

Growth Assessment: Weighing and Measuring WIC Participants

Self-Paced Training Guide

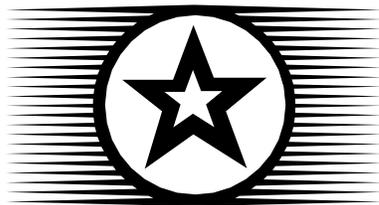
**Training and Technical Assistance
Division**

Bureau of Nutrition Services

Texas Department of Health

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TEXAS DEPARTMENT OF HEALTH



A WIC Training Guide

Texas Department of Health

Bureau of Nutrition Services

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The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is a food and nutrition program benefitting infants, children under age 5 and pregnant, postpartum and breastfeeding women with low to moderate incomes.

WIC is an equal opportunity program. If you believe you have been discriminated against because of race, color, national origin, age, sex or disability, immediately call the State WIC Office at 1-800-942-3678.

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Introduction

Welcome to the Weighing and Measuring Training Guide, which is one in a series of self-paced training guides. Self-paced learning allows you, the learner, to proceed through the subject matter and learning process at your own pace.

Each training guide includes questions and an answer key.

- The guide contains the subject matter and can be used as an on-the-job reference when you are finished.
- The exercises in the manual are questions and practical activities that reinforce learning.
- The answer key, which contains the answers to the end of chapter questions and physical activities, is located at the end of the training guide.

These guides address the steps in the process the WIC Program uses to certify applicants, and include the following:

1. Interviewing Skills
2. Screening for Eligibility
3. Weighing and Measuring WIC Participants
4. Testing for Hematocrit and Hemoglobin Values
5. Dietary History/Dietary Recall and Assessment
6. More About Risk Codes
7. Individual Counseling
8. WIC Food Packages and Food Issuance
9. Teaching WIC Nutrition Education Classes

This training guide is called Growth Assessment: Weighing and Measuring WIC Participants. The guide is to facilitate accurate and consistent weights and measurements of women, infants, and children and determining the Body Mass Index (BMI) for those two years of age and older. Measurements must be accurate for the following reasons:

1. Program Eligibility: Measurements are used in part to determine

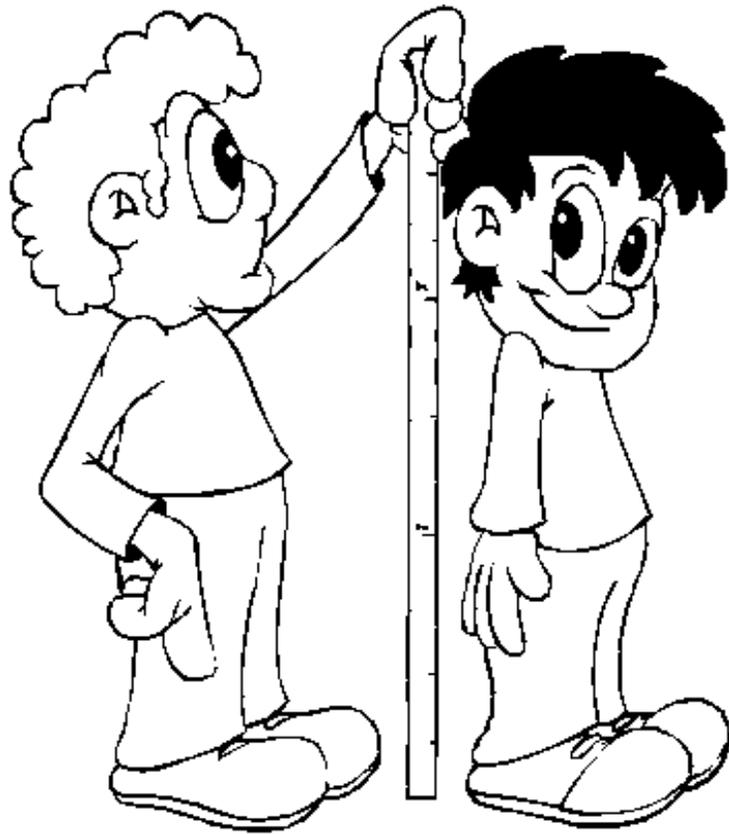
program eligibility

2. Counseling: Inaccurate growth assessments can lead to serious counseling errors.
3. Nutrition Surveillance and Planning: Measurement information is sent to the Center for Disease Control (CDC) and the United States Department of Agriculture (USDA) to be used for planning nutrition services.

The illustrations on page 23 are based upon photos from “How to Weigh and Measure Children,” by I. J. Sherr, UN, New York 1986.

Instructions

Read the information in this training guide and complete the questions at your own pace. When you have finished all the questions, your answers will be checked by your supervisor. Where there are incorrect answers, you will be asked to reread the section(s) to find the correct answer(s). If you answer the questions correctly, you may begin working on another training guide in the series.





Chapter 1: Why Do We Weigh and Measure Participants

The Objectives for this chapter are:

- Staff will recognize the reasons why WIC participants are weighed and measured.
- Staff will define anthropometry.
- Staff will list two forms of anthropometric measurements conducted by WIC.
- Staff will determine which participants are measured for height and which for length.

I. Why We Weigh and Measure

Obtaining weight and height measurements is mandated by Federal legislation in **7 CFR Part 246.7** for determining participant eligibility in the WIC Program. The measurements collected are known as anthropometric measures, which are part of the nutritional assessment procedure, and are a benefit of program participation. The purpose of weighing and measuring applicants is to:

- determine eligibility for WIC
- assess for nutritional risk
- provide appropriate food packages and nutrition education

Anthropometry

Anthropometry is the collection of physical measurements such as weight, height or length, head circumference, and body thickness. In WIC, height or length and weight are used to assess growth. For children younger than 24 months and infants, we measure their length. For adults and children 24 months and older, we obtain a height. For all participants, we weigh and measure using the proper equipment.

Height/length and weight are the best indicators of nutritional health.



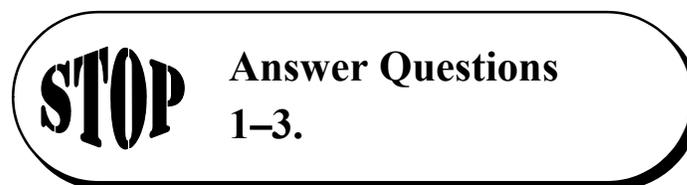
Repeated measurements can be compared and used to determine if a possible problem exists or if there is a trend for inappropriate growth and development (Whitney, 1996).

Use of Measurements

The use of anthropometric measures to assess growth is a vital part of the WIC Program, but only if they are accurate. Small errors in measuring can lead to big errors in assessment and counseling. This training guide will discuss fully the steps involved in obtaining accurate measurements:

1. Weigh and measure applicants/participants.
2. Plot measurements on appropriate growth chart.
3. Use a gestational wheel to determine estimated date of delivery and current week gestation for pregnant women.
4. Calculate and plot BMI for children two years of age and older.
5. Calculate “adjusted” and “chronological” age for infants/children born premature.
6. Assess growth information for eligibility and counseling purposes.
7. Assign the appropriate nutrition risk code, if applicable, indicated in the Anthropometric section of the participant form.
8. Share growth information with participants and/or caretakers.

This training guide will also cover measurement issues for non-standard situations.





Place a mark on the line next to the correct answer(s) to the questions.

1. Of the following, which are the reason(s) why we weigh and measure participants:
 - a. nutritional assessment and education
 - b. eligibility
 - c. appropriate benefits
 - d. all of the above

2. Height, length, and weight are all forms of _____ collected by the WIC staff.

3. Aida Lopez brings in her 20 month old daughter, Maria, for subsequent certification. In order to recertify her, the staff must obtain her weight and _____.





Chapter 2: Weighing and Measuring Equipment and Procedures

Most children and women can be measured using standard equipment and procedures. Those who cannot will be discussed in the Chapter 5 “Special Considerations.”

The Objectives for this chapter are:

- Staff will identify the correct equipment for weighing and measuring applicants.
- Staff will list the standard procedures for weighing and measuring applicants.
- Staff will identify two methods for determining BMI for applicants two years of age and older.

In order to ensure accurate and reliable measurements for identifying individuals at nutritional risk, Federal code **7 CFR Part 246.7** mandates the collection of applicant/participant measurements. Texas WIC policy states that each applicant/participant will be weighed and measured on standard equipment.

I. Weighing Participants

Weighing Equipment

Weight should be obtained using either a pediatric or adult beam-balance scale with non-detachable weights and a "zero-balance adjuster" (screw-type preferred).

Placement of Equipment

Pediatric beam balance scales should be placed on a sturdy table. Adult balance-beam scales should be placed on an uncarpeted floor, where possible. If the floor is carpeted, place the scale on a $\frac{3}{4}$ -inch-thick piece of plywood, plastic, acrylic, or Plexiglas® material.



Which Equipment to Use

1. Infants and children younger than 24 months of age* are to be weighed using a pediatric, table model beam-balance scale. Measurements should be readable to the nearest one-half ounce.
2. Women and children two years and older are to be weighed using an adult floor-model, beam-balance scale. Measurements should be readable to the nearest ounce.
3. Electronic digital scales may be used if they meet the following USDA guidelines:
 - a. Accuracy of measurements are within one-half ounce for pediatric scales, and within four ounces for adult scales.
 - b. The scale has a zero adjustment.
 - c. Measurements are accurate, with minimum error at both low and high ends of the scale range.
 - d. The scale provides measurement reproducibility (i.e. consistent readings).
 - e. The scale is durable and easy to maintain.

NOTE: Bathroom and other spring-type scales should NOT be used.

* If a child under the age of 24 months exceeds the weight limit for the pediatric scale, they can be weighed on an adult scale. For children who may not be able to stand on the adult scale, weigh the parent/guardian first, and record their weight. Have the parent/guardian step off the scale to pick up the child, and step back on the scale holding the child to obtain the combined weight; record the combined weight of the parent/guardian and the child. Subtract the weight of the parent/guardian from the combined weight of the parent/guardian and the child (total weight of parent/guardian holding the child). Record the child's weight as the difference between the two weights.

Weight of the parent/guardian holding the child	130 lbs.
<u>-Weight of parent/guardian</u>	<u>-110 lbs.</u>
Weight of Child	20 lbs

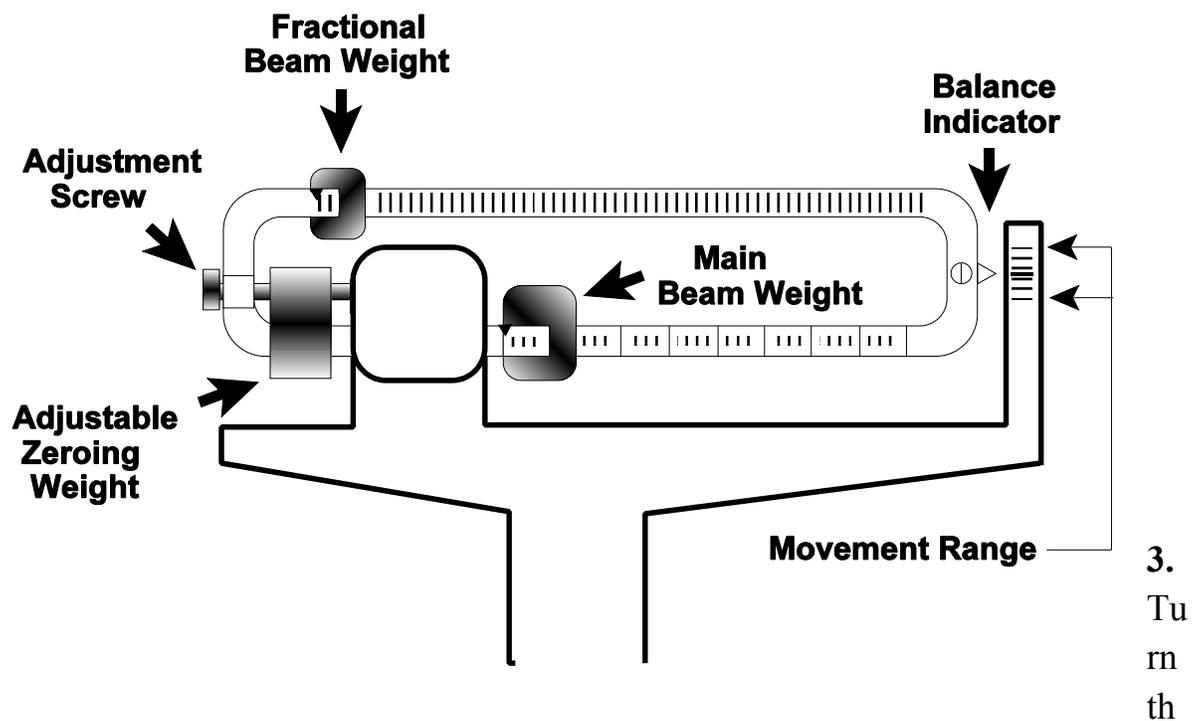
Remember– you must document if the child was weighed using the adult scale, or if the child was held and weighed.



Balancing Scales

Each day before clinic begins, a trained staff member should balance all scales using the following procedure(s):

1. Balance the pediatric scales with the scale paper on it. Remove everything from the adult scales.
2. Place the fractional (upper) beam weight and the main (lower) beam weight directly over their respective zeros. (See the diagram that follows.)



Turn the adjustment screw on the left side of the beam until the balance indicator is centered. The balance indicator is centered when it freely rests in the center of the movement range. For beam-balance scales which do not have an adjustment screw, follow the manufacturer's directions for zero balancing.

