13 mm	13w6d	13w0d	14w6d
14 mm	14w1d	13w1d	15w1d
15 mm	14w3d	13w3d	15w3d
16 mm	14w5d	13w5d	15w6d
17 mm	15w0d	14w0d	16w1d
18 mm	15w2d	14w2d	16w3d
19 mm	15w5d	14w4d	16w6d
20 mm	16w0d	14w6d	17w1d
21 mm	16w2d	15w1d	17w3d
22 mm	16w4d	15w3d	17w6d
23 mm	16w6d	15w5d	18w1d
24 mm	17w2d	16w0d	18w4d
25 mm	17w4d	16w2d	18w6d
26 mm	17w6d	16w4d	19w2d
27 mm	18w2d	16w6d	19w5d
28 mm	18w4d	17w1d	20w0d
29 mm	18w6d	17w4d	20w3d
30 mm	19w2d	17w6d	20w5d
31 mm	19w4d	18w1d	21w1d
32 mm	20w0d	18w3d	21w4d

FL (mm)	GA (wd)	5%	95%
33 mm	20w2d	18w5d	22w0d
34 mm	20w5d	19w1d	22w2d
35 mm	21w0d	19w3d	22w5d
36 mm	21w3d	19w5d	23w1d
37 mm	21w5d	20w1d	23w4d
38 mm	22w1d	20w3d	24w0d
39 mm	22w4d	20w5d	24w3d
40 mm	22w6d	21w1d	24w6d
41 mm	23w2d	21w3d	25w2d
42 mm	23w5d	21w6d	25w5d
43 mm	24w1d	22w1d	26w1d
44 mm	24w3d	22w4d	26w4d
45 mm	24w6d	22w6d	27w1d
46 mm	25w2d	23w2d	27w4d
47 mm	25w5d	23w4d	28w0d
48 mm	26w1d	24w0d	28w3d
49 mm	26w4d	24w3d	29w0d
50 mm	27w0d	24w5d	29w3d
51 mm	27w3d	25w1d	30w0d
52 mm	27w6d	25w4d	30w3d
53 mm	28w2d	26w0d	31w0d
54 mm	28w5d	26w2d	31w3d
55 mm	29w2d	26w5d	32w0d
56 mm	29w5d	27w1d	32w3d
57 mm	30w1d	27w4d	33w0d
58 mm	30w4d	28w0d	33w4d
59 mm	31w1d	28w3d	34w1d
60 mm	31w4d	28w6d	34w4d
61 mm	32w1d	29w2d	35w1d
62 mm	32w4d	29w5d	35w5d
63 mm	33w1d	30w1d	36w2d
64 mm	33w4d	30w4d	36w6d

FL (mm)	GA (wd)	5%	95%
65 mm	34w1d	31w0d	37w3d
66 mm	34w4d	31w3d	38w0d
67 mm	35w1d	32w0d	38w5d

## GA by FL - Hadlock1984

**Name:** Hadlock 1984

**Author:** Hadlock

**Year:** 1984

**Reference:** Hadlock F.P, Deter R.L, Harrist R.B. and Park S.K, Estimating fetal age: computer-assisted analysis of multiple fetal growth parameters, Radiology,152, pp 497-501, 1984

**Comments:**

FL (cm)	GA (week)	+/-2 SD
0.7 cm	12.1553 weeks	1.38 weeks
0.9 cm	12.7017 weeks	1.38 weeks
1.1 cm	13.2617 weeks	1.38 weeks
1.2 cm	13.5468 weeks	1.38 weeks
1.4 cm	14.1272 weeks	1.38 weeks
1.6 cm	14.7212 weeks	1.38 weeks
1.7 cm	15.0233 weeks	1.38 weeks
1.9 cm	15.6377 weeks	1.38 weeks
2 cm	15.95 weeks	1.38 weeks
2.2 cm	16.5848 weeks	1.38 weeks
2.4 cm	17.2332 weeks	1.38 weeks
2.5 cm	17.5625 weeks	1.38 weeks
2.7 cm	18.2313 weeks	1.8 weeks
2.8 cm	18.5708 weeks	1.8 weeks
3 cm	19.26 weeks	1.8 weeks
3.1 cm	19.6097 weeks	1.8 weeks
3.3 cm	20.3193 weeks	1.8 weeks
3.4 cm	20.6792 weeks	1.8 weeks

<b>FL (cm)</b>	<b>GA (week)</b>	<b>+/-2 SD</b>
3.5 cm	21.0425 weeks	1.8 weeks
3.7 cm	21.7793 weeks	1.8 weeks
3.8 cm	22.1528 weeks	1.8 weeks
4 cm	22.91 weeks	1.8 weeks
4.1 cm	23.2937 weeks	1.8 weeks
4.2 cm	23.6808 weeks	1.8 weeks
4.4 cm	24.4652 weeks	2.08 weeks
4.5 cm	24.8625 weeks	2.08 weeks
4.6 cm	25.2632 weeks	2.08 weeks
4.7 cm	25.6673 weeks	2.08 weeks
4.9 cm	26.4857 weeks	2.08 weeks
5 cm	26.9 weeks	2.08 weeks
5.1 cm	27.3177 weeks	2.08 weeks
5.2 cm	27.7388 weeks	2.08 weeks
5.4 cm	28.5912 weeks	2.08 weeks
5.5 cm	29.0225 weeks	2.08 weeks
5.6 cm	29.4572 weeks	2.08 weeks
5.7 cm	29.8953 weeks	2.08 weeks
5.8 cm	30.3368 weeks	2.96 weeks
5.9 cm	30.7817 weeks	2.96 weeks
6 cm	31.23 weeks	2.96 weeks
6.1 cm	31.6817 weeks	2.96 weeks
6.2 cm	32.1368 weeks	2.96 weeks
6.3 cm	32.5953 weeks	2.96 weeks
6.4 cm	33.0572 weeks	2.96 weeks
6.5 cm	33.5225 weeks	2.96 weeks
6.6 cm	33.9912 weeks	2.96 weeks
6.7 cm	34.4633 weeks	2.96 weeks
6.8 cm	34.9388 weeks	2.96 weeks
6.9 cm	35.4177 weeks	2.96 weeks
7 cm	35.9 weeks	3.12 weeks
7.1 cm	36.3857 weeks	3.12 weeks



FL (cm)	GA (week)	+/-2 SD
7.2 cm	36.8748 weeks	3.12 weeks
7.3 cm	37.3673 weeks	3.12 weeks
7.4 cm	37.8632 weeks	3.12 weeks
7.5 cm	38.3625 weeks	3.12 weeks
7.6 cm	38.8652 weeks	3.12 weeks
7.7 cm	39.3713 weeks	3.12 weeks
7.8 cm	40.0705 weeks	3.12 weeks
7.9 cm	40.3937 weeks	3.12 weeks
8 cm	40.91 weeks	3.12 weeks
8.1 cm	41.4297 weeks	3.12 weeks
8.2 cm	41.9528 weeks	3.12 weeks
8.3 cm	42.4793 weeks	3.12 weeks

## GA by FL - Hansmann 1986

**Name:** Hansmann\_1986

**Author:** Hansmann

**Year:** 1986

**Reference:** Hansmann, Hackeloer, Staudach and Wittman, Ultrasound Diagnosis in Obstetrics and Gynecology, Springer-Verlag, New York, 1986

**Comments:**

FL (cm)	GA (week)
1 cm	13 weeks
1.2 cm	14 weeks
1.6 cm	15 weeks
1.8 cm	16 weeks
2.2 cm	17 weeks
2.5 cm	18 weeks
2.8 cm	19 weeks
3.1 cm	20 weeks

FL (cm)	GA (week)
3.4 cm	21 weeks
3.6 cm	22 weeks
3.9 cm	23 weeks
4.1 cm	24 weeks
4.4 cm	25 weeks
4.7 cm	26 weeks
4.9 cm	27 weeks
5.1 cm	28 weeks
5.4 cm	29 weeks
5.6 cm	30 weeks
5.9 cm	31 weeks
6.1 cm	32 weeks
6.3 cm	33 weeks
6.5 cm	34 weeks
6.7 cm	35 weeks
6.9 cm	36 weeks
7.1 cm	37 weeks
7.3 cm	38 weeks
7.4 cm	39 weeks
7.5 cm	40 weeks

## GA by FL - ISUOG\_Leung2008

**Name:** ISUOG Leung 2008

**Author:** ISUOG\_Leung

**Year:** 2008

**Reference:** "Fetal biometry in ethnic Chinese: biparietal diameter, head circumference, abdominal circumference and femur length. T. N. LEUNG, M. W. PANG, S. S. DALJIT, T. Y. LEUNG, C. F. POON, S. M. WONG and T. K. LAU. Fetal Medicine Unit, Department of Obstetrics and Gynaecology, The Chinese University of Hong Kong, The Prince of Wales Hospital, Hong Kong"

**Comments:**

Input parameter: FL (cm)

Min limit: 1.02208

Max limit: 8.79549

Output: Gest Age (week)

Equation:

$$11.52821+1.591733*_{FL}+0.435641*_{FL}^2-0.017006*_{FL}^3$$

## GA by FL - Jeanty1984

**Name:** Jeanty 1984

**Author:** Jeanty

**Year:** 1984

**Reference:** Estimation of Gestational Age from Measurements of Fetal Long Bones, Jeanty et al., February 1984, J Ultrasound Med

**Comments:**

Input parameter: FL (mm)

Min limit: 10

Max limit: 80

Output: Gest Age (week)

Equation:

$$9.5411757+(0.29774510*_{FL})+(0.0010388013*_{FL}^2)$$

## GA by FL - Merz1988

**Name:** Merz 1988

**Author:** Merz

**Year:** 1988

**Reference:** Merz E, Goldhofer W and Timor-Tritsch E , Ultrasound in Gynecology and Obstetrics, Textbook and Atlas, Georg Thieme Verlag , 1991

**Comments:** From Merz E, Habilitationsschrift, Mainz University Woman's Hospital, 1988

FL (mm)	GA (wd)	5%	95%
10 mm	12w2d	11w1d	13w4d
11 mm	12w5d	11w4d	13w6d
12 mm	13w0d	11w6d	14w1d
13 mm	13w2d	12w1d	14w4d
14 mm	13w5d	12w3d	15w0d
15 mm	14w0d	12w5d	15w2d
16 mm	14w3d	13w1d	15w5d
17 mm	14w5d	13w3d	16w0d
18 mm	15w1d	13w6d	16w3d
19 mm	15w3d	14w1d	16w5d
20 mm	15w6d	14w4d	17w1d
21 mm	16w1d	14w6d	17w3d
22 mm	16w4d	15w1d	17w6d
23 mm	16w6d	15w3d	18w1d
24 mm	17w1d	15w6d	18w4d
25 mm	17w4d	16w1d	19w1d
26 mm	17w6d	16w3d	19w3d
27 mm	18w2d	16w6d	19w6d
28 mm	18w4d	17w1d	20w1d
29 mm	19w0d	17w4d	20w4d
30 mm	19w3d	17w6d	20w6d
31 mm	19w5d	18w1d	21w1d
32 mm	20w1d	18w4d	21w4d
33 mm	20w4d	18w6d	22w1d
34 mm	20w6d	19w1d	22w3d
35 mm	21w1d	19w4d	22w6d
36 mm	21w4d	20w0d	23w1d
37 mm	21w6d	20w2d	23w4d
38 mm	22w2d	20w5d	23w6d
39 mm	22w5d	21w0d	24w3d

<b>FL (mm)</b>	<b>GA (wd)</b>	<b>5%</b>	<b>95%</b>
40 mm	23w1d	21w3d	24w6d
41 mm	23w3d	21w5d	25w1d
42 mm	23w6d	22w1d	25w4d
43 mm	24w1d	22w4d	25w6d
44 mm	24w4d	22w6d	26w3d
45 mm	25w0d	23w1d	26w6d
46 mm	25w3d	23w4d	27w1d
47 mm	25w6d	24w0d	27w4d
48 mm	26w1d	24w3d	28w0d
49 mm	26w4d	24w5d	28w2d
50 mm	26w6d	25w1d	28w5d
51 mm	27w2d	25w4d	29w1d
52 mm	27w5d	25w6d	29w4d
53 mm	28w1d	26w1d	30w0d
54 mm	28w4d	26w4d	30w4d
55 mm	29w0d	27w0d	31w0d
56 mm	29w3d	27w3d	31w3d
57 mm	29w6d	27w6d	31w6d
58 mm	30w1d	28w1d	32w1d
59 mm	30w4d	28w4d	32w4d
60 mm	31w0d	29w0d	33w0d
61 mm	31w4d	29w4d	33w4d
62 mm	31w6d	29w6d	33w6d
63 mm	32w2d	30w2d	34w2d
64 mm	32w6d	30w6d	34w6d
65 mm	33w1d	31w1d	35w1d
66 mm	33w4d	31w4d	35w4d
67 mm	34w1d	32w0d	36w1d
68 mm	34w4d	32w3d	36w4d
69 mm	35w0d	32w6d	37w1d
70 mm	35w3d	33w2d	37w4d
71 mm	35w6d	33w6d	38w0d

FL (mm)	GA (wd)	5%	95%
72 mm	36w2d	34w1d	38w3d
73 mm	36w6d	34w4d	39w0d
74 mm	37w2d	35w1d	39w4d
75 mm	37w5d	35w4d	39w6d
76 mm	38w1d	36w0d	40w3d
77 mm	38w5d	36w4d	40w6d
78 mm	39w1d	37w0d	41w3d
79 mm	39w4d	37w3d	41w6d
80 mm	40w1d	37w6d	42w2d

## GA by FL - Osaka 1989

**Name:** Osaka 1989

**Author:** Osaka

**Year:** 1989

**Reference:** Osaka University, Perinatal Care, vol.9, no 5, pp 407-422.

**Comments:**

Femur Length (cm)	Gest Age (week)	+/-1 SD
0.94 cm	13 weeks	0.21 week
1.26 cm	14 weeks	0.22 week
1.57 cm	15 weeks	0.22 week
1.88 cm	16 weeks	0.22 week
2.18 cm	17 weeks	0.23 week
2.47 cm	18 weeks	0.23 week
2.75 cm	19 weeks	0.24 week
3.03 cm	20 weeks	0.24 week
3.3 cm	21 weeks	0.24 week
3.57 cm	22 weeks	0.25 week
3.83 cm	23 weeks	0.25 week
4.08 cm	24 weeks	0.25 week
4.32 cm	25 weeks	0.26 week

Femur Length (cm)	Gest Age (week)	+/-1 SD
4.56 cm	26 weeks	0.26 week
4.78 cm	27 weeks	0.27 week
5.01 cm	28 weeks	0.27 week
5.22 cm	29 weeks	0.27 week
5.43 cm	30 weeks	0.28 week
5.63 cm	31 weeks	0.28 week
5.82 cm	32 weeks	0.29 week
6.01 cm	33 weeks	0.29 week
6.19 cm	34 weeks	0.29 week
6.36 cm	35 weeks	0.3 week
6.53 cm	36 weeks	0.3 week
6.69 cm	37 weeks	0.31 week
6.84 cm	38 weeks	0.31 week
6.98 cm	39 weeks	0.31 week
7.12 cm	40 weeks	0.32 week

## Gestational Sac (GA by GS)

### GA by GS - Daya1991

**Name:** Daya 1991

**Author:** Daya

**Year:** 1991

**Reference:** Daya S, Woods S, Ward S, Lappalainen R and Caco R, Early pregnancy assessment with transvaginal ultrasound scanning, CMAJ, Vol 144(4), pp 441-446, 1991

**Comments:**

GS (mm)	GA (day)	5%	95%
2 mm	34.9 days	31.6 days	38.2 days
3 mm	35.8 days	32.5 days	39.1 days

GS (mm)	GA (day)	5%	95%
4 mm	36.6 days	33.3 days	39.9 days
5 mm	37.5 days	34.2 days	40.8 days
6 mm	38.4 days	35.1 days	41.7 days
7 mm	39.3 days	36 days	42.6 days
8 mm	40.2 days	36.9 days	43.5 days
9 mm	41.1 days	37.8 days	44.3 days
10 mm	41.9 days	38.7 days	45.2 days
11 mm	42.8 days	39.5 days	46.1 days
12 mm	43.7 days	40.4 days	47 days
13 mm	44.6 days	41.3 days	47.9 days
14 mm	45.5 days	42.2 days	48.7 days
15 mm	46.3 days	43.1 days	49.6 days
16 mm	47.2 days	44 days	50.5 days
17 mm	48.1 days	44.8 days	51.4 days
18 mm	49 days	45.7 days	52.3 days
19 mm	49.9 days	46.6 days	53.2 days
20 mm	50.8 days	47.5 days	54 days
21 mm	51.6 days	48.3 days	54.9 days
22 mm	52.5 days	49.2 days	55.8 days
23 mm	53.4 days	50.1 days	56.7 days
24 mm	54.3 days	51 days	57.6 days
25 mm	55.2 days	51.9 days	58.5 days
26 mm	56 days	52.7 days	59.4 days
27 mm	56.9 days	53.6 days	60.3 days
28 mm	57.8 days	54.5 days	61.1 days
29 mm	58.7 days	55.4 days	62 days
30 mm	59.6 days	56.2 days	62.9 days

## GA by GS - Hansmann1985

**Name:** Hansmann 1985



**Author:** Hansmann

**Year:** 1985

**Reference:** Hansmann, Hackeloer, Staudach and Wittman, Ultrasound Diagnosis in Obstetrics and Gynecology, Springer-Verlag, New York, 1986

**Comments:**

GS (mm)	GA (wd)
7 mm	4w6d
9 mm	5w5d
10 mm	6w0d
13 mm	6w2d
15 mm	6w5d
24 mm	7w3d
28 mm	8w2d
34 mm	9w0d

## GA by GS - Hellman 1969

**Name:** Hellman 1969 GA by GS

**Author:** Hellman

**Year:** 1969

**Reference:** HELLMAN, L. Mh, KOBAYASHI, M., FILLISTI, L., et al. Growth and development of the human fetus prior to the twentieth week of gestation. American Journal of Obstetrics and Gynecology, 1969, vol. 103, no 6, p. 789-798.

**Comments:**

Gestational Sac (cm)	Gest Age (wd)
1 cm	5w0d
1.1 cm	5w1d
1.2 cm	5w2d
1.3 cm	5w4d
1.4 cm	5w4d
1.5 cm	5w6d

Gestational Sac (cm)	Gest Age (wd)
1.6 cm	5w6d
1.7 cm	6w0d
1.8 cm	6w1d
1.9 cm	6w2d
2 cm	6w4d
2.1 cm	6w4d
2.2 cm	6w6d
2.3 cm	6w6d
2.4 cm	7w0d
2.5 cm	7w1d
2.6 cm	7w2d
2.7 cm	7w4d
2.8 cm	7w4d
2.9 cm	7w6d
3 cm	7w6d
3.1 cm	8w0d
3.2 cm	8w1d
3.3 cm	8w2d
3.4 cm	8w4d
3.5 cm	8w4d
3.6 cm	8w6d
3.7 cm	8w6d
3.8 cm	9w0d
3.9 cm	9w1d
4 cm	9w2d
4.1 cm	9w4d
4.2 cm	9w4d
4.3 cm	9w5d
4.4 cm	9w6d
4.5 cm	10w0d
4.6 cm	10w1d
4.7 cm	10w2d

Gestational Sac (cm)	Gest Age (wd)
4.8 cm	10w4d
4.9 cm	10w4d
5 cm	10w5d
5.1 cm	10w6d
5.2 cm	11w0d
5.3 cm	11w1d
5.4 cm	11w2d
5.5 cm	11w4d
5.6 cm	11w4d
5.7 cm	11w5d
5.8 cm	11w6d
5.9 cm	12w0d
6 cm	12w1d