4. Return scales to zero after **each** use.



5. If using electronic scales, follow the manufacturer's instructions for calibration.

If scale cannot be calibrated, notify the supervisor/LA director immediately.

Weighing Procedures

Pediatric Weight: For Children younger than 24 months

Supplies:

Pediatric Beam-Balance Scale or Electronic Digital Pediatric Scale

Scale Liner or Table Paper

Preparations:

- Remove shoes and heavy outer clothing such as coats, jackets, and bulky sweaters.
- Weigh infants up to 12 months in a dry diaper and lightweight clothing.
- In your presence, have the parent/guardian check for a dry diaper.
- Do not subtract the weight of the dry diaper or clothing.

Procedure:

1. Place clean paper on scale.
2. Make sure the scale is balanced at zero weight according to the procedures described on the previous page.
3. Gently place the infant or child in the center of the covered scale bed. The infant should be placed lying down in a comfortable position unless she can sit up alone. Make sure the child isn't holding on to the scale, holding anything in their hands, and the caretaker isn't touching the child or the scale during the procedure.
4. Starting with the weights at zero, slowly move the main beam weight to the right until the balance indicator begins to tip down, then move it back to the left until the main beam weight rests in one of the grooves. The balance indicator will be pointing toward the top of the



movement range.

5. Move the fractional weight to the right until the balance indicator is centered.
6. Read the weight to the nearest ounce. Add the weight indicated on the fractional beam to the weight indicated on the main beam.

Example:

Main beam weight	20 lbs
Fractional beam weight	<u>+ 2 lbs 3 oz.</u>
Total weight	22 lbs 3 oz.

7. Record the weight on the growth chart and in the appropriate boxes on the Participant form.
8. After removing child from scale, return weights to zero.

Common Errors:

- < Use of improper equipment.
- < Scale not properly balanced.
- < Necessary clothing not removed.
- < Child not placed in center of scale bed.
- < Child holding on to scale or caretaker.
- < Child holding a bottle or toy.
- < Caretaker touching infant/child on scale.
- < Child not remaining still on scale.
- < Weights not positioned at zero before taking measurements.
- < Not asking parent if the infant's diaper is dry or wet.



Adult/Standing Weight: For Women and Children 24 months or older

Supplies:

Adult Beam-Balance Scale or Electronic Digital Scale

Preparations:

- Have the applicant remove shoes, and heavy outer clothing such as coats, jackets or bulky sweaters.
- For children, remember to have parent/guardian check the child's pockets for rocks, toys, etc.
- If a child is wearing a diaper, have parent/guardian check (in your presence) to make sure it is dry.

Procedure:

1. Make sure the scale is balanced at zero weight.
2. Have the applicant step onto the center of the scale platform with feet slightly apart for better balance.
3. Move the main beam weight to the right until the balance indicator begins to tip down, then move it back to the left until the main beam weight rests in one of the grooves. The balance indicator will point to the top of the movement range.
4. Move the fractional weight to the right until the balance indicator is centered.
5. Read the measurement to the nearest ounce. Add the weight indicated on the fractional beam to that indicated on the main beam.
6. Record the measurement on the growth chart and in the appropriate boxes on the Participant form.
7. After participant steps off scale, return weights to zero.

Common Errors:

- < Use of improper equipment.
- < Scale not properly balanced.
- < Footwear and heavy outer clothing not removed.
- < Individual not properly centered on scale platform.
- < Individual holding on to scale, caretaker, or some other object.
- < Individual not remaining still on scale.
- < Weights not positioned at zero before taking measurements.
- < Not asking parent if the child's diaper is dry or wet.



II. Measuring Participants

Length/Height Measurement Equipment

Length (lying down) should be obtained using a recumbent board consisting of three parts:

- A flat, calibrated board
- A stationary headpiece that is at a right angle to the calibrated board, and is wider and taller than the head
- A moveable footboard that is also at a right angle to the calibrated board

NOTE: A pediatric exam table is **not** acceptable for measuring length.

Height (standing) should be obtained using either a metal or other non-stretchable measuring tape in conjunction with a 6-inch-deep right angle headpiece or a full-length measuring board.

- The measuring tape should be flat, made of non-stretchable material, and readable in increments of $\frac{1}{8}$ inch.
- The headpiece should be wide and deep enough (at least 6 inches) to assure measurement of the crown of the head.
- The headpiece should be held parallel to the floor and at a right angle to the measuring surface while the height measurement is obtained.

NOTE: Do Not use the hinged headpiece on a beam-balance scale to obtain standing height.



Placement of Equipment

Recumbent board– should be placed on a flat, hard surface such as a table.

Full-length wall-mounted board or non-stretchable tape– should be firmly attached to a flat, vertical surface, such as a wall.

- If wall mounted, select an area without a baseboard or carpet. If an area without a baseboard is not available, wall spacers shall be used to compensate for the baseboard and to ensure the measuring board is mounted parallel to the wall. Follow the manufacturer’s instructions to mount the board on the wall. With an accurate measuring stick, measure up the wall from the standing surface and make a pencil mark at the specified height for placement of the bottom of the board. Be sure the bottom of the headpiece, or the “Read Here” line, accurately corresponds with the measured height.
- If non-stretchable tape– place the “zero” mark of the tape exactly at the point where the floor and the vertical surface (wall) meet.

Which Equipment to Use

1. Infants and children younger than 24 months should be measured using the recumbent board.
2. Women and children two years (24 months) and older should be measured using the non-stretchable measuring tape or full-length measuring board mounted to the wall.

NOTE: Children younger than 2 years old who are too big to be measured using the recumbent board should be measured using the non-stretchable tape or full-length board. Document the procedure.

Precautionary Measure

To prevent the spread of disease and parasites such as head lice, be sure to cover measuring board & headpieces with fresh scale paper, and change the paper for each participant.



Measuring Procedures

Pediatric Recumbent Length: For Children younger than 24 months

Supplies:

- Recumbent Board
- Scale Liner or Table Paper

Preparations:

- Cover the board with scale liner or table paper. Position the paper so that it protects the area where the infant's head touches the headpiece.
- Remove shoes and heavy/bulky outer clothing such as coats, jackets or bulky sweaters.
- Ask parent or guardian to remove hats, hair barrettes or anything else in the child's hair which could prevent obtaining an accurate measurement from the top of the head.

Procedure:

1. Place the infant or child on her back on the recumbent board.
2. Have an assistant or parent/guardian hold the child's head firmly against the headpiece by cupping their hands over the child's ears to hold the head against the headpiece. Position the head so the Frankfort Plane is perpendicular, or at a 90-degree angle, to the measuring board, and parallel to the headpiece. (See Glossary)
3. Hold the child's legs together by placing one hand on both knees and gently push both legs down against the recumbent board. The child's heels, knees, buttocks, shoulder blades, and head should be in a straight line parallel to the board.
4. With your other hand, slide the footboard towards the child's feet until the heels of both feet are flat against the footboard, toes pointing upward.
5. Read the measurement to the nearest 1/8 inch. (If the measurement falls between 1/8 inch increments, round up.)
6. Record the measurement on the growth chart and in the appropriate boxes on the Participant form.

NOTE: For premature infants, see instructions in **Chapter 5: Special**



Considerations.

Common Errors:

- < Using improper equipment.
- < Hat, hair barrettes, or adornments not removed.
- < Necessary clothing not removed.
- < Child's head not firmly against headpiece at a 90-degree angle.
- < Legs not straightened or properly positioned.
- < Heels not flat against the footboard.
- < Only one leg extended and measured.

After each measurement, replace with fresh scale protective paper to prevent spread of head lice and other parasites.

Adult/Standing Height (Stature): For Women & Children 24 months and older

Supplies:

Full-length wall-mounted measuring board, or metal or other non-stretchable measuring tape and 6 inch deep right-angle headpiece mounted on a wall that is smooth and doesn't have moldings or baseboards. (Do NOT use the measuring rod on the adult beam-balance scale because it is not accurate.)

Preparation:

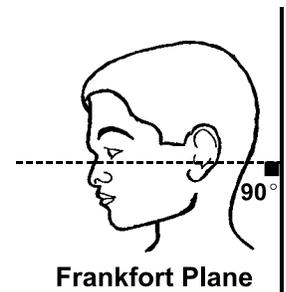
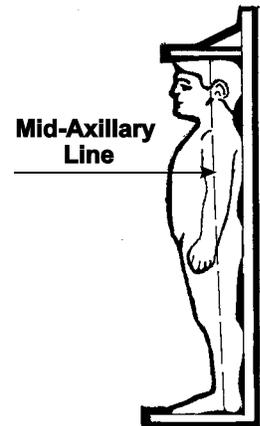
- Have the applicant remove shoes and heavy outer clothing such as coats, jackets, or bulky sweaters.
- Have the applicant remove hat and hair barrettes or anything on the top of the head that would prevent accurate measurement.

Procedure:

1. Have the applicant stand with her back directly in front of the measuring board or tape. Have her back slowly towards the board or wall on which the tape is placed. As soon as any part of the body (buttocks, shoulder



- blades, and/or heels) touches the surface board/wall, have the applicant stand in that spot.
2. Find the applicant's natural stance with knees and feet. The stance will be either knees together and feet apart, *or* knees apart and feet together, *or* knees together and feet together. *NOTE:* Some people may have their thighs touch first before their knees touch, and that is acceptable.
 3. Find the **MID-AXILLARY LINE** on the applicant. (This imaginary line runs from mid-shoulder to the heels.) It should be perpendicular, or at a right angle, to the floor. If necessary, position the applicant's body so that the mid-axillary line is correctly positioned. The applicant's arms should be at his/her side. The heels and/or head may or may not touch the wall or board.
 4. Position the applicant's head using the **FRANKFORT PLANE**. (This imaginary line runs from the middle of the ear to under the eye.) It should be parallel to the floor.
 5. Place the headpiece flat against the wall or board and touching the crown of the head at a right angle.
 6. Hold the headpiece steady and read the measurement at eye level. If the individual is taller than the staff member obtaining the measurement, the staff should use a foot stool to read the measurement at eye level. Read the measurement to the nearest 1/8 inch. (If the measurement falls between 1/8 inch increments, round up.)
 7. Record the measurement on the growth chart and in the appropriate boxes on the Participant form. For further instructions, see the video entitled "**For Good Measure.**"



Common Errors:

- < Use of improper equipment.
- < Improper mounting of equipment.
- < Footwear, heavy outer clothing, hat, and hair barrettes not removed.
- < Both feet not flat on floor.
- < Measurement not read at eye level.
- < Improper position of the stance, mid-axillary line, or the Frankfort plane.

**STOP****Answer Questions****4–8.**

*Place a mark on
the line next to the correct answer(s) to the questions.*

4. A child 22 months of age should be measured using a
_____ a. Wall mounted board or measuring tape
_____ b. Recumbent measuring board
_____ c. Measuring rod on an adult beam-balance
scale
5. The length of an infant should be measured to the nearest
_____ a. $\frac{1}{8}$ inch
_____ b. $\frac{1}{4}$ inch
_____ c. $\frac{1}{2}$ inch
_____ d. whole inch
6. When measuring the standing height of a child, the things to be
aware of are:
_____ a. Frankfort plane and mid-axillary line
_____ b. Stance with knees and feet
_____ c. Both a and b
7. In the list below, mark the weighing and measuring procedures



that are acceptable:

- _____ a. Weighing and measuring infant in lightweight clothing.
- _____ b. Being sure that one leg is held straight while measuring.
- _____ c. Using measuring bar on upright beam-balance scales to obtain height.
- _____ d. Using pediatric exam table.
- _____ e. Parent/guardian/caretaker removing hair adornments before measuring.
- _____ f. Using two people to measure infant, one to hold head firmly against the headpiece and one to push down on the knees and ensure the legs are straight and push footboard against heels.
- _____ g. Zero-balancing scales once a day.
- _____ h. Placing beam-balance scale on a carpeted floor.
- _____ I. Removing heavy clothing such as sweaters and jackets when measuring a child.

8. Height measurements, using the wall-mounted measuring board, should be read at
- _____ a. sea level
 - _____ b. eye level
 - _____ c. from below, looking up
 - _____ d. from above, looking down



_____ e. an angle using a level





Chapter 3: Using Growth Charts

The Objectives for this chapter are:

- Staff will plot applicants' growth and/or body mass index (BMI) accurately using appropriate participant growth charts.
- Staff will calculate applicants' age correctly.
- Staff will interpret growth chart correctly.

After collecting weight and height/length data, plot the measurements on the appropriate growth chart for interpretation. The Texas WIC program uses growth charts that were adapted from the National Center for Health Statistics (NCHS). These charts are based upon a large sample of children (reference population) and therefore give a good indication of a child's growth as compared to other children of the same age. This chapter will explain how to select, plot, and interpret the growth charts.

Chart Design

Four growth charts are used to plot the growth of children:

Form Number	Form Description
CH-9W	Girls from Birth to 36 Months
CH-10W	Boys from Birth to 36 Months
CH-20W	Girls from 2 to 5 Years
CH-21W	Boys from 2 to 5 Years



The **Birth to 36 Months** growth charts have four grids:

- Weight for Length
- Length for Age
- Weight for Age
- Head Circumference

NOTE: Head circumference is *not* measured in the WIC Program.

The **2 to 5 WIC** growth charts have three grids:

- BMI for Age
- Stature for Age
- Weight for Age

The grids compare the anthropometric measurements in different combinations in order to get a complete picture of growth.

Each grid is composed of seven or eight curved lines, called percentiles. The spaces between percentiles are referred to as percentile divisions. On any grid, a child's measurements will either be:

- within a percentile division (e.g., between the 25th and the 50th percentiles),
- on a percentile line (e.g., at the 75th percentile),
- above the 95th percentile, or
- below the 5th percentile

Chart Selection

Chart selection, in most cases, depends on the equipment used in measuring.

The **Birth to 36 Months** growth charts should be used for children younger than 24 months of age who are measured using pediatric equipment, *i.e.*, recumbent measuring board and pediatric scale.

**Note:**

The chart is labeled 36 months based on previous measuring guidelines. It is no longer used in WIC for children two years of age and older unless special circumstances apply.

The **2 to 5 WIC** growth charts should be used for children 2 years of age and older who are measured standing using adult equipment.

Age	Equipment/Position	Growth Chart
Younger than 24 months	Pediatric/recumbent	Birth - 36 Months
2 years or older	Adult/standing	2 to 5 WIC

Exceptions:

- < Children 2 years and older who are unable to stand for the adult equipment should be measured using pediatric equipment and plotted on the Birth to 36 Months growth chart. (See pages 28-31.)
- < Children who are younger than 24 months but too large to be measured on a recumbent board are measured standing and plotted on the 2 to 5 WIC growth chart. (See pages 32-35)

Interestingly, a standing height will be shorter than a recumbent length for the same child, due to gravity and compression of the spine. Therefore, it is very important to weigh and measure using the appropriate equipment and to plot growth using the appropriate chart.

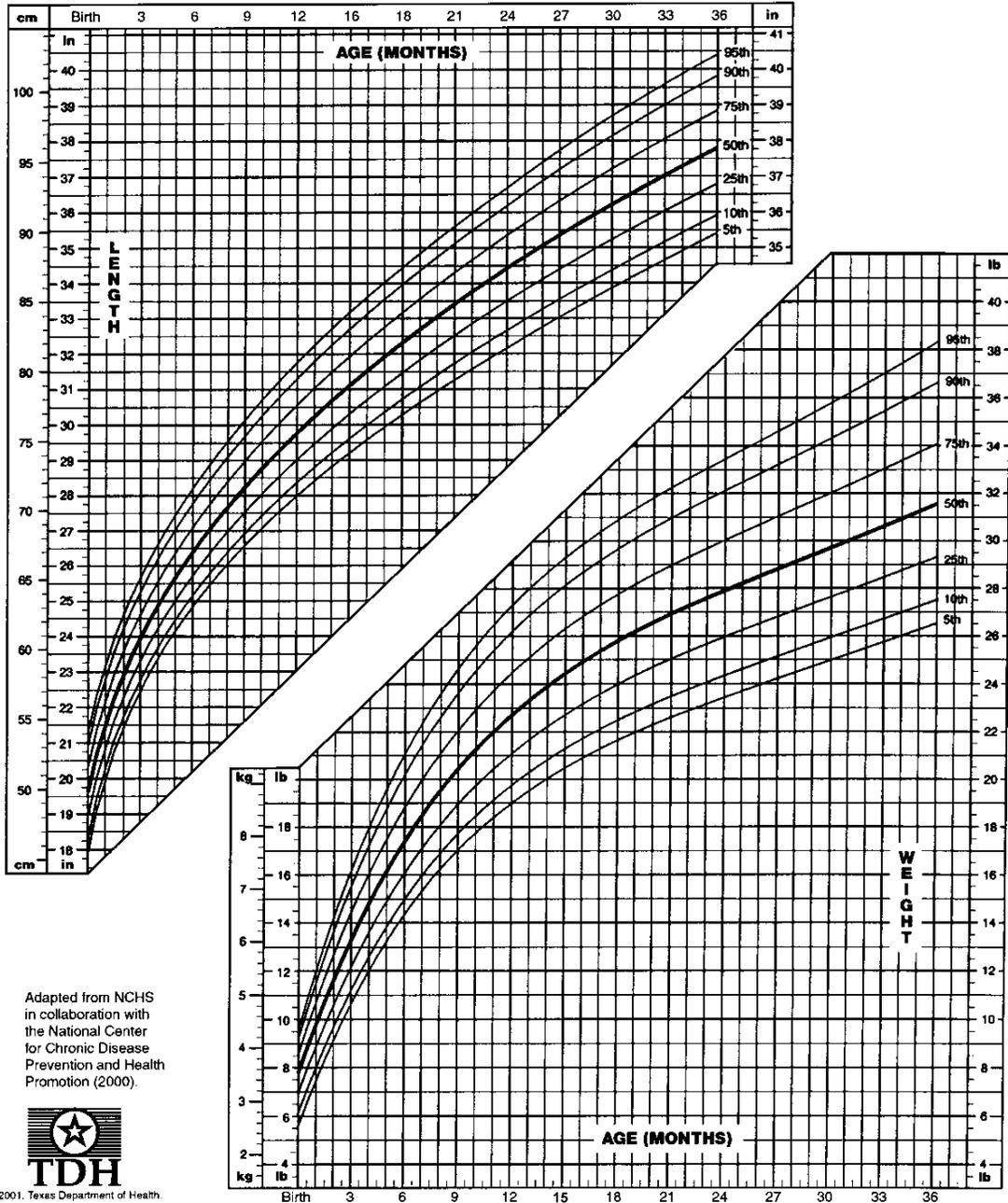
NOTE: One side of the 2-5 growth chart plots BMI (Body Mass Index) for age. For further explanation on how to determine this, see page 46.

A standing *height* is required to determine BMI. If a child 2 years of age or older is measured on the recumbent board, measuring its *length* rather than *height*, BMI cannot be determined and the BMI-for-age portion of the growth chart cannot be plotted.



BOYS: BIRTH TO 36 MONTHS Name _____ Record # _____

Length-for-age and weight-for-age percentiles



Adapted from NCHS in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).



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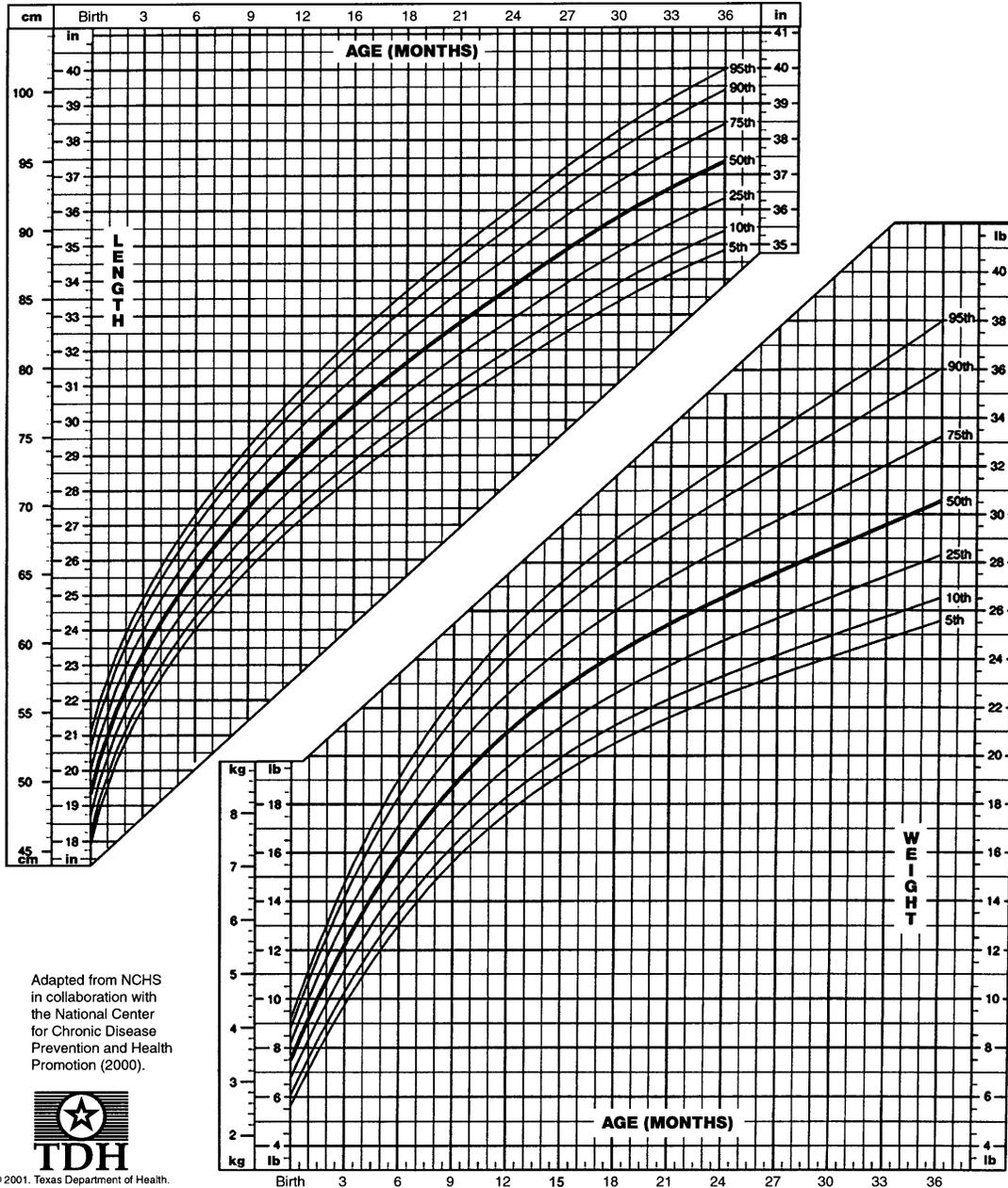
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Girls from Birth to 36 Months^o Back

GIRLS: BIRTH TO 36 MONTHS Name _____ Record # _____

Length-for-age and weight-for-age percentiles



Adapted from NCHS in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).



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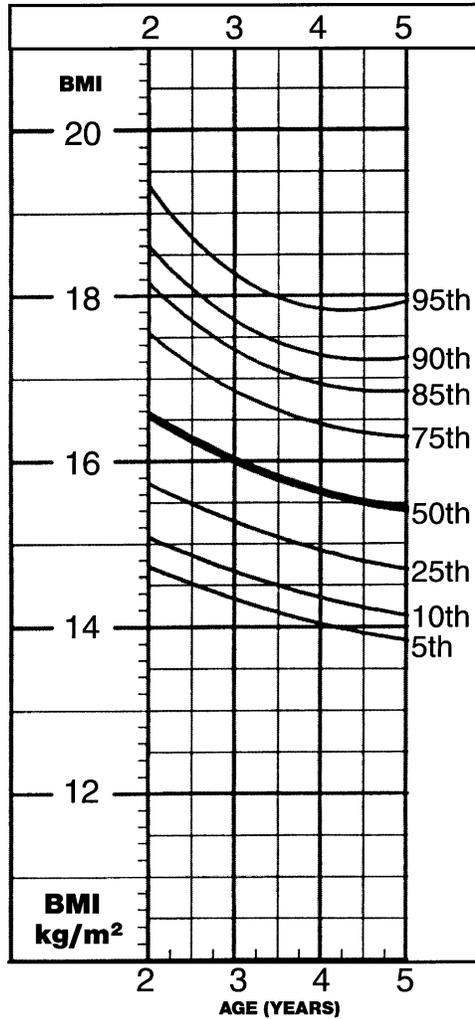


Boys from 2 - 5 years° Front

BOYS: 2-5 YEARS

Name _____ Record # _____

Body mass index-for-age percentiles



English Formula:

$$\text{BMI} = \frac{\text{wt. lb}}{\text{ht. in}^2} \times 703$$
 (fractions and ounces must be converted to decimal values)

DATE	AGE	LENGTH	WEIGHT	HEAD CIRC.	COMMENT
	Birth				

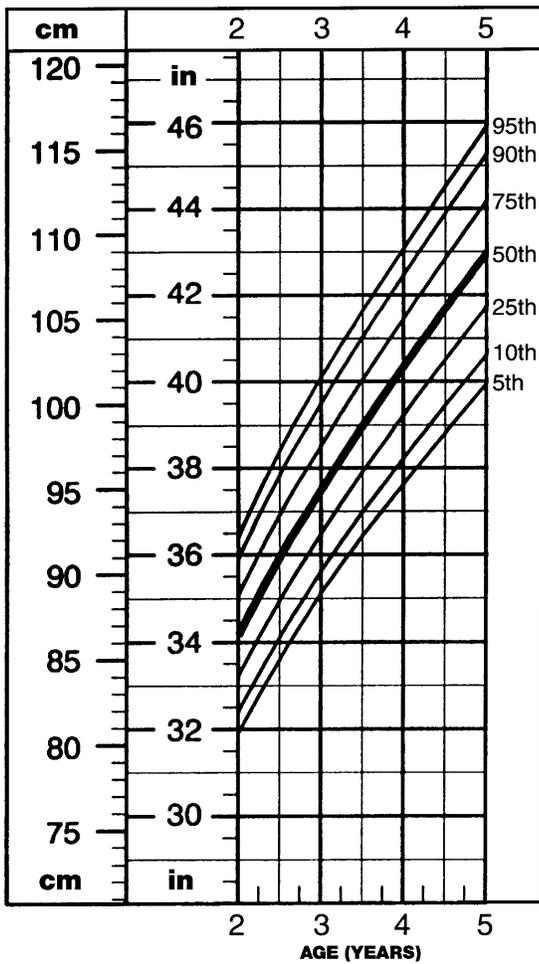


Boys from 2 - 5 years^o Back

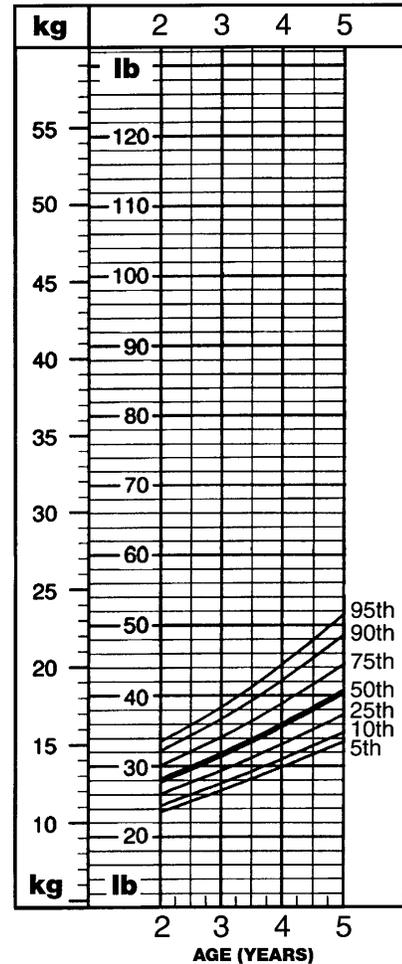
BOYS: 2-5 YEARS

Name _____ Record # _____

Stature-for-age percentiles



Weight-for-age percentiles



Adapted from NCHS in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).