## GA by GS - Rempen1991

**Name:** Rempen 1991 GA by GS

**Author:** Rempen

**Year:** 1991

**Reference:** REMPEN, A. "Biometrie in der Frühgravidität (I. Trimenon)" Der Frauenarzt, 1991, 32, 4, p 425-430.

**Comments:**

Gestational Sac (cm)	Gest Age (wd)	+/-2 SD
0.1 cm	4w5d	1w3d
0.2 cm	4w6d	1w3d
0.3 cm	5w0d	1w3d
0.4 cm	5w1d	1w3d
0.5 cm	5w2d	1w3d
0.6 cm	5w2d	1w3d
0.7 cm	5w3d	1w3d
0.8 cm	5w4d	1w3d

Gestational Sac (cm)	Gest Age (wd)	+/-2 SD
0.9 cm	5w5d	1w3d
1 cm	5w5d	1w3d
1.1 cm	5w6d	1w3d
1.2 cm	6w0d	1w3d
1.3 cm	6w1d	1w3d
1.4 cm	6w2d	1w3d
1.5 cm	6w2d	1w3d
1.6 cm	6w3d	1w3d
1.7 cm	6w4d	1w3d
1.8 cm	6w5d	1w3d
1.9 cm	6w6d	1w3d
2 cm	6w6d	1w3d
2.1 cm	7w0d	1w3d
2.2 cm	7w1d	1w3d
2.3 cm	7w2d	1w3d
2.4 cm	7w3d	1w3d
2.5 cm	7w4d	1w3d
2.6 cm	7w4d	1w3d
2.7 cm	7w5d	1w3d
2.8 cm	7w6d	1w3d
2.9 cm	8w0d	1w3d
3 cm	8w1d	1w3d
3.1 cm	8w2d	1w3d
3.2 cm	8w3d	1w3d
3.3 cm	8w3d	1w3d
3.4 cm	8w4d	1w3d
3.5 cm	8w5d	1w3d
3.6 cm	8w6d	1w3d
3.7 cm	9w0d	1w3d
3.8 cm	9w1d	1w3d
3.9 cm	9w2d	1w3d
4 cm	9w3d	1w3d

Gestational Sac (cm)	Gest Age (wd)	+/-2 SD
4.1 cm	9w4d	1w3d
4.2 cm	9w5d	1w3d
4.3 cm	9w6d	1w3d
4.4 cm	9w6d	1w3d
4.5 cm	10w0d	1w3d
4.6 cm	10w1d	1w3d
4.7 cm	10w2d	1w3d
4.8 cm	10w3d	1w3d
4.9 cm	10w4d	1w3d
5 cm	10w5d	1w3d
5.1 cm	10w6d	1w3d
5.2 cm	11w0d	1w3d
5.3 cm	11w1d	1w3d
5.4 cm	11w2d	1w3d
5.5 cm	11w3d	1w3d
5.6 cm	11w4d	1w3d
5.7 cm	11w5d	1w3d
5.8 cm	11w6d	1w3d
5.9 cm	12w0d	1w3d
6 cm	12w1d	1w3d
6.1 cm	12w2d	1w3d
6.2 cm	12w3d	1w3d
6.3 cm	12w4d	1w3d
6.4 cm	12w5d	1w3d
6.5 cm	12w6d	1w3d
6.6 cm	13w0d	1w3d
6.7 cm	13w1d	1w3d
6.8 cm	13w2d	1w3d
6.9 cm	13w3d	1w3d
7 cm	13w4d	1w3d
7.1 cm	13w5d	1w3d
7.2 cm	14w0d	1w3d

Gestational Sac (cm)	Gest Age (wd)	+/-2 SD
7.3 cm	14w1d	1w3d

## Head Circumference (GA by HC)

### GA by HC - ASUM2000

**Name:** ASUM 2000

**Author:** ASUM

**Year:** 2000

**Reference:** ASUM and Campbell Westerway S , Ultrasonic fetal Measurement Standards for an Australian Population, ASUM, 2003

**Comments:**

Input parameter: HC (mm)

Min limit: 59

Max limit: 344

Output: GA (week)

Equation:

$$0.0001797 * \_HC * \_HC + 0.02631 * \_HC + 9.667$$

### GA by HC - CFEF2000

**Name:** CFEF 2000

**Author:** CFEF

**Year:** 2000

**Reference:** Crequat J, Duyme M and Brodaty G, Fetal growth charts by the French College of fetal ultrasonography and the Inserm U 155 , Biometry 2000, 28, pp 435-455, 2000

Comments: <http://cfef.org/>

HC (mm)	GA (week)
120.86 mm	16 weeks
134.49 mm	17 weeks
147.55 mm	18 weeks
160.29 mm	19 weeks
172.47 mm	20 weeks
184.21 mm	21 weeks
195.74 mm	22 weeks
206.64 mm	23 weeks
217.18 mm	24 weeks
227.32 mm	25 weeks
236.72 mm	26 weeks
246 mm	27 weeks
254.77 mm	28 weeks
263 mm	29 weeks
270.84 mm	30 weeks
278.33 mm	31 weeks
285.29 mm	32 weeks
292 mm	33 weeks
298.1 mm	34 weeks
303.62 mm	35 weeks
308.81 mm	36 weeks
313.52 mm	37 weeks
317.88 mm	38 weeks
321.86 mm	39 weeks
324 mm	40 weeks

## GA by HC - Chitty1997

**Name:** Chitty 1997

**Author:** Chitty

**Year:** 1997

**Reference:** Altman D.G and Chitty L.S, New charts for ultrasound dating of pregnancy, Ultrasound Obstet. Gynecol, Vol 10, pp 174-191, 1997

**Comments:**

HC (mm)	GA (wd)	5%	95%
85 mm	12w6d	12w1d	13w4d
90 mm	13w2d	12w4d	14w0d
95 mm	13w5d	12w6d	14w3d
100 mm	14w0d	13w2d	14w6d
105 mm	14w3d	13w4d	15w2d
110 mm	14w6d	14w0d	15w6d
115 mm	15w2d	14w3d	16w2d
120 mm	15w5d	14w5d	16w5d
125 mm	16w1d	15w1d	17w1d
130 mm	16w3d	15w3d	17w4d
135 mm	16w6d	15w6d	18w0d
140 mm	17w2d	16w1d	18w3d
145 mm	17w5d	16w4d	18w6d
150 mm	18w1d	17w0d	19w2d
155 mm	18w3d	17w2d	19w5d
160 mm	18w6d	17w5d	20w1d
165 mm	19w2d	18w0d	20w4d
170 mm	19w5d	18w3d	21w0d
175 mm	20w0d	18w5d	21w3d
180 mm	20w3d	19w1d	21w6d
185 mm	20w6d	19w3d	22w2d
190 mm	21w2d	19w6d	22w6d
195 mm	21w5d	20w1d	23w2d
200 mm	22w0d	20w4d	23w5d
205 mm	22w3d	20w6d	24w1d
210 mm	22w6d	21w2d	24w4d
215 mm	23w2d	21w5d	25w0d



HC (mm)	GA (wd)	5%	95%
220 mm	23w5d	22w0d	25w4d
225 mm	24w1d	22w3d	26w0d
230 mm	24w4d	22w6d	26w3d
235 mm	25w0d	23w1d	27w0d
240 mm	25w3d	23w4d	27w3d
245 mm	25w6d	24w0d	28w0d
250 mm	26w3d	24w3d	28w3d
255 mm	26w6d	24w6d	29w0d
260 mm	27w3d	25w2d	29w4d
265 mm	27w6d	25w5d	30w1d
270 mm	28w3d	26w2d	30w5d
275 mm	29w0d	26w5d	31w2d
280 mm	29w4d	27w2d	32w0d
285 mm	30w1d	27w5d	32w4d
290 mm	30w5d	28w2d	33w2d
295 mm	31w2d	28w6d	34w0d
300 mm	32w0d	29w3d	34w5d
305 mm	32w5d	30w0d	35w3d
310 mm	33w3d	30w5d	36w2d
315 mm	34w1d	31w2d	37w1d
320 mm	34w6d	32w0d	38w0d
325 mm	35w5d	32w5d	38w6d

## GA by HC - Hadlock1984

**Name:** Hadlock 1984

**Author:** Hadlock

**Year:** 1984

**Reference:** Hadlock F.P, Deter R.L, Harrist R.B. and Park S.K, Estimating fetal age: computer-assisted analysis of multiple fetal growth parameters, Radiology,152, pp 497-501, 1984

**Comments:**

HC (cm)	GA (week)	+/-2 SD
6.8 cm	12.7263 weeks	1.19 weeks
7.5 cm	13.1366 weeks	1.19 weeks
8.2 cm	13.5534 weeks	1.19 weeks
8.9 cm	13.9775 weeks	1.19 weeks
9.7 cm	14.4718 weeks	1.19 weeks
10.4 cm	14.9135 weeks	1.19 weeks
11 cm	15.2993 weeks	1.19 weeks
11.7 cm	15.7585 weeks	1.19 weeks
12.4 cm	16.228 weeks	1.19 weeks
13.1 cm	16.7084 weeks	1.19 weeks
13.8 cm	17.2004 weeks	1.19 weeks
14.4 cm	17.6318 weeks	1.19 weeks
15.1 cm	18.1469 weeks	1.48 weeks
15.8 cm	18.6753 weeks	1.48 weeks
16.4 cm	19.1393 weeks	1.48 weeks
17 cm	19.6139 weeks	1.48 weeks
17.7 cm	20.1816 weeks	1.48 weeks
18.3 cm	20.6805 weeks	1.48 weeks
18.9 cm	21.1914 weeks	1.48 weeks
19.5 cm	21.7145 weeks	1.48 weeks
20.1 cm	22.2502 weeks	1.48 weeks
20.7 cm	22.7989 weeks	1.48 weeks
21.3 cm	23.3611 weeks	1.48 weeks
21.9 cm	23.937 weeks	1.48 weeks
22.4 cm	24.4278 weeks	2.06 weeks
23 cm	25.0301 weeks	2.06 weeks
23.5 cm	25.5434 weeks	2.06 weeks
24.1 cm	26.1733 weeks	2.06 weeks
24.6 cm	26.7101 weeks	2.06 weeks
25.1 cm	27.258 weeks	2.06 weeks
25.6 cm	27.8172 weeks	2.06 weeks
26.1 cm	28.3879 weeks	2.06 weeks