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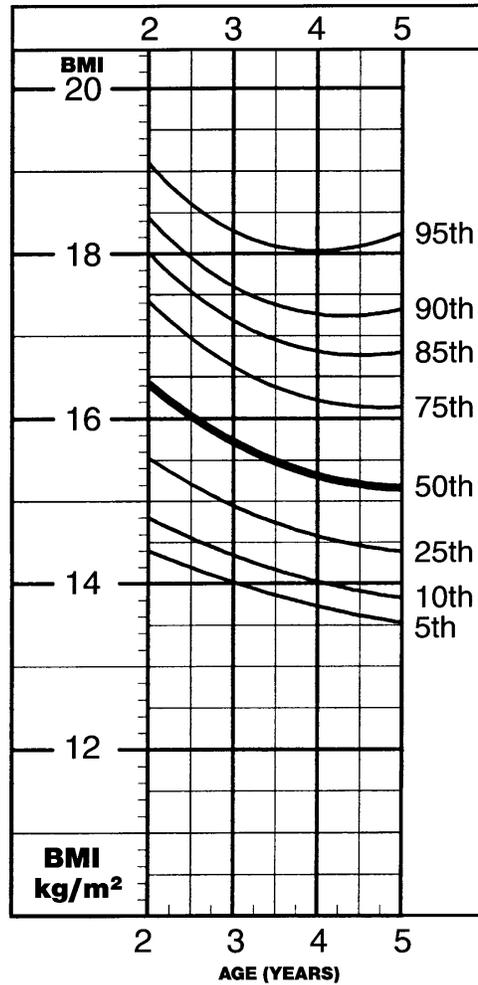


Girls from 2 - 5 years^o Front

GIRLS: 2-5 YEARS

Name _____ Record # _____

Body mass index-for-age percentiles



English Formula:

$$\text{BMI} = \frac{\text{wt. lb}}{\text{ht. in}} \div \text{ht. in} \times 703$$

(fractions and ounces must be converted to decimal values)

DATE	AGE	LENGTH	WEIGHT	HEAD CIRC.	COMMENT
	Birth				

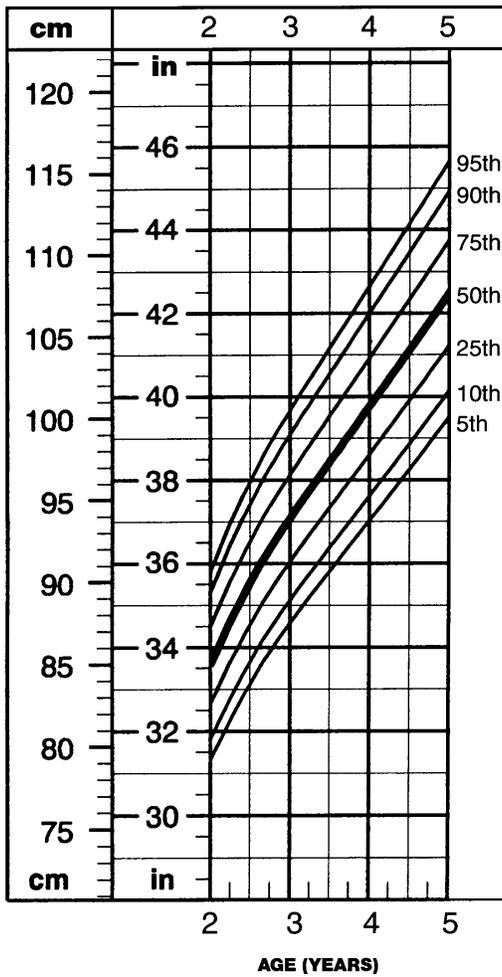


Girls from 2 - 5 years^o Back

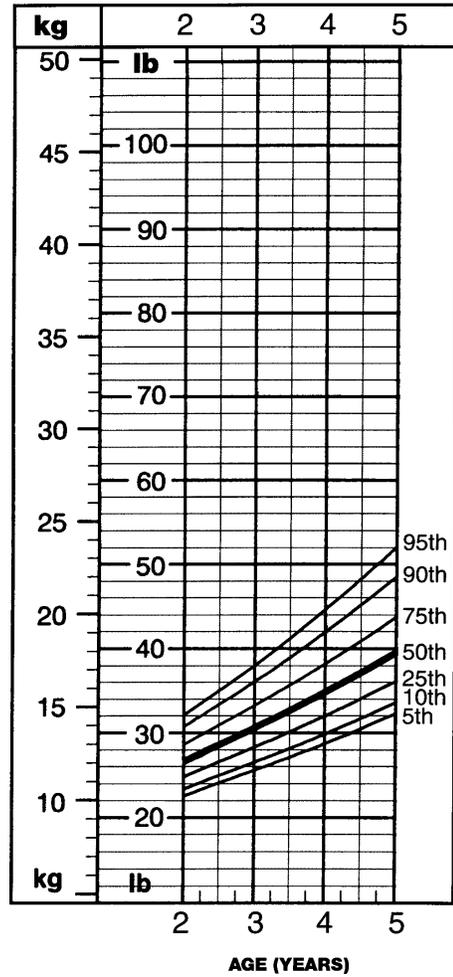
GIRLS: 2-5 YEARS

Name _____ Record # _____

Stature-for-age percentiles



Weight-for-age percentiles



Adapted from NCHS in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).



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Determining a Child's Age

A child's age must be determined before selecting a growth chart and plotting the measurements. Small differences in age can result in serious differences in measurement plotting. Errors can affect program eligibility, growth assessment, selection of risk factors, and counseling.

When plotting a child's growth using the **Birth to 36 Months** chart, age is calculated to the nearest half month. (See page 73) When using the **2 to 5 WIC** growth chart, age is calculated to the nearest one-fourth (quarter) year. (See page 74)

One method used to calculate age is to subtract the child's date of birth from the date measurements are taken. See example below:

Example A:

The child's birthdate is November 25, 1999. The date the measurement data was obtained is December 30, 2001.

Set up the problem in three columns. The left column is the year, the middle column is the month, and the right column is the day.

	Year	Month	Day
Measurement Date	2001	12	30
(Minus) Birthdate (-)	1999	11	25
	2 years	1 month	5 days

To work the problem, simply subtract the birthdate from the measurement date, starting with the day column. Thirty days minus 25 days equals 5 days; 12 months minus 11 months equals 1 month; the year 2001 minus 1999 equals 2 years. This child is 2 years, 1 month, and 5 days old. This child's measurements would be plotted at 2 years 1 month (or 25 months) of age.

Examples: [SEE ROUNDING CHART ON PAGE 73]

- < A girl who is 1 year 5 months 20 days old would be plotted at 17½ months on the Girls Birth to 36 months growth chart.
- < A boy who is 8 months 8 days old would be plotted at 8½ months on the Boys Birth to 36 months growth chart.



Now let's look at a more complicated example.

Example B:

The child's birthdate is July 29, 1997. The date the measurement data was obtained is June 20, 2001.

Again, set up the problem in three columns:

	Year	Month	Day
Measurement Date	2001	6	20
(Minus) Birthdate (-)	1997	7	29

To work the problem, start with the "day" column.

	Year	Month	Day
	2000	5	50 (20 + 30)
Measurement Date	2001	6	20
(Minus) Birthdate (-)	1997	7	29

In order to subtract 29 days from 20 days, one month (30 days) is borrowed from the 6 in the month column, leaving 5 (6-1) months and 50 (20+30) days.

30 days is used for all months.

Now the subtraction can be figured as follows:

	Year	Month	Day
Measurement Date	2001	5	50
(Minus) Birthdate (-)	1997	7	29
			<u>21</u>

Next, in order to subtract 7 months from 5 months, one year (12 months) must be borrowed from the year 2001 and added to the 5 months, leaving the year 2000 [2001-1] and 17 [5+12] months.

	Year	Month	Day
	2000	17 (5 + 12)	
Measurement Date	2001	5	50
(Minus) Birthdate (-)	1997	7	29
	<u>3</u>	<u>10</u>	<u>21</u>

Completing the subtraction, the child's exact age is:

3 Year, 10 Months and 21 Days.

Remember, when using the 2 to 5 WIC growth charts, age is rounded to the nearest quarter ($\frac{1}{4}$) year. This child's measurements would be plotted at 4 years of age.



Examples:

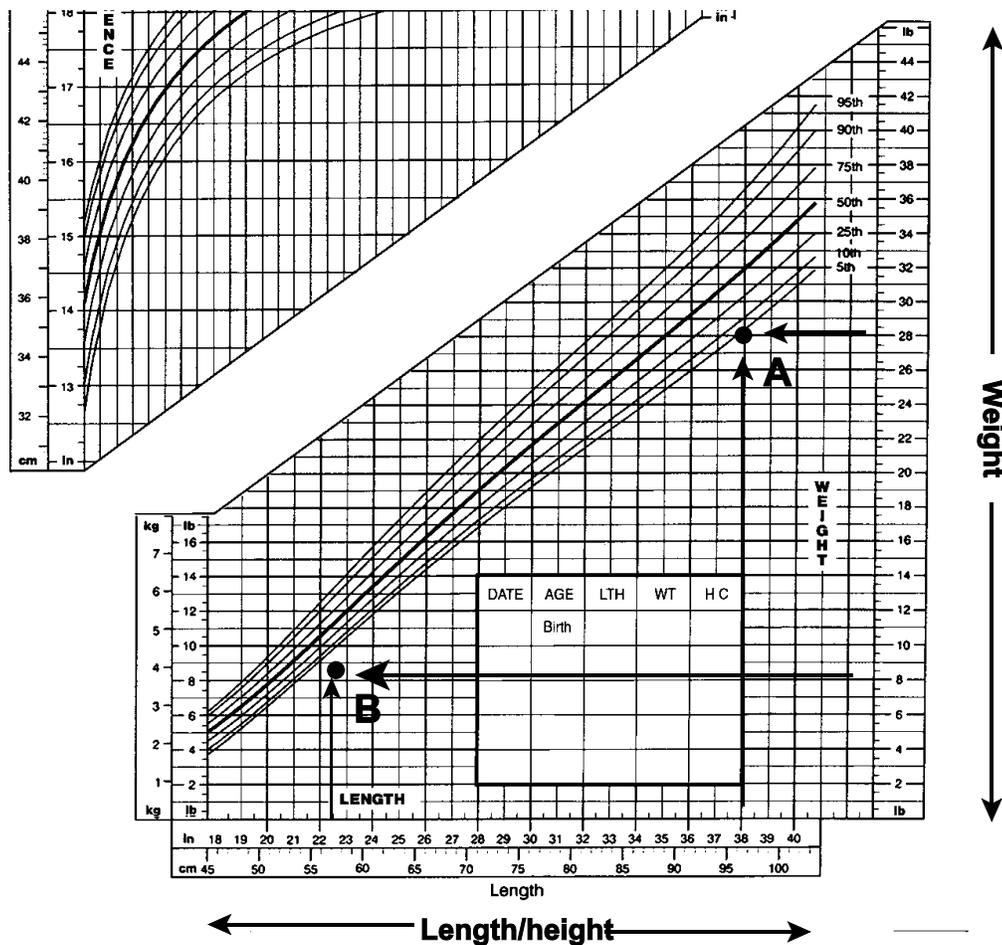
- < A girl who is 4 years, 5 months old would be plotted at age $4\frac{1}{2}$ years on the girls 2 to 5 WIC chart.
- < A boy who is 3 years, 1 month, and 10 days old would be plotted at age 3 years on the boys 2 to 5 WIC chart.
- < A girl 3 years, 10 months and 5 days will be plotted on the girls 2 to 5 WIC chart as $3\frac{3}{4}$ years old.
- < A boy who is 3 years, 2 months, and 3 days old will be plotted on the boys 2 to 5 WIC chart as $3\frac{1}{4}$ years old.



Growth Chart Plotting

Weight for Height/Length

Find a child's length/height on the horizontal axis (left–right), and their weight on the vertical axis (up–down). Determine the point where the two measurements intersect and make a dot at the point of intersection. The following chart has examples worked out.



For

exam

ple, child A measures **38** inches long and weighs **28** pounds. Find the number **38** on the horizontal axis. Find the number **28** on the vertical axis. Follow the line above the number 38 up. Follow the line beside 28 across until the two lines meet. Make a dot at the point where the 38 inch length vertical line and the 28 pound



horizontal line intersect.

For example, child **B** measures $22\frac{1}{2}$ inches long and weighs 8 pounds, 8 oz. ($8\frac{1}{2}$ lbs.). Only whole even numbers are listed on the axes of the Weight for Length grid with a mark between the whole numbers which indicates half an inch/pound. To plot $22\frac{1}{2}$ inches, first find 22 inches on the horizontal axis, then find the mark between 22 inches and 23 inches. Do basically the same thing for the weight. Find 8 pounds on the vertical axis and then find the mark midway between 8 lbs. and 9 lbs. Make a dot at the point where $22\frac{1}{2}$ inches intersects with 8 pounds, 8 oz. ($8\frac{1}{2}$ lbs.)



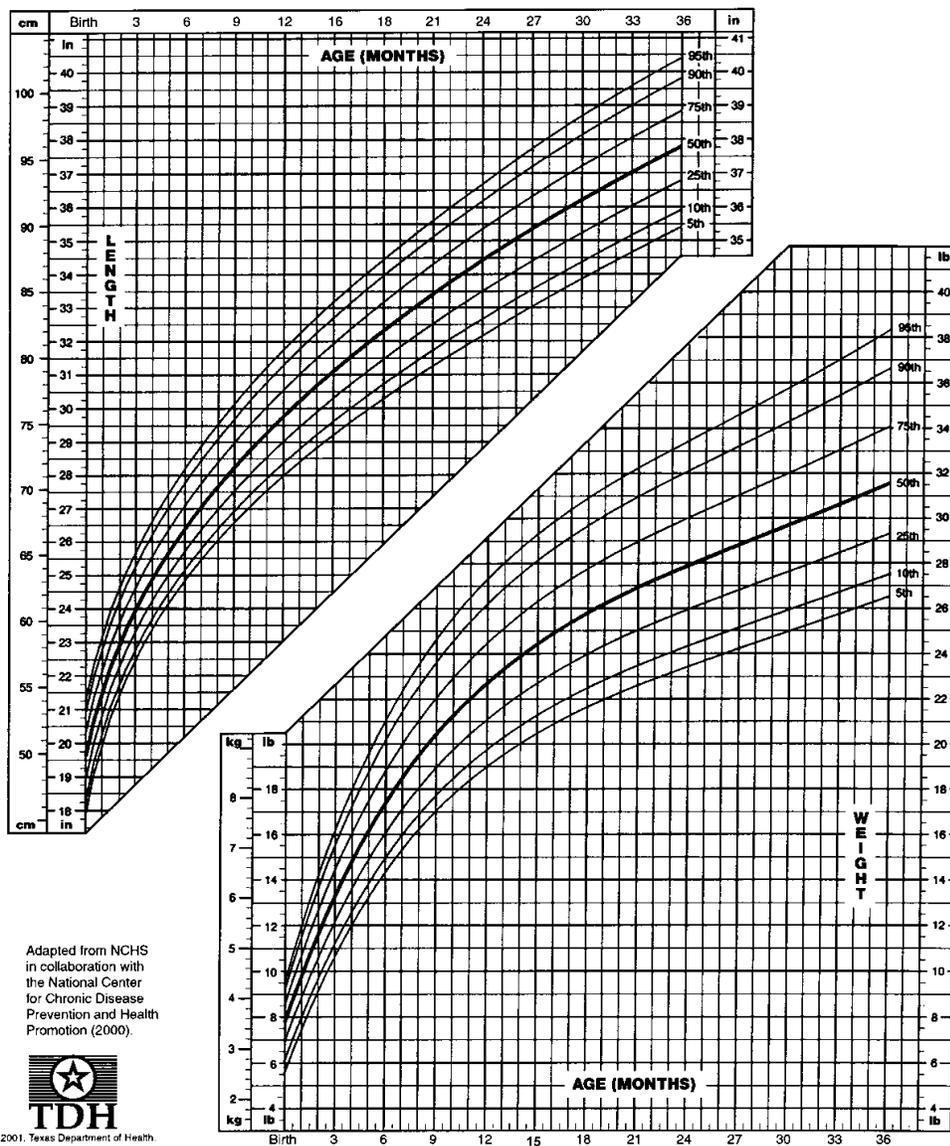
Weight and Height/Length for Age

Find a child's age on the two horizontal axes, and their weight and length/height on the vertical axes. Determine the point of intersection and make a dot.

Be sure to label the dots on the growth chart grids with the current date.

BOYS: BIRTH TO 36 MONTHS Name _____ Record # _____

Length-for-age and weight-for-age percentiles





Plot the measurements in the following exercises on an appropriate growth chart. After you've finished, compare your answer with the answer printed at the end of this manual.

Exercise "A"

[IT IS APRIL 1, 2002]

Luis is 18 months old with a recumbent length of 31-2/8 inches and a weight of 22 pounds, 8 ounces. Select the appropriate growth chart and plot his length for age and weight for age. At what percentile does his length for age plot? Within which percentile division does his weight for age plot?

On the same growth chart plot Luis' weight for length. Within which percentile division does his weight for length plot?

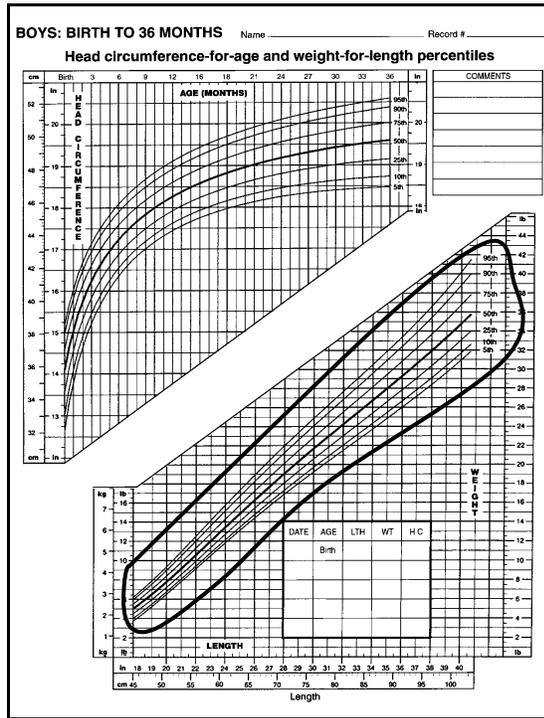
Note:

- C When an infant's measurements are less than what is indicated on the growth charts, document in the chart that you are *unable to plot* growth.
- C Do not plot growth outside the borders of the growth grid.

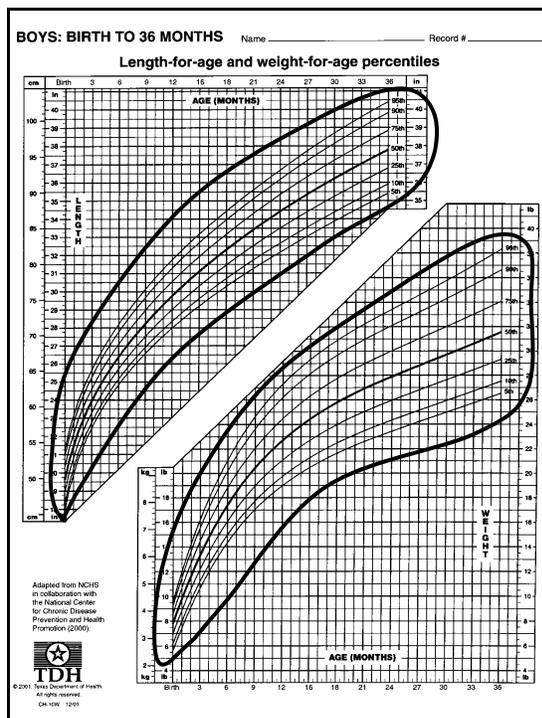
Growth Chart Interpretation

A growth chart is a valuable assessment tool in evaluating a child's growth status and growth pattern over time. However, health professionals must use great care in interpreting the measurements plotted on the growth charts. Additional medical, nutritional, or social data will also be important for proper assessment of growth data.

Guidelines for interpretation are listed in this section. Usually, if a child's measurements fall between the 10th and 95th percentiles, he is considered to be within the average range of growth. However, each child must be considered individually.



Weight for Height/Length Grid (percentile lines circled)



Length/Height for Age Growth Grid (percentile lines circled)

and Weight-for-Age



Weight for Height/Length Grid

Above 95th Percentile

Measurements that plot above the 95th percentile weight for length/height may indicate a child is overweight. However, there are other factors that should be considered in the evaluation, such as ethnicity and heredity. The health professional should also consider whether the weight for height percentile has changed recently or if the child has remained at a particular percentile division over time. This will be important when counseling the caretaker.

Weight loss for infants and children should **NEVER** be recommended. Instead, the health professional should continue to monitor the rate of growth and work with the caretaker to slow the weight gain. The goal for these children is for their length/height to “catch up” with their weight. The health professional should also determine whether or not the child should be referred to a physician for further assessment. This may include weight for height continuing to plot above the 95th percentile or weight for height continues to increase.

Below 10th Percentile

Measurements that plot below the 10th percentile for weight for length/height may indicate a child is underweight and should also be monitored. Ethnicity and heredity must be considered in the evaluation. Again, it is important to note whether the low percentile in weight for length/height is a recent development or has been maintained over time. The child’s growth status and pattern are always important considerations when counseling the caretaker. The goal is to achieve a healthy, consistent growth pattern. If appropriate, the health professional should work with the caretaker to promote weight gain and may need to refer to a physician for further assessment.

Length/Height/Weight for Age Growth Grid

Below 10th Percentile

Measurements that plot below the 10th percentile length/height/weight for age may indicate a risk of delayed growth/undernutrition and should be monitored. Genetic factors can play a role in the child’s short length/height or thinness, as can the child's size for gestational age at birth. However, undernutrition or



nutritional deficiencies may also contribute to short stature. Assessing whether or not the weight status is also at a low percentile will help to determine whether the short stature may be due to growth problems, eating problems, or genetic factors. If the health professional believes growth or eating problems to be a factor, the child should be referred to a physician.

Linear Growth Falling Off the Curve

When there is a dramatic decrease in a child's growth pattern, it could indicate a potential problem and should be closely monitored. For example, when a child's length/height/weight for age falls to lower percentiles (i.e., his linear growth rate slows down), it may indicate a normal "leveling off" or it may indicate a nutritional deficiency or other medical problem. It may also be necessary to refer the child to a physician for further assessment.

Conditions Affecting Growth

Acute undernutrition: Evidenced by a decrease in weight; usually coincides with a short-term disease process or as an immediate reaction to a major lifestyle change.

Chronic undernutrition: Evidenced by a decrease in weight gain, followed by a decrease in height gain; generally indicative of a long-term illness or food deprivation.

Growth spurts: Sometimes a child's increase in height will be greater than their increase in weight. This may cause a decrease in their weight for length/height, even by a percentile division. Growth spurts are a normal part of development, however any drastic changes in weight and length/height should always be monitored closely.

Body Mass Index

Body Mass Index (BMI) is a screening tool used to identify those individuals who are either overweight, at risk of being overweight, or underweight. BMI is determined using a mathematical equation or using the Center for Disease Control (CDC) BMI table.



Beginning at age 2, BMI-for-age is consistent with the adult index. BMI tracks body size throughout the life cycle, and BMI in childhood is a determinant of adulthood BMI. Also, BMI has been shown to correlate with clinical risk factors for heart disease, including elevated levels of fat and insulin and high blood pressure.

THE MATHEMATICAL EQUATION TO CALCULATE BMI IS THE FOLLOWING:

$$\text{Weight(lb)/[Height(in)]}^2 \times 703 = \text{Weight(lb)/Height (in) x 703}$$

[Weight in pounds divided by height in inches squared multiplied by 703 (conversion factor) equals weight divided by height, then divided by height multiplied by 703 (conversion factor).]

Example:

< If a 2 year old male weighed 28 pounds and measured 34 inches, his BMI would be 17.0. $(28/(34)^2 \times 703 = 17.0)$
The BMI value 17.0 is plotted on the BMI-for-age side of the 2 to 5 years boys growth chart.

Another way to determine BMI is to use the pre-calculated BMI values for selected heights and weights using the CDC BMI tables (see **Appendix A**). To identify an individual's BMI, locate the correct page by finding the child's height and weight range in the top right-hand corner. Each page has a column for height in inches and a row for weight in pounds (lbs). For example, if a girl weighs 25 pounds and is 30 inches tall, the first page of the table, 29" - 37" and "18lbs - 26lbs" is the correct table to use since her height and weight are within the documented ranges. Next look for 30 inches under height and then locate 25 pounds on the top row. The point where the height and weight intersect identifies the child's BMI value, 19.5. This value is plotted on the BMI for age side of the Girl: 2 to 5 years growth chart.



When using the chart, the height and weight have to be in decimal form. If the child weighs 33 pounds 1 oz., this converts to 33.06. If a child measures 33 and 6/8th inches, this converts to 33.75. See the conversion table below for weights and heights.