HC (cm)	GA (week)	+/-2 SD
26.6 cm	28.9703 weeks	2.06 weeks
27.1 cm	29.5648 weeks	2.06 weeks
27.5 cm	30.0491 weeks	2.06 weeks
28 cm	30.6656 weeks	2.06 weeks
28.4 cm	31.1679 weeks	2.98 weeks
28.8 cm	31.6784 weeks	2.98 weeks
29.3 cm	32.3281 weeks	2.98 weeks
29.7 cm	32.8574 weeks	2.98 weeks
30.1 cm	33.3953 weeks	2.98 weeks
30.4 cm	33.8043 weeks	2.98 weeks
30.8 cm	34.3574 weeks	2.98 weeks
31.2 cm	34.9194 weeks	2.98 weeks
31.5 cm	35.3468 weeks	2.98 weeks
31.8 cm	35.7792 weeks	2.98 weeks
32.2 cm	36.3639 weeks	2.98 weeks
32.5 cm	36.8084 weeks	2.98 weeks
32.8 cm	37.2583 weeks	3.2 weeks
33 cm	37.5611 weeks	3.2 weeks
33.3 cm	38.0198 weeks	3.2 weeks
33.5 cm	38.3286 weeks	3.2 weeks
33.8 cm	38.7963 weeks	3.2 weeks
34 cm	39.1112 weeks	3.2 weeks
34.2 cm	39.4285 weeks	3.2 weeks
34.4 cm	39.7483 weeks	3.2 weeks
34.6 cm	40.0705 weeks	3.2 weeks
34.8 cm	40.3953 weeks	3.2 weeks
35 cm	40.7225 weeks	3.2 weeks
35.2 cm	41.0523 weeks	3.2 weeks
35.4 cm	41.3846 weeks	3.2 weeks
35.6 cm	41.7194 weeks	3.2 weeks
35.8 cm	42.0568 weeks	3.2 weeks
36 cm	42.3968 weeks	3.2 weeks

## GA by HC - Hansmann 1986

**Name:** Hansmann\_1986

**Author:** Hansmann

**Year:** 1986

**Reference:** Hansmann, Hackeloer, Staudach and Wittman, Ultrasound Diagnosis in Obstetrics and Gynecology, Springer-Verlag, New York, 1986

**Comments:**

HC (cm)	GA (week)
10.6 cm	14 weeks
11.5 cm	15 weeks
12.7 cm	16 weeks
14 cm	17 weeks
15.2 cm	18 weeks
16.4 cm	19 weeks
17.6 cm	20 weeks
19 cm	21 weeks
20.3 cm	22 weeks
21.5 cm	23 weeks
22.6 cm	24 weeks
24 cm	25 weeks
25.1 cm	26 weeks
26.3 cm	27 weeks
27.4 cm	28 weeks
28.4 cm	29 weeks
29.3 cm	30 weeks
30.3 cm	31 weeks
31.1 cm	32 weeks
31.8 cm	33 weeks
32.5 cm	34 weeks
33.2 cm	35 weeks
33.7 cm	36 weeks

HC (cm)	GA (week)
34 cm	37 weeks
34.4 cm	38 weeks
34.7 cm	39 weeks
34.9 cm	40 weeks

## GA by HC - ISUOG\_Leung2008

**Name:** ISUOG Leung 2008

**Author:** ISUOG\_Leung

**Year:** 2008

**Reference:** "Fetal biometry in ethnic Chinese: biparietal diameter, head circumference, abdominal circumference and femur length. T. N. LEUNG, M. W. PANG, S. S. DALJIT, T. Y. LEUNG, C. F. POON, S. M. WONG and T. K. LAU. Fetal Medicine Unit, Department of Obstetrics and Gynaecology, The Chinese University of Hong Kong, The Prince of Wales Hospital, Hong Kong"

**Comments:**

Input parameter: HC (cm)

Min limit: 6.19137

Max limit: 33.8651

Output: Gest Age (week)

Equation:

$$6.395595+0.966476*_{\text{HC}}-0.019933*_{\text{HC}}^2+0.00059*_{\text{HC}}^3$$

## GA by HC - Merz1988

**Name:** Merz 1988

**Author:** Merz

**Year:** 1988

**Reference:** Merz E, Goldhofer W and Timor-Tritsch E , Ultrasound in Gynecology and Obstetrics, Textbook and Atlas, Georg Thieme Verlag , 1991

**Comments:** From Merz E, Habilitationsschrift, Mainz University Woman's Hospital, 1988

HC (mm)	GA (wd)	5%	95%
72 mm	12w1d	11w0d	13w1d
74 mm	12w2d	11w1d	13w4d
76 mm	12w3d	11w1d	13w4d
78 mm	12w4d	11w2d	13w5d
80 mm	12w5d	11w4d	13w6d
82 mm	12w6d	11w4d	14w0d
84 mm	12w6d	11w5d	14w1d
86 mm	13w1d	11w6d	14w2d
88 mm	13w1d	12w0d	14w3d
90 mm	13w2d	12w1d	14w4d
92 mm	13w4d	12w2d	14w5d
94 mm	13w4d	12w3d	14w6d
96 mm	13w5d	12w4d	14w6d
98 mm	13w6d	12w5d	15w1d
100 mm	14w0d	12w6d	15w1d
102 mm	14w1d	12w6d	15w4d
104 mm	14w2d	13w0d	15w4d
106 mm	14w3d	13w1d	15w5d
108 mm	14w4d	13w2d	15w6d
110 mm	14w5d	13w3d	16w0d
112 mm	14w6d	13w4d	16w1d
114 mm	15w0d	13w5d	16w2d
116 mm	15w1d	13w6d	16w3d
118 mm	15w2d	14w0d	16w4d
120 mm	15w3d	14w1d	16w5d
122 mm	15w4d	14w1d	17w0d
124 mm	15w5d	14w2d	17w1d

HC (mm)	GA (wd)	5%	95%
126 mm	15w6d	14w3d	17w1d
128 mm	16w0d	14w4d	17w3d
130 mm	16w1d	14w5d	17w4d
132 mm	16w2d	14w6d	17w5d
134 mm	16w3d	15w0d	17w6d
136 mm	16w4d	15w1d	18w0d
138 mm	16w5d	15w2d	18w1d
140 mm	16w6d	15w4d	18w2d
142 mm	17w0d	15w4d	18w3d
144 mm	17w1d	15w6d	18w4d
146 mm	17w2d	15w6d	18w5d
148 mm	17w4d	16w0d	19w0d
150 mm	17w4d	16w1d	19w1d
152 mm	17w6d	16w2d	19w2d
154 mm	17w6d	16w3d	19w3d
156 mm	18w1d	16w4d	19w4d
158 mm	18w1d	16w5d	19w5d
160 mm	18w3d	16w6d	19w6d
162 mm	18w4d	17w0d	20w0d
164 mm	18w5d	17w1d	20w1d
166 mm	18w6d	17w2d	20w2d
168 mm	19w0d	17w4d	20w4d
170 mm	19w1d	17w4d	20w4d
172 mm	19w2d	17w6d	20w6d
174 mm	19w3d	17w6d	20w6d
176 mm	19w4d	18w0d	21w1d
178 mm	19w6d	18w1d	21w3d
180 mm	19w6d	18w2d	21w4d
182 mm	20w1d	18w4d	21w5d
184 mm	20w1d	18w4d	21w6d
186 mm	20w3d	18w6d	22w0d
188 mm	20w4d	19w0d	22w1d

HC (mm)	GA (wd)	5%	95%
190 mm	20w5d	19w1d	22w2d
192 mm	20w6d	19w2d	22w4d
194 mm	21w1d	19w4d	22w5d
196 mm	21w1d	19w4d	22w6d
198 mm	21w3d	19w5d	23w0d
200 mm	21w4d	19w6d	23w2d
202 mm	21w5d	20w0d	23w3d
204 mm	21w6d	20w1d	23w4d
206 mm	22w1d	20w3d	23w6d
208 mm	22w1d	20w4d	23w6d
210 mm	22w3d	20w5d	24w1d
212 mm	22w4d	20w6d	24w2d
214 mm	22w5d	21w0d	24w3d
216 mm	22w6d	21w1d	24w4d
218 mm	23w1d	21w3d	24w6d
220 mm	23w2d	21w4d	25w0d
222 mm	23w4d	21w6d	25w1d
224 mm	23w4d	21w6d	25w2d
226 mm	23w6d	22w1d	25w4d
228 mm	24w0d	22w1d	25w6d
230 mm	24w1d	22w3d	26w0d
232 mm	24w3d	22w4d	26w1d
234 mm	24w4d	22w5d	26w2d
236 mm	24w5d	22w6d	26w4d
238 mm	24w6d	23w1d	26w5d
240 mm	25w1d	23w2d	26w6d
242 mm	25w2d	23w4d	27w1d
244 mm	25w4d	23w5d	27w2d
246 mm	25w5d	23w6d	27w4d
248 mm	25w6d	24w1d	27w5d
250 mm	26w0d	24w1d	27w6d
252 mm	26w1d	24w3d	28w0d