Decimal Conversion Table

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<tr><td>76.2</td><td>30</td><td></td><td></td><td>14.1</td><td>14.5</td><td>14.8</td><td>15.2</td><td>15.6</td><td>16.0</td><td>16.4</td><td>16.8</td><td>17.2</td><td>17.6</td><td>18.0</td><td>18.4</td><td>18.7</td><td>19.1</td><td>19.5</td><td>19.9</td><td>20.3</td></tr> <tr><td>77.5</td><td>30.5</td><td></td><td></td><td>13.6</td><td>14.0</td><td>14.4</td><td>14.7</td><td>15.1</td><td>15.5</td><td>15.9</td><td>16.2</td><td>16.6</td><td>17.0</td><td>17.4</td><td>17.8</td><td>18.1</td><td>18.5</td><td>18.9</td><td>19.3</td><td>19.7</td></tr> <tr><td>78.7</td><td>31</td><td></td><td></td><td>13.2</td><td>13.5</td><td>13.9</td><td>14.3</td><td>14.6</td><td>15.0</td><td>15.4</td><td>15.7</td><td>16.1</td><td>16.5</td><td>16.8</td><td>17.2</td><td>17.6</td><td>17.9</td><td>18.3</td><td>18.7</td><td>19.0</td></tr> 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<tr><td>94.0</td><td>37</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>13.1</td><td>13.4</td><td></td><td></td></tr> </tbody> </table>	Height		Weight																		<small>Whenever a child's specific height or weight measurement is not listed, round to the closest number in the 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9 = .56	10 = .63	11 = .69	12 = .75
13 = .81	14 = .88	15 = .94	
Inches			
1/8 = .13	2.8 = .25	3/8 = .38	4/8 = .5
5/8 = .63	6/8 = .75	7.8 = .88	

The heights and weights in the CDC BMI tables are documented in whole and half numbers, 29 inches; 29.5 inches, 30 inches, etc. The same is true for weight. If the height or weight falls between the whole number and the half, always round up to the next whole or half number. For example: 30.13 lbs rounds up to 30.5 lbs and 35.75 inches rounds up to 36 inches.

Let's try another exercise that uses BMI. Plot Johnny's information in Exercise B on the appropriate growth chart. After you've finished, compare your answers with the answers printed at the end of this manual.



Exercise “B”

[IT IS APRIL 1, 2002]

Johnny is 2 years and 3 months old. He weighs 23 pounds, 8 ounces, and his standing height is 34 inches. Select the appropriate growth chart and plot his stature for age and weight for age.

Johnny plots at what percentile, or within which percentile divisions? Determine and plot Johnny’s BMI.

Sharing Growth Information

After measurements and percentiles have been determined, the health professional should share growth information with the participant and/or parent/caretaker. When explaining length/height or weight, always use simple words that the participant/caretaker can understand instead of complicated medical terms. Being truthful and sincere will build a trusting relationship between the health professional and the participant.

Caution should be used when addressing weight issues of women and children. Weight loss diets should never be recommended for children or pregnant women. Suggesting healthy alternatives to high-calorie “junk” foods and supporting the gradual increase in physical activity are positive ways of changing behavior patterns that promote obesity.

It is important not to alarm the child or caretaker concerning the child’s growth or eating habits. If further counseling and education of the caretaker is necessary to improve the nutritional status of the child, this should be pursued slowly using positive reinforcement and referral to an R.D. high risk counselor if necessary.

STOP

Answer Questions

9–15.



For questions 9-11, place a mark on the line next to the correct answer for each.

9. BMI is determined using the following mathematical equation:
 _____ a. $\text{Weight (lb.)} / \text{Height (in.)} / \text{Height (in.)} \times 703$
 _____ b. $\text{Weight (lb.)} \times \text{Height (in.)} \times 703$
10. The height for age of a child should be plotted to
 _____ a. the nearest $\frac{1}{4}$ year and $\frac{1}{8}$ inch
 _____ b. the nearest $\frac{1}{4}$ year and $\frac{1}{4}$ inch
11. A twenty month old with a recumbent length of 33 inches should be measured using pediatric equipment and their growth plotted on a
 _____ a. Birth to 36 Months growth chart
 _____ b. 2 to 5 WIC growth chart

For questions 12-13, calculate each participant's age.

12. John was born on November 23, 1998. You measure his height and weight on May 11, 2002. Determine John's age.
 _____ years _____ months _____ days
 At what age on the growth chart will you plot his measurements? _____
13. Juliet was born on June 10, 1999. You measure her height and weight on January 1, 2002.
 _____ years _____ months _____ days
 At what age on the growth chart will you plot her measurements? _____



For the following question, place a mark on the line next to the correct answer.

14. A child whose weight for height plots above the 95th percentile should be

- a.** put on a weight loss diet
- b.** encouraged to eat whatever and however much they would like because “chubby children are healthy children.”
- c.** encouraged to consume a nutritious diet, avoiding high-calorie “junk” foods, while their height catches up with their weight.

15. *Mark True or False:*

- T** **F** A child whose weight for age is less than the 10th percentile is undernourished and should be referred immediately to a physician.





Chapter 4: Prenatal and Postpartum Measurements

The Objectives for this chapter are:

- Staff will determine prenatal data such as estimated date of delivery and current week gestation using a gestation wheel.
- Staff will define “gestation wheel.”
- Staff will assess prenatal weight gain.
- Staff will evaluate postpartum weight gain.

I. Pregnant Women: Assessing Prenatal Weight Gain

Pregnant women should be weighed at their initial clinic visit and at appropriate times during the prenatal period. An appropriate weight gain impacts the health of the mother and the birth outcome of the infant.

Excessive or inadequate weight gains, and certainly weight loss, indicate potential problems. In order to assess what the appropriate prenatal weight gain should be, the following tools are needed:

- Adult Beam-Balance Scale or Electronic Digital Scale meeting USDA Guidelines
- Range of Prenatal Weight Gain Form (WIC-4)
- Gestation Wheel

Procedure:

1. Obtain a woman's height and weight using standard measuring equipment and procedures.
2. With the woman's measurement data, plot the woman's BMI and determine her BMI category.
3. Determine a woman's current week of gestation using a gestation wheel.
4. Plot a woman's weight gain using the Range of Prenatal Weight Gain (WIC-4) form.

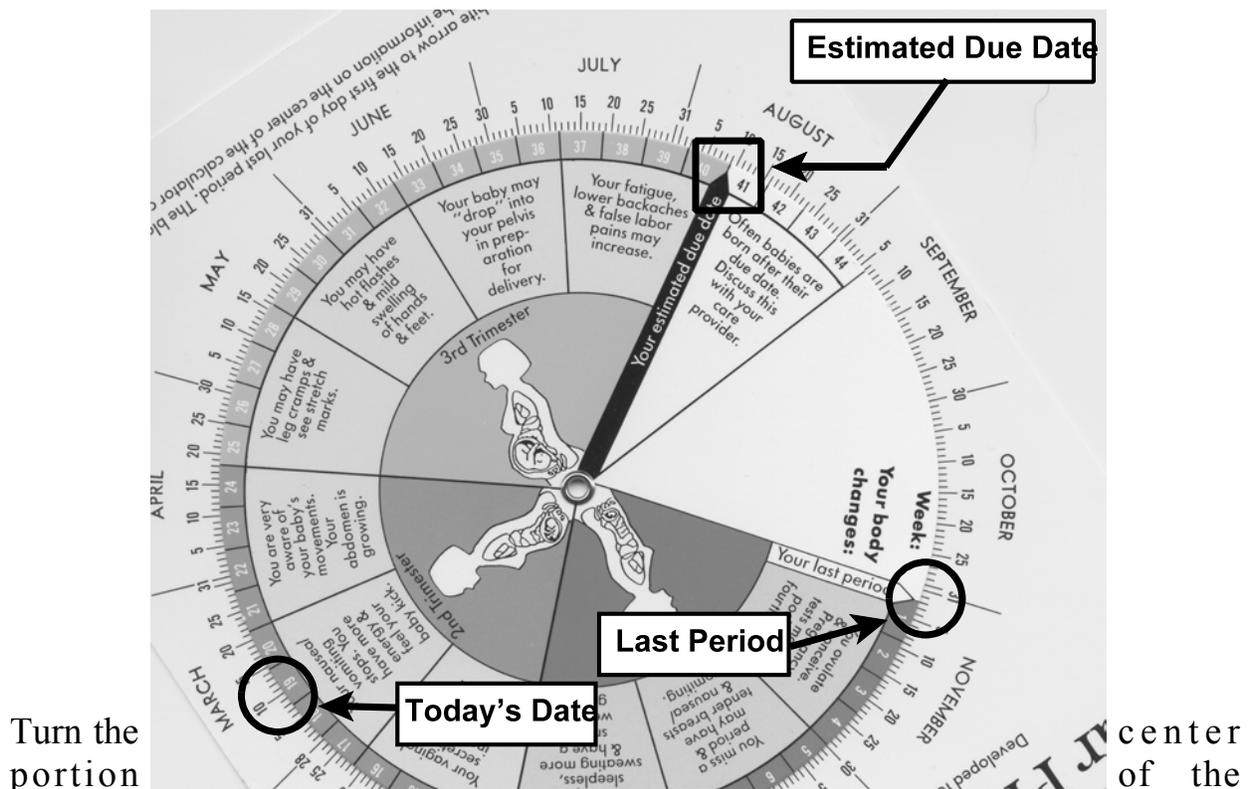


Gestation Wheel

Gestation refers to the state of pregnancy: the period of carrying the developing embryo/fetus from fertilization to birth. For humans, this period of time is usually 40 weeks. If a woman is “at 20 weeks gestation,” this means that she is 20 weeks along in her pregnancy, about halfway through her pregnancy.

A gestation wheel is a valuable tool providing information on dates and time periods throughout a woman’s pregnancy. Use a gestation wheel to determine a woman’s current week and trimester of gestation and her estimated date of delivery.

In order to determine a woman's estimated date of delivery, you will need to know the first day of her last menstrual period. If she is unsure of when her last period began, ask her to approximate. Let’s say a participant comes into your clinic on **March 10th**, and says the first day of her last menstrual period was approximately the **2nd of November**.



Turn the portion

center of the

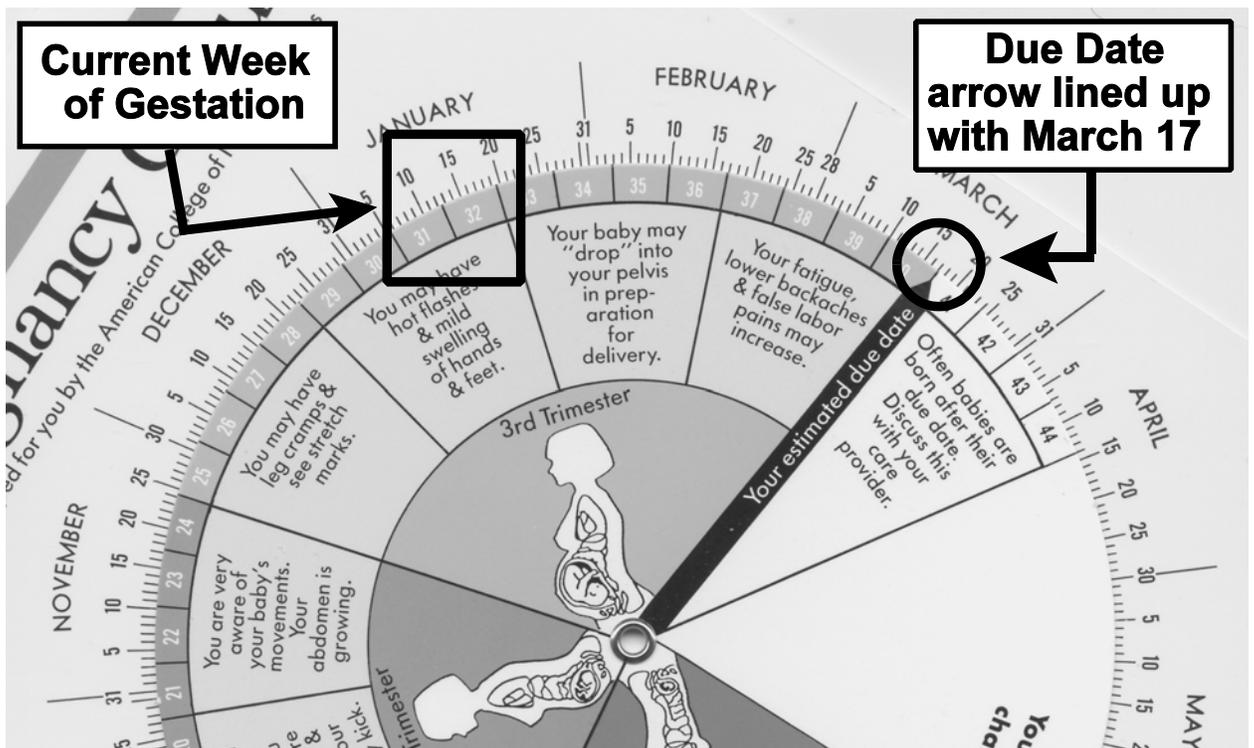


wheel to line up the arrow labeled “Your last period” or “First Day of Last Period” or “Last Period Began” with a woman's reported first day of her last period— **November 2**. The arrow at 40 weeks on the inner circle points to the estimated date of delivery—“Your estimated due date”— **August 9**.

To determine the current week of gestation, find today's date (**March 10th**) on the outer circle. The current week of gestation (**week 19**) is on the inner circle, under today's date. The number of weeks of gestation *completed* is used to plot a woman's weight gain on the Range of Prenatal Weight Gain form. This woman is said to be at 18 weeks gestation because she has “completed” that many weeks.

If the estimated date of delivery has already been determined by a health care professional, that date should be used to determine the current week of gestation. Let's say that on **January 15th** a different participant informs you that her doctor said her baby is due **March 17**.

Turn the inner portion of the wheel to line up the arrow at 40 weeks with the estimated date of delivery, March 17. Look for today's date, January 15, on





the outer circle. Then look on the inner circle next to that date. Note that she is within her 32nd week of gestation, and has completed 31 weeks of gestation.

Range of Prenatal Weight Gain Form

The **Range of Prenatal Weight Gain (WIC-4)** form is used to assess a pregnant woman's weight gain or loss. The form has one weight gain grid with four different colors to identify for the different recommended weight gain ranges. In order to determine which range to follow, a woman's body mass index weight category must be identified.