HC (mm)	GA (wd)	5%	95%
254 mm	26w3d	24w4d	28w1d
256 mm	26w4d	24w6d	28w3d
258 mm	26w6d	25w0d	28w4d
260 mm	27w0d	25w1d	28w6d
262 mm	27w1d	25w3d	29w0d
264 mm	27w3d	25w4d	29w1d
266 mm	27w4d	25w6d	29w3d
268 mm	27w6d	26w0d	29w4d
270 mm	28w1d	26w1d	30w0d
272 mm	28w2d	26w3d	30w1d
274 mm	28w4d	26w4d	30w3d
276 mm	28w5d	26w6d	30w4d
278 mm	28w6d	27w0d	30w6d
280 mm	29w1d	27w1d	31w0d
282 mm	29w2d	27w3d	31w1d
284 mm	29w4d	27w5d	31w4d
286 mm	29w6d	27w6d	31w5d
288 mm	30w0d	28w1d	31w6d
290 mm	30w1d	28w2d	32w1d
292 mm	30w4d	28w4d	32w3d
294 mm	30w5d	28w6d	32w4d
296 mm	30w6d	29w0d	32w6d
298 mm	31w1d	29w1d	33w0d
300 mm	31w3d	29w3d	33w3d
302 mm	31w4d	29w4d	33w4d
304 mm	31w6d	29w6d	33w6d
306 mm	32w1d	30w1d	34w1d
308 mm	32w2d	30w2d	34w2d
310 mm	32w4d	30w4d	34w4d
312 mm	32w6d	30w6d	34w6d
314 mm	33w1d	31w1d	35w1d
316 mm	33w3d	31w3d	35w3d

HC (mm)	GA (wd)	5%	95%
318 mm	33w4d	31w4d	35w4d
320 mm	33w6d	31w6d	36w0d
322 mm	34w1d	32w0d	36w1d
324 mm	34w3d	32w2d	36w4d
326 mm	34w5d	32w4d	36w6d
328 mm	34w6d	32w6d	37w0d
330 mm	35w1d	33w1d	37w2d
332 mm	35w4d	33w2d	37w5d
334 mm	35w6d	33w4d	38w0d
336 mm	36w1d	33w6d	38w2d
338 mm	36w3d	34w1d	38w4d
340 mm	36w4d	34w3d	38w6d
342 mm	36w6d	34w5d	39w1d
344 mm	37w1d	35w0d	39w3d
346 mm	37w4d	35w2d	39w5d
348 mm	37w6d	35w4d	40w1d
350 mm	38w1d	35w6d	40w4d
352 mm	38w4d	36w1d	40w6d
354 mm	38w6d	36w4d	41w1d
356 mm	39w1d	36w6d	41w3d
358 mm	39w4d	37w1d	41w6d
360 mm	39w6d	37w4d	42w1d
362 mm	40w1d	37w6d	42w3d
364 mm	40w4d	38w1d	42w6d

## Humerus Length (GA by HL)

### GA by HL - ASUM2000

Name: ASUM 2000

**Author:** ASUM

**Year:** 2000

**Reference:** ASUM and Campbell Westerway S , Ultrasonic fetal Measurement Standards for an Australian Population, ASUM, 2003

**Comments:**

Input parameter: HL (mm)

Min limit: 8

Max limit: 68

Output: GA (week)

Equation:

$$0.406 * \text{__HL} - 0.002804 * \text{__HL} * \text{__HL} + 0.0000563 * \text{__HL} * \text{__HL} * \text{__HL} + 8.411$$

## GA by HL - Jeanty1984

**Name:** Jeanty 1984

**Author:** Jeanty

**Year:** 1984

**Reference:** Estimation of Gestational Age from Measurements of Fetal Long Bones, Jeanty et al., February 1984, J Ultrasound Med

**Comments:**

Input parameter: HL (mm)

Min limit: 10

Max limit: 69

Output: Gest Age (week)

Equation:

$$9.6519438 + (0.26200391 * \text{__HL}) + (0.0026105367 * \text{__HL}^2)$$

# GA by HL - Osaka 1989

**Name:** Osaka 1989

**Author:** Osaka

**Year:** 1989

**Reference:** Osaka University, Perinatal Care, vol.9, no 5, pp 407-422.

**Comments:**

Humerus Length (cm)	Gest Age (week)	+/-1 SD
1.01 cm	13 weeks	0.2 week
1.31 cm	14 weeks	0.21 week
1.59 cm	15 weeks	0.21 week
1.87 cm	16 weeks	0.21 week
2.15 cm	17 weeks	0.22 week
2.41 cm	18 weeks	0.22 week
2.67 cm	19 weeks	0.22 week
2.91 cm	20 weeks	0.23 week
3.15 cm	21 weeks	0.23 week
3.38 cm	22 weeks	0.23 week
3.61 cm	23 weeks	0.24 week
3.82 cm	24 weeks	0.24 week
4.03 cm	25 weeks	0.24 week
4.23 cm	26 weeks	0.25 week
4.42 cm	27 weeks	0.25 week
4.6 cm	28 weeks	0.25 week
4.78 cm	29 weeks	0.26 week
4.94 cm	30 weeks	0.26 week
5.1 cm	31 weeks	0.26 week
5.25 cm	32 weeks	0.27 week
5.39 cm	33 weeks	0.27 week
5.53 cm	34 weeks	0.27 week
5.65 cm	35 weeks	0.28 week
5.77 cm	36 weeks	0.28 week
5.88 cm	37 weeks	0.28 week

Humerus Length (cm)	Gest Age (week)	+/-1 SD
5.98 cm	38 weeks	0.29 week
6.08 cm	39 weeks	0.29 week
6.16 cm	40 weeks	0.29 week

## Occipito-Frontal Diameter (GA by OFD)

### GA by OFD - ASUM2000

**Name:** ASUM 2000

**Author:** ASUM

**Year:** 2000

**Reference:** ASUM and Campbell Westerway S , Ultrasonic fetal Measurement Standards for an Australian Population, ASUM, 2003

**Comments:**

Input parameter: OFD (mm)

Min limit: 21

Max limit: 122

Output: Gest Age (week)

Equation:

$$0.381 * \_OFD - 0.00344 * \_OFD * \_OFD + 0.00002298 * \_OFD * \_OFD * \_OFD + 4.189$$

### GA by OFD - Hansmann1986

**Name:** Hansmann\_1986

**Author:** Hansmann

**Year:** 1986

**Reference:** Hansmann, Hackeloer, Staudach and Wittman, *Ultrasound Diagnosis in Obstetrics and Gynecology*, Springer-Verlag, New York, 1986

**Comments:**

OFD (cm)	GA (week)
3.1 cm	14 weeks
3.8 cm	15 weeks
4.1 cm	16 weeks
4.6 cm	17 weeks
5 cm	18 weeks
5.4 cm	19 weeks
5.8 cm	20 weeks
6.3 cm	21 weeks
6.7 cm	22 weeks
7.2 cm	23 weeks
7.6 cm	24 weeks
8 cm	25 weeks
8.4 cm	26 weeks
8.8 cm	27 weeks
9.1 cm	28 weeks
9.5 cm	29 weeks
9.8 cm	30 weeks
10 cm	31 weeks
10.3 cm	32 weeks
10.5 cm	33 weeks
10.7 cm	34 weeks
10.9 cm	35 weeks
11.1 cm	36 weeks
11.2 cm	37 weeks
11.3 cm	38 weeks
11.4 cm	39 weeks
11.5 cm	40 weeks

# Trans-Abdominal Diameter (GA by TAD)

## GA by TAD - CFEF2000

**Name:** CFEF 2000

**Author:** CFEF

**Year:** 2000

**Reference:** Crequat J, Duyme M and Brodaty G, Fetal growth charts by the French College of fetal ultrasonography and the Inserm U 155 , Biometry 2000, 28, pp 435-455, 2000

**Comments:** <http://cfef.org/>

TAD (mm)	GA (week)
13.5 mm	11 weeks
17 mm	12 weeks
20.56 mm	13 weeks
24 mm	14 weeks
27.69 mm	15 weeks
31.21 mm	16 weeks
34.7 mm	17 weeks
38.31 mm	18 weeks
41.69 mm	19 weeks
45.21 mm	20 weeks
48.34 mm	21 weeks
51.57 mm	22 weeks
54.72 mm	23 weeks
57.88 mm	24 weeks
61 mm	25 weeks
64 mm	26 weeks
67.11 mm	27 weeks
70.27 mm	28 weeks
73.27 mm	29 weeks

TAD (mm)	GA (week)
76.17 mm	30 weeks
79.25 mm	31 weeks
82.1 mm	32 weeks
84.78 mm	33 weeks
87.55 mm	34 weeks
90 mm	35 weeks
92.36 mm	36 weeks
94.81 mm	37 weeks
97 mm	38 weeks
99.33 mm	39 weeks
101.64 mm	40 weeks
103 mm	41 weeks

## Transverse Cerebellar Diameter (GA by TCD)

### GA by TCD - Hill1990

**Name:** Hill 1990 GA by TCD

**Author:** Hill

**Year:** 1990

**Reference:** HILL, LYNDON M., GUZICK, DAVID, FRIES, JOANNE, et al. The transverse cerebellar diameter in estimating gestational age in the large for gestational age fetus. *Obstetrics and Gynecology*, 1990, vol. 75, no 6, p. 981-985.