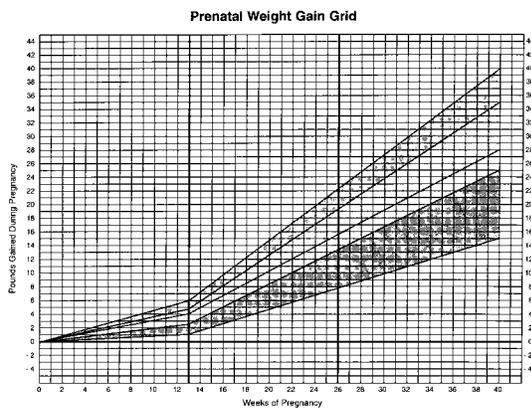
RANGE OF PRENATAL WEIGHT GAIN

Name _____ Date _____ Record # _____

Body Mass Index Weight Category	Recommended Wt. Gain Range	Due Date: _____
<input type="checkbox"/> Underweight	<input type="checkbox"/> 28-40 lbs	Current weeks gestation: _____
<input type="checkbox"/> Normal weight	<input type="checkbox"/> 25-35 lbs	Current wt: _____
<input type="checkbox"/> Overweight	<input type="checkbox"/> 15-25 lbs	Pre-pregnancy wt: _____
<input type="checkbox"/> Obese	15 lbs	Current wt. gain: _____

INSTRUCTIONS

- Determine Body Mass Index Weight Category according to instructions on back side.
- Determine number of current weeks gestation.
- Obtain current weight and calculate the weight gained (or lost) from the pre-pregnancy weight. If pre-pregnancy weight is unknown, plot the weight obtained on the first prenatal visit at the midpoint of the Recommended Weight Gain Range based on the appropriate Body Mass Index Weight Category (i.e., underweight, normal weight, overweight, obese) and current weeks gestation.
- Plot the intersection of the weight gained and current weeks gestation. If the pattern varies from the appropriate recommended weight gain range (shaded area), investigation of the cause is indicated.



Estimating Prenatal BMI

The nomogram (chart) on the back of the WIC-4, called Chart of Estimating Body Mass Index (BMI) Category and BMI (Pounds and Inches), will help you estimate a woman's prepregnancy BMI.

Follow these steps:

1. Ask the woman to tell you her prepregnancy weight. Record the



prepregnancy weight on the form.

2. Measure her height. Convert this measurement to inches. (See conversion chart on page 75.)

If a woman's measurement is greater than $\frac{1}{2}$ inch, round **up**.

Example: 5' 5 $\frac{1}{2}$ ", rounds up to 5' 6", or 65".

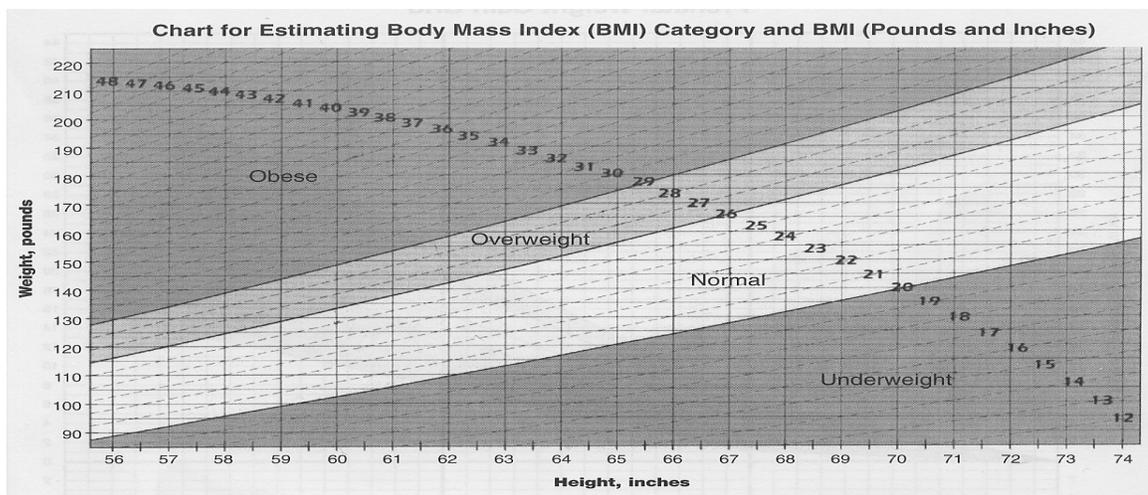
If the measurement is less than $\frac{1}{2}$ inch, round **down**.

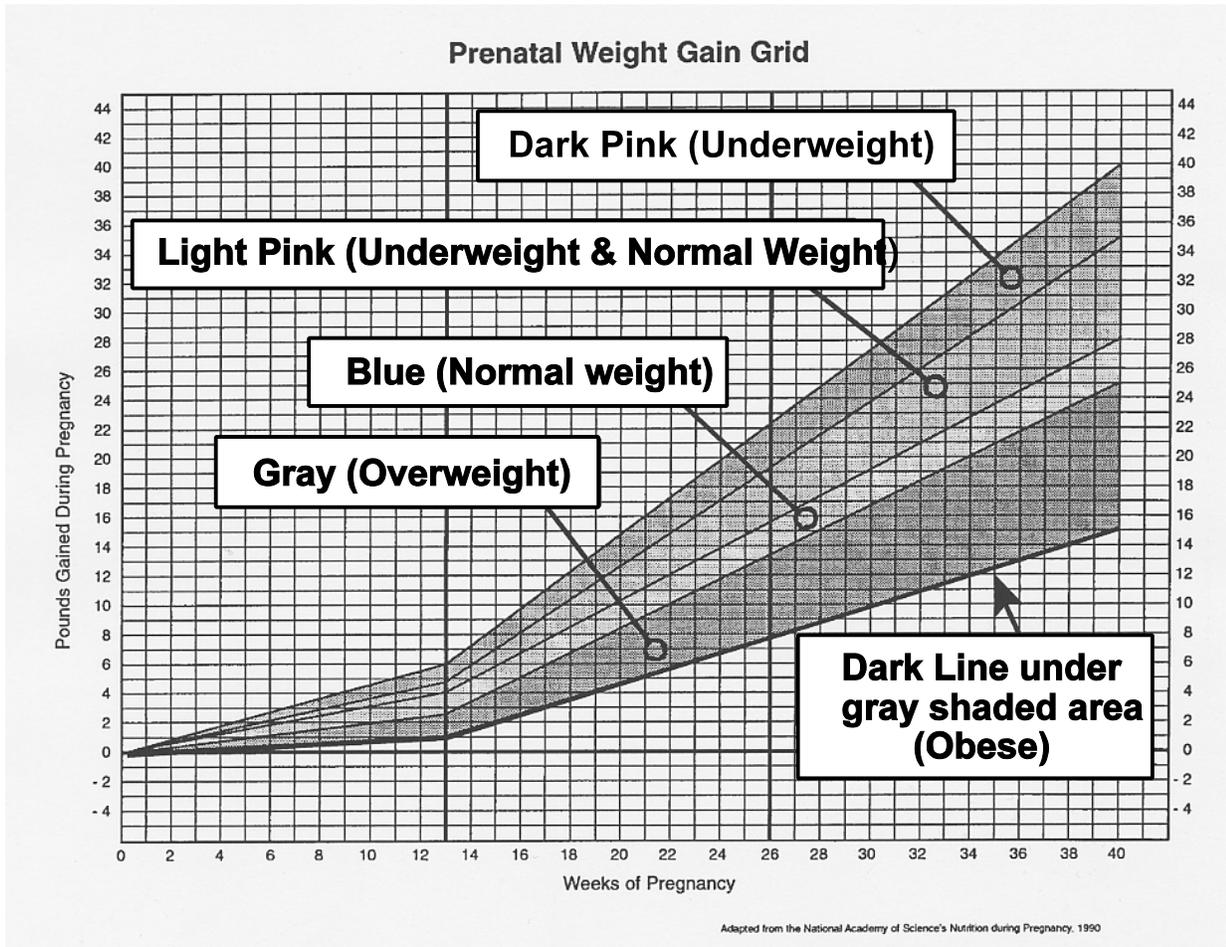
Example: 5' 5 $\frac{1}{4}$ ", rounds down to 5' 5", or 65".

Quick Tip: 5 feet = 60 inches

3. Find her height on the bottom of the chart under the horizontal line or axis. Then find her prepregnancy weight on the left side column, or vertical axis, of the chart.
4. Identify where the two points, height and weight, meet.
5. To estimate her BMI, read the bold number on the dashed line that is closest to this point. This is the woman's estimated BMI.

She will be classified into one of the following categories: normal, underweight, overweight, or obese.





Normal

If a woman's prepregnancy BMI is between 19.8 and 26.0, she is considered at a normal weight. When you plot her "pounds gained during pregnancy" and "weeks of pregnancy" on the Prenatal Weight Gain Grid, the intersection of the two axes should fall in the blue and light pink areas. If it falls in the dark pink area or the white grid space above it, she has gained too much weight. If it falls in the gray area or the white grid space below it, she hasn't gained enough weight.

Underweight

If a woman's prepregnancy BMI is less than or equal to 19.8, she is considered underweight. When you plot her "pounds gained during



pregnancy” and “weeks of pregnancy” on the Prenatal Weight Gain Grid, the intersection of the two axes should fall in either the light pink or dark pink areas. If it falls in the white grid space above the dark pink area, she has gained too much weight. If it falls in the blue or gray areas or the white grid space below them, she hasn’t gained enough weight.

Overweight

If a woman’s prepregnancy BMI is between 26.1 and 29.0, she is considered overweight. When you plot her “pounds gained during pregnancy” and “weeks of pregnancy” on the Prenatal Weight Gain Grid, the intersection of the two axes should fall in the gray area. If it falls in the blue, light pink, or dark pink areas or the white grid space above them, she has gained too much weight. If it falls in the white grid space below the gray area, she hasn’t gained enough weight.

Obese

If a woman’s prepregnancy BMI is greater than 29.0, she is considered obese. When you plot her “pounds gained during pregnancy” and “weeks of pregnancy” on the Prenatal Weight Gain Grid, the intersection of the two axes should fall on the dark line under the gray area. If it falls in the gray, blue, light pink, dark pink areas or the white grid space above the dark pink area, she has gained too much weight. If it falls in the white grid space below the line, she hasn’t gained enough weight. This line is only a guide for weight gain since there is no “range.” Weight gain should generally follow the slope of the line. *i.e.* along the line.

Plotting the Prenatal Weight Gain

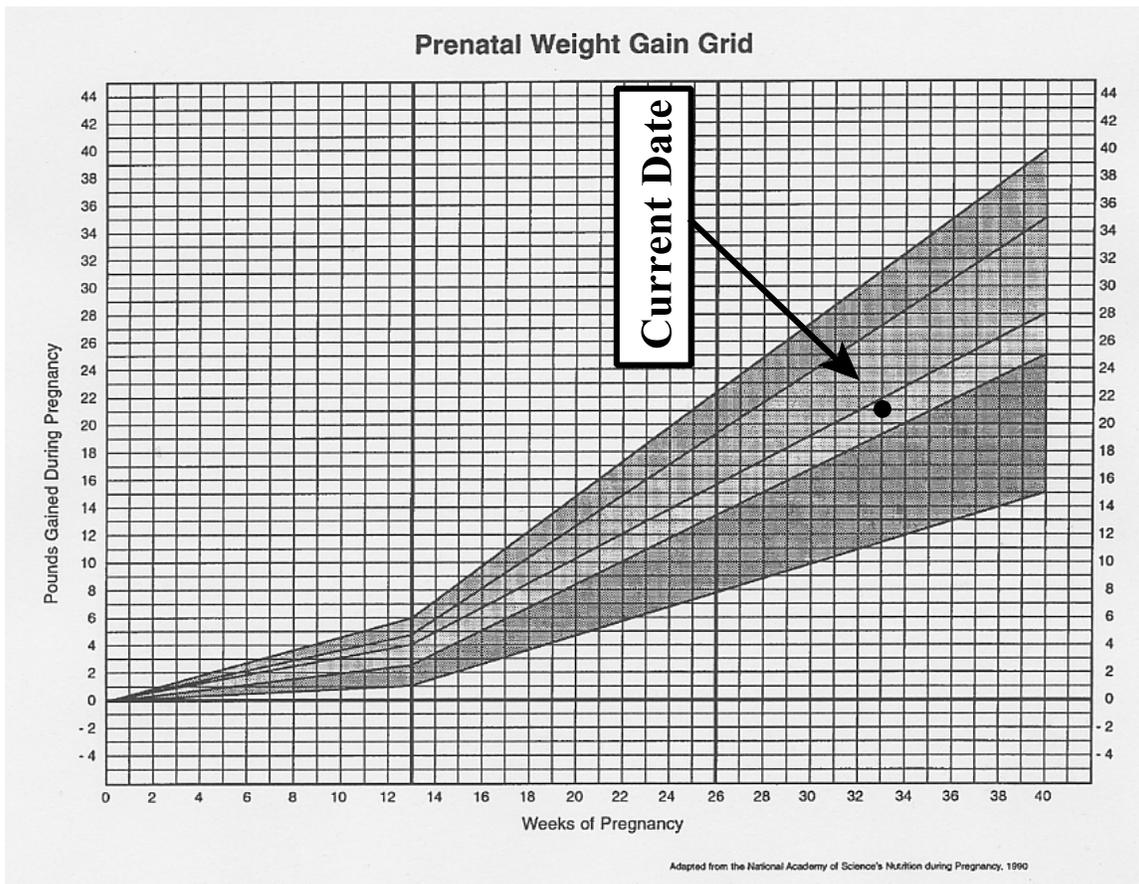
Subtract a woman’s prepregnancy weight from her current weight to determine current weight gain or loss since the onset of pregnancy.