**Comments:**

Transverse Cerebellar Diameter (cm)	Gest Age (wd)	+/-2 SD
1.4 cm	15w1d	0w4d
1.5 cm	15w6d	0w4d



Transverse Cerebellar Diameter (cm)	Gest Age (wd)	+/-2 SD
1.6 cm	16w4d	0w4d
1.7 cm	17w1d	0w4d
1.8 cm	17w6d	0w4d
1.9 cm	18w4d	0w6d
2 cm	19w2d	0w6d
2.1 cm	20w0d	0w6d
2.2 cm	20w5d	0w6d
2.3 cm	21w3d	0w6d
2.4 cm	22w1d	0w6d
2.5 cm	22w6d	0w6d
2.6 cm	23w4d	0w6d
2.7 cm	24w1d	1w0d
2.8 cm	24w6d	1w0d
2.9 cm	25w4d	1w0d
3 cm	26w1d	1w0d
3.1 cm	26w6d	1w0d
3.2 cm	27w4d	1w0d
3.3 cm	28w1d	1w0d
3.4 cm	28w6d	1w0d
3.5 cm	29w3d	1w0d
3.6 cm	30w0d	1w1d
3.7 cm	30w4d	1w1d
3.8 cm	31w1d	1w1d
3.9 cm	31w6d	1w1d
4 cm	32w2d	1w1d
4.1 cm	32w6d	1w1d
4.2 cm	33w3d	1w1d
4.3 cm	33w6d	1w1d
4.4 cm	34w3d	1w1d
4.5 cm	34w6d	1w1d
4.6 cm	35w2d	1w1d

Transverse Cerebellar Diameter (cm)	Gest Age (wd)	+/-2 SD
4.7 cm	35w5d	1w1d
4.8 cm	36w1d	1w4d
4.9 cm	36w4d	1w4d
5 cm	36w6d	1w4d
5.1 cm	37w1d	1w4d
5.2 cm	37w4d	1w4d
5.4 cm	38w0d	1w4d
5.5 cm	38w2d	1w4d
5.6 cm	38w4d	1w4d

## Tibia (GA by TIB)

### GA by TIB - Jeanty1984

**Name:** Jeanty 1984

**Author:** Jeanty

**Year:** 1984

**Reference:** Estimation of Gestational Age from Measurements of Fetal Long Bones, Jeanty et al., February 1984, J Ultrasound Med

**Comments:**

Input parameter: TIB (mm)

Min limit: 10

Max limit: 69

Output: Gest Age (week)

Equation:

$$10.055043+(0.31317668*\_TIB)+(0.0016814056*\_TIB^2)$$

# Transverse Thoracic Diameter (GA by TTD)

## GA by TTD - Hansmann 1986

**Name:** Hansmann\_1986

**Author:** Hansmann

**Year:** 1986

**Reference:** Hansmann, Hackeloer, Staudach and Wittman, Ultrasound Diagnosis in Obstetrics and Gynecology, Springer-Verlag, New York, 1986

**Comments:**

TTD (cm)	GA (week)
1.7 cm	12 weeks
2 cm	13 weeks
2.4 cm	14 weeks
2.7 cm	15 weeks
3.1 cm	16 weeks
3.4 cm	17 weeks
3.7 cm	18 weeks
4 cm	19 weeks
4.4 cm	20 weeks
4.7 cm	21 weeks
5 cm	22 weeks
5.3 cm	23 weeks
5.6 cm	24 weeks
5.9 cm	25 weeks
6.2 cm	26 weeks
6.5 cm	27 weeks
6.9 cm	28 weeks
7.2 cm	29 weeks

TTD (cm)	GA (week)
7.4 cm	30 weeks
7.8 cm	31 weeks
8.1 cm	32 weeks
8.3 cm	33 weeks
8.6 cm	34 weeks
8.9 cm	35 weeks
9.2 cm	36 weeks
9.4 cm	37 weeks
9.7 cm	38 weeks
9.9 cm	39 weeks
10.1 cm	40 weeks

## Ulna (GA by ULNA)

### GA by TTD - Hansmann1986

**Name:** Hansmann\_1986

**Author:** Hansmann

**Year:** 1986

**Reference:** Hansmann, Hackeloer, Staudach and Wittman, Ultrasound Diagnosis in Obstetrics and Gynecology, Springer-Verlag, New York, 1986

**Comments:**

TTD (cm)	GA (week)
1.7 cm	12 weeks
2 cm	13 weeks
2.4 cm	14 weeks
2.7 cm	15 weeks
3.1 cm	16 weeks
3.4 cm	17 weeks

<b>TTD (cm)</b>	<b>GA (week)</b>
3.7 cm	18 weeks
4 cm	19 weeks
4.4 cm	20 weeks
4.7 cm	21 weeks
5 cm	22 weeks
5.3 cm	23 weeks
5.6 cm	24 weeks
5.9 cm	25 weeks
6.2 cm	26 weeks
6.5 cm	27 weeks
6.9 cm	28 weeks
7.2 cm	29 weeks
7.4 cm	30 weeks
7.8 cm	31 weeks
8.1 cm	32 weeks
8.3 cm	33 weeks
8.6 cm	34 weeks
8.9 cm	35 weeks
9.2 cm	36 weeks
9.4 cm	37 weeks
9.7 cm	38 weeks
9.9 cm	39 weeks
10.1 cm	40 weeks



# **3 Estimated Fetal Weight Equation and Tables**





# Gestational Age (EFW by GA)

## EFW by GA - CFEF2014

**Name:** CFEF 2014

**Author:** CFEF

**Year:** 2014

**Reference:** Courbe d'estimation de poids foetal 2014 par le CFEF - Janvier 2015 - Massoud M., Duyme M., Fontanges M., Collège Français d'Echographie Foetale (CFEF), Combourieu D. - Journal de Gynécologie Obstétrique et Biologie de la Reproduction - Accepté le 15 janvier 2015.

**Comments:**

GA (week)	EFW (g)	3%	10%	90%	97%
17 weeks	182.04 g	148.35 g	159.1 g	204.98 g	215.72 g
18 weeks	242.75 g	202.89 g	215.61 g	269.9 g	282.62 g
19 weeks	299.47 g	251.15 g	266.57 g	332.37 g	347.79 g
20 weeks	356.66 g	297.62 g	316.46 g	396.86 g	415.71 g
21 weeks	418.22 g	346.17 g	369.16 g	467.27 g	490.26 g
22 weeks	487.39 g	400.08 g	427.94 g	546.84 g	574.7 g
23 weeks	566.84 g	461.98 g	495.45 g	638.23 g	671.69 g
24 weeks	658.6 g	533.93 g	573.72 g	743.48 g	783.27 g
25 weeks	764.1 g	617.35 g	664.18 g	864.01 g	910.85 g
26 weeks	884.16 g	713.05 g	767.66 g	1000.65 g	1055.26 g
27 weeks	1018.97 g	821.24 g	884.34 g	1153.6 g	1216.71 g
28 weeks	1168.15 g	941.51 g	1013.84 g	1322.45 g	1394.78 g
29 weeks	1330.66 g	1072.85 g	1155.13 g	1506.19 g	1588.47 g
30 weeks	1504.87 g	1213.62 g	1306.57 g	1703.17 g	1796.13 g
31 weeks	1688.55 g	1361.58 g	1465.93 g	1911.17 g	2015.52 g
32 weeks	1878.84 g	1513.89 g	1630.36 g	2127.32 g	2243.8 g
33 weeks	2072.28 g	1667.06 g	1796.39 g	2348.17 g	2477.49 g
34 weeks	2264.78 g	1817.03 g	1959.93 g	2569.63 g	2712.53 g

GA (week)	EFW (g)	3%	10%	90%	97%
35 weeks	2451.66 g	1959.12 g	2116.31 g	2787.02 g	2944.21 g
36 weeks	2627.63 g	2088 g	2260.22 g	2995.03 g	3167.25 g
37 weeks	2786.76 g	2197.79 g	2385.76 g	3187.76 g	3375.73 g
38 weeks	2922.53 g	2281.95 g	2486.39 g	3358.68 g	3563.12 g

## EFW by GA - CFEF\_Massoud2015

**Name:** CFEF Massoud 2015

**Author:** CFEF\_Massoud

**Year:** 2015

**Reference:** Massoud M, et al. Courbe destination de poids fetal 2014 par le Colle\_ge fran \_cais de\_chographie fetale (CFEF). J Gynecol Obstet Biol Reprod (Paris) (2015), <http://dx.doi.org/10.1016/j.jgyn.2015.01.006>

**Comments:** Rev 1

Gest Age (week)	EFW (g)	3%	10%	90%	97%
17 weeks	182.036 g	148.352 g	159.102 g	204.971 g	215.721 g
18 weeks	242.752 g	202.885 g	215.609 g	269.895 g	282.619 g
19 weeks	299.465 g	251.144 g	266.565 g	332.364 g	347.786 g
20 weeks	356.661 g	297.614 g	316.459 g	396.863 g	415.707 g
21 weeks	418.215 g	346.17 g	369.163 g	467.266 g	490.259 g
22 weeks	487.39 g	400.076 g	427.942 g	546.837 g	574.703 g
23 weeks	566.837 g	461.982 g	495.447 g	638.228 g	671.692 g
24 weeks	658.597 g	533.929 g	573.717 g	743.477 g	783.265 g
25 weeks	764.097 g	617.345 g	664.181 g	864.014 g	910.85 g
26 weeks	884.154 g	713.046 g	767.655 g	1000.65 g	1055.26 g
27 weeks	1018.97 g	821.236 g	884.344 g	1153.6 g	1216.71 g
28 weeks	1168.15 g	941.509 g	1013.84 g	1322.45 g	1394.78 g
29 weeks	1330.66 g	1072.85 g	1155.13 g	1506.19 g	1588.46 g
30 weeks	1504.87 g	1213.62 g	1306.57 g	1703.17 g	1796.12 g

Gest Age (week)	EFW (g)	3%	10%	90%	97%
31 weeks	1688.55 g	1361.58 g	1465.93 g	1911.17 g	2015.52 g
32 weeks	1878.84 g	1513.88 g	1630.36 g	2127.32 g	2243.8 g
33 weeks	2072.28 g	1667.06 g	1796.38 g	2348.17 g	2477.49 g
34 weeks	2264.78 g	1817.03 g	1959.93 g	2569.63 g	2712.53 g
35 weeks	2451.66 g	1959.12 g	2116.31 g	2787.01 g	2944.21 g
36 weeks	2627.63 g	2088 g	2260.22 g	2995.03 g	3167.25 g
37 weeks	2786.76 g	2197.79 g	2385.76 g	3187.76 g	3375.73 g
38 weeks	2922.53 g	2281.95 g	2486.39 g	3358.68 g	3563.12 g

## EFW by GA - Doubilet1997

**Name:** Doubilet 1997

**Author:** Doubilet

**Year:** 1997

**Reference:** J Ultrasound Med. 1997 Apr

**Comments:**

GA (week)	EFW (g)	5%	10%	90%	95%
25 weeks	660 g	450 g	490 g	889 g	968 g
26 weeks	760 g	523 g	568 g	1016 g	1103 g
27 weeks	875 g	609 g	660 g	1160 g	1257 g
28 weeks	1005 g	707 g	765 g	1322 g	1430 g
29 weeks	1153 g	820 g	884 g	1504 g	1623 g
30 weeks	1319 g	947 g	1020 g	1706 g	1836 g
31 weeks	1502 g	1090 g	1171 g	1928 g	2070 g
32 weeks	1702 g	1249 g	1338 g	2167 g	2321 g
33 weeks	1918 g	1422 g	1519 g	2421 g	2587 g
34 weeks	2146 g	1608 g	1714 g	2687 g	2865 g
35 weeks	2383 g	1804 g	1919 g	2959 g	3148 g
36 weeks	2622 g	2006 g	2129 g	3230 g	3428 g
37 weeks	2859 g	2210 g	2340 g	3493 g	3698 g

GA (week)	EFW (g)	5%	10%	90%	95%
38 weeks	3083 g	2409 g	2544 g	3736 g	3947 g
39 weeks	3288 g	2595 g	2735 g	3952 g	4164 g
40 weeks	3462 g	2762 g	2904 g	4127 g	4340 g
41 weeks	3597 g	2900 g	3042 g	4254 g	4462 g
42 weeks	3685 g	3002 g	3142 g	4322 g	4523 g
43 weeks	3717 g	3061 g	3195 g	4324 g	4515 g

## EFW by GA - Hadlock1991

**Name:** Hadlock 1991

**Author:** Hadlock

**Year:** 1991

**Reference:** Hadlock FP1, Harrist RB, Martinez-Poyer J, In utero analysis of fetal growth: a sonographic weight standard, Radiology. 1991 Oct, 181(1):129-33.

**Comments:**

GA (week)	EFW (g)	3%	10%	90%	97%
10 weeks	35 g	26 g	29 g	41 g	44 g
11 weeks	45 g	34 g	37 g	53 g	56 g
12 weeks	58 g	43 g	48 g	68 g	73 g
13 weeks	73 g	55 g	61 g	85 g	91 g
14 weeks	93 g	70 g	77 g	109 g	116 g
15 weeks	117 g	88 g	97 g	137 g	146 g
16 weeks	146 g	110 g	121 g	171 g	183 g
17 weeks	181 g	136 g	150 g	212 g	226 g
18 weeks	223 g	167 g	185 g	261 g	279 g
19 weeks	273 g	205 g	227 g	319 g	341 g
20 weeks	331 g	248 g	275 g	387 g	414 g
21 weeks	399 g	299 g	331 g	467 g	499 g
22 weeks	478 g	359 g	398 g	559 g	598 g
23 weeks	568 g	426 g	471 g	665 g	710 g

GA (week)	EFW (g)	3%	10%	90%	97%
24 weeks	670 g	503 g	556 g	784 g	838 g
25 weeks	785 g	589 g	652 g	918 g	981 g
26 weeks	913 g	685 g	758 g	1068 g	1141 g
27 weeks	1055 g	791 g	876 g	1234 g	1319 g
28 weeks	1210 g	908 g	1004 g	1416 g	1513 g
29 weeks	1379 g	1034 g	1145 g	1613 g	1724 g
30 weeks	1559 g	1169 g	1294 g	1824 g	1946 g
31 weeks	1751 g	1313 g	1453 g	2049 g	2189 g
32 weeks	1953 g	1465 g	1621 g	2285 g	2441 g
33 weeks	2162 g	1622 g	1794 g	2530 g	2703 g
34 weeks	2377 g	1783 g	1973 g	2781 g	2971 g
35 weeks	2595 g	1946 g	2154 g	3036 g	3244 g
36 weeks	2813 g	2110 g	2335 g	3291 g	3516 g
37 weeks	3028 g	2271 g	2513 g	3543 g	3785 g
38 weeks	3236 g	2427 g	2686 g	3786 g	4045 g
39 weeks	3435 g	2576 g	2851 g	4019 g	4294 g
40 weeks	3619 g	2714 g	3004 g	4234 g	4524 g
41 weeks	3787 g	2840 g	3143 g	4431 g	4734 g
42 weeks	3934 g	2951 g	3265 g	4603 g	4918 g

## EFW by GA - Oken2003

**Name:** Oken 2003 - All (curve fit data)

**Author:** Oken

**Year:** 2003

**Reference:** BMC Pediatr. 2003, 3: 6. Published online 2003 Jul 8. doi: 10.1186/1471-2431-3-6 A nearly continuous measure of birth weight for gestational age using a United States national reference Emily Oken, Ken P Kleinman, Janet Rich-Edwards, and Matthew W Gillman

**Comments:** A mathematical curve fit for Oken z-scores is used rather than a direct look-up method. This is similar to approximations used for most standard percentile calculations (e.g. Hadlock). Oken percentiles are accurate at the anchor percentiles of 10th, 50th and 90th. There

may be a small difference from published values in-between the anchor percentiles, generally less than 5%, which is clinically acceptable and within the bounds of normal ultrasound measurements.

GA (week)	EFW (g)	3%	10%	90%	97%
22 weeks	510 g	304 g	373 g	764 g	1086 g
23 weeks	583 g	341 g	435 g	807 g	1123 g
24 weeks	653 g	391 g	483 g	907 g	1246 g
25 weeks	746 g	425 g	529 g	1021 g	1376 g
26 weeks	869 g	454 g	576 g	1235 g	1691 g
27 weeks	988 g	509 g	645 g	1431 g	1936 g
28 weeks	1134 g	557 g	726 g	1772 g	2292 g
29 weeks	1328 g	653 g	878 g	2240 g	2619 g
30 weeks	1541 g	766 g	1003 g	2641 g	2893 g
31 weeks	1809 g	931 g	1204 g	2958 g	3148 g
32 weeks	2095 g	1153 g	1444 g	3181 g	3402 g
33 weeks	2391 g	1354 g	1673 g	3374 g	3610 g
34 weeks	2629 g	1573 g	1928 g	3494 g	3788 g
35 weeks	2814 g	1809 g	2155 g	3603 g	3963 g
36 weeks	2966 g	2025 g	2354 g	3657 g	4030 g
37 weeks	3136 g	2257 g	2552 g	3770 g	4115 g
38 weeks	3301 g	2470 g	2750 g	3912 g	4229 g
39 weeks	3421 g	2609 g	2884 g	4025 g	4332 g
40 weeks	3509 g	2688 g	2962 g	4110 g	4411 g
41 weeks	3563 g	2717 g	3004 g	4166 g	4489 g
42 weeks	3514 g	2637 g	2924 g	4138 g	4478 g
43 weeks	3470 g	2599 g	2892 g	4082 g	4417 g
44 weeks	3479 g	2599 g	2897 g	4103 g	4421 g

## EFW by GA - Oken2003

**Name:** Oken 2003 - Females (curve fit data)

**Author:** Oken

**Year:** 2003

**Reference:** BMC Pediatr. 2003, 3: 6. Published online 2003 Jul 8. doi: 10.1186/1471-2431-3-6 A nearly continuous measure of birth weight for gestational age using a United States national reference Emily Oken, Ken P Kleinman, Janet Rich-Edwards, and Matthew W Gillman

**Comments:** A mathematical curve fit for Oken z-scores is used rather than a direct look-up method. This is similar to approximations used for most standard percentile calculations (e.g. Hadlock). Oken percentiles are accurate at the anchor percentiles of 10th, 50th and 90th. There may be a small difference from published values in-between the anchor percentiles, generally less than 5%, which is clinically acceptable and within the bounds of normal ultrasound measurements.

GA (week)	EFW (g)	3%	10%	90%	97%
22 weeks	482 g	299 g	362 g	736 g	1063 g
23 weeks	564 g	333 g	416 g	790 g	1105 g
24 weeks	626 g	371 g	470 g	880 g	1254 g
25 weeks	712 g	410 g	504 g	977 g	1337 g
26 weeks	835 g	439 g	556 g	1201 g	1684 g
27 weeks	947 g	501 g	622 g	1416 g	1951 g
28 weeks	1087 g	523 g	693 g	1762 g	2298 g
29 weeks	1286 g	626 g	845 g	2296 g	2648 g
30 weeks	1500 g	737 g	965 g	2659 g	2897 g
31 weeks	1777 g	924 g	1180 g	2977 g	3171 g
32 weeks	2061 g	1135 g	1390 g	3196 g	3402 g
33 weeks	2371 g	1326 g	1638 g	3345 g	3594 g
34 weeks	2597 g	1546 g	1872 g	3461 g	3755 g
35 weeks	2771 g	1756 g	2099 g	3559 g	3915 g
36 weeks	2904 g	1984 g	2299 g	3597 g	3955 g
37 weeks	3068 g	2209 g	2495 g	3685 g	4029 g
38 weeks	3232 g	2432 g	2694 g	3827 g	4137 g
39 weeks	3354 g	2573 g	2834 g	3936 g	4236 g
40 weeks	3441 g	2659 g	2919 g	4024 g	4316 g
41 weeks	3494 g	2687 g	2949 g	4082 g	4384 g
42 weeks	3451 g	2601 g	2893 g	4053 g	4380 g
43 weeks	3408 g	2572 g	2849 g	4003 g	4336 g

GA (week)	EFW (g)	3%	10%	90%	97%
44 weeks	3411 g	2564 g	2863 g	4025 g	4341 g

## EFW by GA - Oken2003

**Name:** Oken 2003 - Males (curve fit data)

**Author:** Oken

**Year:** 2003

**Reference:** BMC Pediatr. 2003, 3: 6. Published online 2003 Jul 8. doi: 10.1186/1471-2431-3-6 A nearly continuous measure of birth weight for gestational age using a United States national reference Emily Oken, Ken P Kleinman, Janet Rich-Edwards, and Matthew W Gillman

**Comments:** A mathematical curve fit for Oken z-scores is used rather than a direct look-up method. This is similar to approximations used for most standard percentile calculations (e.g. Hadlock). Oken percentiles are accurate at the anchor percentiles of 10th, 50th and 90th. There may be a small difference from published values in-between the anchor percentiles, generally less than 5%, which is clinically acceptable and within the bounds of normal ultrasound measurements.

GA (week)	EFW (g)	3%	10%	90%	97%
22 weeks	520 g	313 g	393 g	764 g	1086 g
23 weeks	597 g	353 g	453 g	822 g	1138 g
24 weeks	680 g	400 g	498 g	923 g	1263 g
25 weeks	771 g	456 g	554 g	1049 g	1394 g
26 weeks	898 g	466 g	594 g	1245 g	1684 g
27 weeks	1023 g	511 g	674 g	1442 g	1935 g
28 weeks	1170 g	585 g	766 g	1784 g	2287 g
29 weeks	1360 g	679 g	906 g	2183 g	2595 g
30 weeks	1577 g	796 g	1044 g	2617 g	2891 g
31 weeks	1834 g	931 g	1241 g	2947 g	3147 g
32 weeks	2115 g	1162 g	1475 g	3175 g	3401 g
33 weeks	2410 g	1381 g	1712 g	3373 g	3617 g
34 weeks	2658 g	1607 g	1957 g	3517 g	3799 g
35 weeks	2849 g	1841 g	2192 g	3639 g	3995 g



GA (week)	EFW (g)	3%	10%	90%	97%
36 weeks	3013 g	2071 g	2410 g	3705 g	4061 g
37 weeks	3193 g	2310 g	2609 g	3826 g	4170 g
38 weeks	3366 g	2524 g	2807 g	3968 g	4297 g
39 weeks	3489 g	2661 g	2947 g	4082 g	4399 g
40 weeks	3580 g	2745 g	3029 g	4166 g	4485 g
41 weeks	3636 g	2771 g	3063 g	4252 g	4561 g
42 weeks	3583 g	2682 g	2979 g	4224 g	4552 g
43 weeks	3537 g	2648 g	2949 g	4167 g	4477 g
44 weeks	3545 g	2650 g	2954 g	4167 g	4481 g

## Abdominal Circumference and Biparietal Diameter (EFW by AC, BPD)

### EFW by AC and BPD - Hadlock 1984

**Name:** Hadlock 1984 - EFW by AC and BPD

**Author:** Hadlock

**Year:** 1984

**Reference:** Hadlock F.P, Harrist R.B, Carpenter R.J, Deter R.L and Park S.K, Sonographic estimation of fetal weight. The value of femur length in addition to head and abdomen measurements, Radiology, 150, pp 535-540, 1984

**Comments:** Mean deviation +/- SD (%) 0.4 +/- 9.1

Input parameter: AC (cm)

Min limit: 4.6

Max limit: 38.1

Input parameter: BPD (cm)

Min limit: 1.7

Max limit: 10.2

Output: EFW 2 (g)

Equation:

$10^{(1.1134+0.05845* \text{ac}-0.000604* \text{ac}^2-0.007365* \text{bpd}^2+0.000595* \text{ac}^3+0.1694* \text{bpd})}$

## EFW by AC and BPD - Merz1991

**Name:** Merz 1991 - EFW by AC and BPD

**Author:** Merz

**Year:** 1991

**Reference:** Merz E, Goldhofer W and Timor-Tritsch E , Ultrasound in Gynecology and Obstetrics, Textbook and Atlas, Georg Thieme Verlag , 1991

**Comments:** From Merz E, Lieser H, Schicketanz KH and Härle J, Intrauterine fetal weight assessment using ultrasound. A comparison of several weight assessment methods and development of a new formula for the determination of fetal weight, Ultraschall Med, pp 15-24, 1988

Input parameter: AC (cm)

Min limit: 21

Max limit: 37

Input parameter: BPD (cm)

Min limit: 7

Max limit: 11

Output: EFW 2 (g)

Equation:

157.07186\*\_\_ac+15.90931\*\_\_bpd^2-3200.40479

## Abdominal Circumference, Biparietal Diameter and Femur Length (EFW by AC, BDP, FL)

### EFW by AC, BPD and FL - Hadlock1985

**Name:** Hadlock 1985 - EFW by AC, BPD and FL

**Author:** Hadlock

**Year:** 1985

**Reference:** Hadlock F.P, Harrist R.B, Sharman R.S, Deter R.L, Park S.K, Estimation of fetal weight with the use of head, body, and femur measurements--a prospective study, Am.J.Obstet.Gynecol., 151, pp 333-337, 1985

**Comments:** Mean deviation +/- SD (%) 0.3 +/- 7.5

Input parameter: AC (cm)

Min limit: 4.6

Max limit: 38.1

Input parameter: BPD (cm)

Min limit: 1.7

Max limit: 10.2

Input parameter: FL (cm)

Min limit: 0.7

Max limit: 8.3

Output: EFW 3 (g)

Equation:

$$10^{(1.335-0.0034*_{ac}*_{fl}+0.0316*_{bpd}+0.0457*_{ac}+0.1623*_{fl})}$$

## Abdominal Circumference, Biparietal Diameter, Femur Length and Head Circumference (EFW by AC, BDP, FL, HC)

### EFW by AC, BPD, FL and HC - Hadlock1985

**Name:** Hadlock 1985 - EFW by AC, BPD, FL and HC

**Author:** Hadlock

**Year:** 1985

**Reference:** Hadlock F.P, Harrist R.B, Sharman R.S, Deter R.L, Park S.K, Estimation of fetal weight with the use of head, body, and femur measurements--a prospective study, Am.J.Obstet.Gynecol., 151, pp 333-337, 1985

**Comments:** Mean deviation +/- SD (%) 0.1 +/- 7.4

Input parameter: AC (cm)

Min limit: 4.6

Max limit: 38.1

Input parameter: BPD (cm)

Min limit: 1.7

Max limit: 10.2

Input parameter: FL (cm)

Min limit: 0.7

Max limit: 8.3

Input parameter: HC (cm)

Min limit: 6.8

Max limit: 36

Output: EFW 4 (g)

Equation:

$$10^{(1.3596-0.00386*_{ac}*_{fl}+0.0064*_{hc}+0.00061*_{bpd}*_{ac}+0.0424*_{ac}+0.174*_{fl})}$$

## Abdominal Circumference and Femur Length (EFW by AC, FL)

### EFW by AC and FL - Hadlock1985

**Name:** Hadlock 1985 - EFW by AC and FL

**Author:** Hadlock

**Year:** 1985

**Reference:** Hadlock F.P, Harrist R.B, Sharman R.S, Deter R.L, Park S.K, Estimation of fetal weight with the use of head, body, and femur measurements--a prospective study, Am.J.Obstet.Gynecol., 151, pp 333-337, 1985

**Comments:** Mean deviation +/- SD (%) 0.3 +/- 8.0

Input parameter: AC (cm)

Min limit: 4.6

Max limit: 38.1

Input parameter: FL (cm)

Min limit: 0.7

Max limit: 8.3

Output: EFW 2 (g)

Equation:

$$10^{(1.304+0.05281* \_ac+0.1938* \_fl-0.004* \_ac* \_fl)}$$

## Abdominal Circumference, Femur Length and Head Circumference (EFW by AC, FL, HC)

### EFW by AC, FL and HC - Hadlock1985

**Name:** Hadlock 1985 - EFW by AC, FL and HC

**Author:** Hadlock

**Year:** 1985

**Reference:** Hadlock F.P, Harrist R.B, Sharman R.S, Deter R.L, Park S.K, Estimation of fetal weight with the use of head, body, and femur measurements--a prospective study, Am.J.Obstet.Gynecol., 151, pp 333-337, 1985

**Comments:** Mean deviation +/- SD (%) 0.0 +/- 7.5

Input parameter: AC (cm)

Min limit: 4.6

Max limit: 38.1

Input parameter: FL (cm)

Min limit: 0.7

Max limit: 8.3

Input parameter: HC (cm)

Min limit: 6.8

Max limit: 36

Output: EFW 3 (g)

Equation:

$$10^{(1.326-0.00326*_{ac}*_{fl}+0.0107*_{hc}+0.0438*_{ac}+0.158*_{fl})}$$

## Abdominal Circumference and Head Circumference (EFW by AC, HC)

### EFW by AC and HC - Hadlock 1984

**Name:** Hadlock 1984 - EFW by AC and HC

**Author:** Hadlock

**Year:** 1984

**Reference:** Hadlock F.P, Harrist R.B, Carpenter R.J, Deter R.L and Park S.K, Sonographic estimation of fetal weight. The value of femur length in addition to head and abdomen measurements, Radiology, 150, pp 535-540, 1984

**Comments:** Mean deviation +/- SD (%) 0.4 +/- 9.1

Input parameter: AC (cm)

Min limit: 4.6

Max limit: 38.1

Input parameter: HC (cm)

Min limit: 6.8

Max limit: 36

Output: EFW 2 (g)

Equation:

$$10^{(1.182+0.0273*_{\text{hc}}+0.07057*_{\text{ac}}-0.00063*_{\text{ac}}^2-0.0002184*_{\text{hc}}*_{\text{ac}})}$$

## Biparietal Diameter and Transverse Thoracic Diameter (EFW by BPD, TTD)

### EFW by BPD and TTD - Hansmann 1986

**Name:** Hansmann 1986 - EFW by BPD and TTD

**Author:** Hansmann

**Year:** 1986

**Reference:** Hansmann, Hackeloer, Staudach and Wittman, Ultrasound Diagnosis in Obstetrics and Gynecology, Springer-Verlag, New York, 1986

**Comments:** Mean deviation +/- SD (%) 15.8

Input parameter: BPD (cm)

Min limit: 6



Max limit: 10.9

Input parameter: TTD (cm)

Min limit: 4.9

Max limit: 12.1

Output: EFW 2 (kg)

Equation:

$$-1.05775 * \text{__bpd} + 0.649145 * \text{__ttd} + 0.0930707 * \text{__bpd}^2 - 0.020562 * \text{__ttd}^2 + 0.515263$$





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