**Example:**

A Woman at 33 weeks gestation has gained 21 pounds.

Current Weight	156 lb.
(subtract) <u>Prepregnancy Weight</u>	<u>-135 lb.</u>
Current Weight Gain	21 lb.

On the Prenatal Weight Gain Grid, find the current weight gain/loss on the vertical axis and current week of gestation on the horizontal axis. Place a dot at the point where the two criteria intersect. Be sure to label the dot with the current date so that weight gain can be accurately monitored over time.



Each time a pregnant woman is weighed, the current week of gestation



should be recalculated and her weight gain plotted as described.

If a woman does not know her prepregnancy weight or her estimate seems unreasonable, assume that her weight gain has been ideal up to this point in time. Plot her weight at the midpoint of the “Normal Recommended Weight Gain Range” on the appropriately-colored area on the Prenatal Weight Gain Grid. If she is obviously overweight, obese, or underweight today, use either the overweight (gray), obese (the dark line under the gray shaded area), or underweight (dark or light pink) areas. If she appears to be a normal weight, plot her at the midpoint between the light pink and blue areas on the grid.

Example:

A woman is 28 weeks gestation and does not know her prepregnancy weight. She is obviously overweight. Plot her at the midpoint of the gray area on the Prenatal Weight Gain Grid, at the intersection of the line indicating weight gain of 12 pounds and 28 weeks gestation.

At each subsequent visit, plot the number of pounds gained or lost from this point.

Plot a prenatal weight gain chart with the information about Carmen in Exercise “C.” After you are finished, compare your answer with the answer printed at the end of this manual.

Exercise “C”

Carmen is pregnant and has come to the clinic for her first prenatal visit on July 3rd. The first day of her last menstrual period was March 9. Her prepregnancy weight was 113 pounds. Her height is 61 inches and her current weight is 124 pounds. Using a gestation wheel, find her estimated date of delivery and current week gestation. Determine the weight status grid that should be used and plot Carmen’s weight gain.



II. Postpartum Women

All postpartum women must be weighed and measured as a part of their postpartum clinic visit. Height and weight measurements should be taken using the procedures previously described.

The health care professional should assess a woman's weight and BMI carefully and counsel her accordingly. A newly postpartum woman may appear overweight when compared to her normal, or usual, weight. However, she may not be "overweight." The number of weeks postpartum needs to be considered when assessing her weight status, because a newly postpartum woman commonly carries several pounds of "baby fat" for a few weeks to several months following delivery.

Rapid weight loss is not recommended, especially for a woman who is breastfeeding. Instead, a slow gradual weight loss is preferred for a woman who is trying to return to her prepregnancy weight.

STOP

**Answer Questions
16–21.**

16. *Using a gestation wheel, fill in the following blanks with the correct answers:*
- The first day of a participant's last period was March 14. What is her due date? _____
 - Her baby is due May 29. Today is April 17. How many weeks gestation is she? _____
 - She can't remember the first day of her last period, but thinks it was around mid-November. What is her estimated date of delivery (E.D.D.)? _____
 - Her E.D.D. is August 7. Today is April 20. How many weeks gestation is she? _____



17. A gestation wheel is:
- ___ a. a super-precise tool for scientific determination of pregnancy outcome.
 - ___ b. a magical wheel of misfortune that is able to predict the future.
 - ___ c. an easy-to-use tool for estimating date of delivery, week of gestation, etc.

Use a **Range of Prenatal Weight Gain** form to answer the following questions.

18. Indicate the prepregnant or prepregnancy BMI status for the following participants:
- a. 5 feet 3 inches; 145 pounds. _____
 - b. 64 inches; 102 pounds. _____
 - c. 60 inches; 149 pounds. _____
 - d. 68 inches; 195 pounds. _____
 - e. 5 feet 8 inches; 115 pounds. _____
 - f. 4 feet 11 inches; 122 pounds. _____
 - g. 66 inches; 134 pounds. _____



Mark True or False:

19. ___ T ___ F The colored areas on the growth grids indicate a danger zone and weight gain should either be above or below this range.
20. ___ T ___ F When a mom makes a clinic visit to bring in her newborn, there is no benefit to obtain her postpartum weight.
21. A pregnant woman's current weight is 130 pounds. Her prepregnant weight was 135 pounds. What is her current weight gain?



Chapter 5: Special Considerations

The Objective for this chapter is:

- **Staff will state acceptable procedures for weighing and measuring participants with special needs.**

During the screening process, circumstances may arise that require special attention or deviation from standard procedures. The following are some of the more common “special situations” that can occur.

I. Mobility Impaired Participants

If a participant has a condition that prevents them from being weighed and measured using standard procedure, document this fact in the medical record. In some cases, non-standard procedures can be used, or recent data can be obtained from another health care provider. Refer to policy CS: 17.0 Section III, for use of medical data taken prior to the time eligibility is determined.

Wheelchair-bound/Unable to Stand

Children over 2 years of age who are wheelchair-bound and/or are unable to stand without support should be measured lying down. If the child is longer than the recumbent board, use a metal or other non-stretchable measuring tape, attached to a table, desk-top, or floor. Plot growth using the appropriate chart and document the non-standard measurement method. If the 2 to 5 WIC growth chart is used, BMI for age cannot be determined due to obtaining recumbent length. Document exception in chart.

Children who are unable to stand on the adult scale may be weighed using the following method: Weigh an adult holding the child and record the combined weights. Then weigh the adult alone. Subtract the adult's weight from the combined weights. The difference represents the child's weight. **(NOTE:** This procedure may also be used for uncooperative children who refuse to be weighed using standard procedures.)



Amputees

It is preferable to weigh and measure an amputee using standard procedures. This is not always possible. If a mother or child amputee is able to stand alone, weigh and measure using standard procedures. If they are unable to stand, measure them lying down, and weigh them as you would a wheel-chair child, as described above.

WIC certification risk factors for being underweight can only be used for participants who are obviously underweight, *i.e.*, participants who appear emaciated. Document observation in the chart to validate assignment of risk factor.

One Long Leg

If a child is younger than 2 years of age and one leg is longer than the other, the child should be measured lying down. Both legs should be fully extended. Record the measurement of the longer leg and plot this measurement on the growth chart.

A child over 2 years of age or a woman who has one leg longer than the other can be measured in a standing position. Have the participant stand on their longer leg and record the measurement. Use the longer-leg length when plotting growth or determining weight status.

Participants Wearing Casts

If a participant is wearing a cast that prevents them from being measured, try to obtain recent data from another health care provider. If a participant is wearing a cast that does not prevent measurements from being obtained, use standard procedures.

A participant wearing a cast can usually be weighed using standard procedures. A cast will produce an artificially heavier weight—this will be reflected on the growth chart. The WIC certification risk factor for being overweight can be used for participants who are *obviously* overweight or obese, *i.e.*, they would be considered overweight even without the cast. Document observation in the chart to validate assignment of risk factor.

Congenital Disorders/Birth Defects



The growth of a participant with a congenital disorder or birth defect cannot be compared to the reference population. Therefore, the NCHS growth charts are not appropriate. However, plotting the individual's personal growth curve over a period of time may be helpful in assessing their pattern of growth and providing appropriate nutrition counseling.

II. Premature Infants

Weigh and measure premature infants using standard procedures. Use the Birth to 36 Months Growth Chart to plot their measurements.

For infants born at 37 weeks gestation or earlier, plot growth for actual age *and* “adjusted” or “corrected” age:

- Actual age is the true, chronological age.
- “Adjusted” age is age that has been “corrected” to allow for prematurity.

Example:

An 11-month old infant who was born 10 weeks early (i.e., 30 weeks gestation).

Actual Age	11 months old
<i>Subtract</i> Months Premature	$2\frac{1}{2}$ months premature (10 weeks)
Adjusted Age	$8\frac{1}{2}$ months old

Plot length and weight for both actual and adjusted age. Use a different colored pen or symbol to distinguish them from each other.



Second Example:

A premature infant is 2 months and 8 days, or 9 weeks, and was born at 37 weeks gestation, or 3 week premature.

Actual Age	9 weeks
<i>Subtract</i> weeks Premature	- 3 weeks
Adjusted Age	6 weeks

Premature infants born at 37 weeks gestation or earlier will have two plots on the weight for age and length for age grids. Be sure that “actual” and “adjusted” plots are labeled with dates and distinguishable from each other. Plot both actual and adjusted age until the infant is at least one year of age. When determining risk codes for program eligibility, use actual, chronological age. When counseling parents/caregivers, use adjusted age. A premature infant’s actual age will plot below normal, sometimes by quite a bit, and this may be disturbing to the parents. Counseling on adjusted or corrected age is less alarming.

Remember:

For premature infants, always use **actual** age, length and weight **for certification**, and **adjusted** age, length and weight **for counseling** purposes.

If an infant’s length or weight are not able to be plotted on the growth charts, document the length and weight in the chart and indicate that the you were unable to plot the results. Don’t draw lines or extend the chart as this may result in inaccurate plotting.

STOP

**Answer Questions
22–24.**



Place a mark on the line next to the correct answer(s) to the questions.

- 22.** If a non-standard method is used to weigh or measure a participant, the CPA should always
- a.** document this fact in the participant's medical record.
 - b.** make sure there are no records that can be traced back to him/her.
- 23.** An uncooperative child can
- a.** be rescheduled.
 - b.** have the weighing procedure skipped, and a verbal declaration taken instead.
 - c.** have their weight determined as the difference between the weight of the mother holding the child and the weight of the mother alone.
- 24.** “Adjust” for prematurity when an infant is
- a.** 37 weeks or less gestation.
 - b.** 32 weeks or less gestation.
 - c.** less than 20 weeks gestation.





Practical Activities

Answers can be found in the Answer Key at the back of the manual.

Activity #1: Determining Age

Marisol is a WIC client who has returned to the WIC clinic for subsequent certification on June 10, 2002. Her birth date is May 30, 2000. Determine Marisol's current age.

Activity #2: Growth Chart Plotting

Joshua, age 3 years, 3 months, and 10 days, measures 39½ inches and weighs 35 pounds. Joshua was measured in a standing position. Choose the appropriate growth chart and plot his height for age, weight for age, and his BMI for age. Joshua plots in what percentiles?

Activity #3: Prenatal Weight Gain Grid



Sheniqua is 68 inches tall. She states that she weighed 120 pounds before she became pregnant. Which prenatal weight gain grid should be used to follow her weight gain during the pregnancy according to the BMI chart?

Activity #4: Prenatal Weight Gain Grid Plotting

Rosa came to the WIC clinic for certification as a pregnant woman. Today is June 22. She states that her last period began approximately February 15. When she was measured today, she was 5 feet 2 inches and weighed 150 pounds. She weighed 146 pounds before she became pregnant. Determine her BMI, the appropriate grid, and plot her weight gain.



Conversions for Weighing and Measuring

Weight

Equivalents	Calculator conversion
1 Kilogram [kg] = 2.2 Pounds	___ kg × 2.2 = ___ lb
1 Pound [lb] = 454 grams	___ lb × 454 = ___ g
1 Ounce [oz] = 28.5 grams	___ oz × 28.5 = ___ g

Length/Height

Equivalents	Calculator conversion
1 Meter [m] = 39.37 inches	___ m × 39.37 = ___ in.
1 Centimeter [cm] = 0.393 Inch	___ cm × 0.393 = ___ in.
1 Inch [in.] = 2.54 cm	___ in. × 2.54 = ___ cm
1 Foot [ft.] = 12 Inches	___ ft. × 12 = ___ in.

Rounding Guidelines for Plotting Age

For Birth to 36 Months Growth Charts

Healthy, Full-term Infants:

ö Round to nearest half [½] month

- 1–7 daysö Round **down** to next lowest whole month
- 8–22 daysö Round to ½ month
- 23–30/31 daysö Round **up** to the next highest whole month

For Premature Infants:

ö Round to nearest week

- 1–3 daysö Round **down** to the next lowest whole week
- 4–7 daysö Round **up** to the next highest whole week



For 24 Months and Older/2-5 WIC Growth Chart

Round to nearest $\frac{1}{4}$ year

Less than 1 month 15 days	Round down to next lowest year
1 month 16 days to 4 months 15 days	Round to $\frac{1}{4}$ year
4 months 16 days to 7 months 15 days	Round to $\frac{1}{2}$ year
7 months 16 days to 10 months 15 days	Round to $\frac{3}{4}$ year
10 months 16 days to 12 months	Round up to next highest year

More precise plotting is not inaccurate. e.g., A child who is 4 years 2 months and 11 days old should be plotted at 4 years 3 months when rounding to the nearest quarter [$\frac{1}{4}$] year. However, if this child is plotted at 4 years 2 months, that's OK.



Glossary

Acute undernutrition:

Evidenced by a sudden decrease in weight; usually coincides with short-term disease process or as an immediate reaction to a major lifestyle change.

Anthropometrics:

Measuring the physical characteristics of the body, such as height and weight.

Body Mass Index (BMI):

A relationship or ratio of a person's weight to their height.

$$\text{BMI} = \frac{\text{weight (lb)}}{\text{height (in)}^2} \times 703 \quad \text{OR} \quad \text{BMI} = \frac{\text{weight (kg)}}{\text{height (m)}^2} \times 703$$

Chronic Disease or Condition:

A disease or condition that can develop slowly and persist for a long period of time or throughout a lifetime.

Chronic undernutrition:

Evidenced by a long-term decrease in weight, followed by a decrease in height; generally indicative of a long-term disease process or food deprivation.

Closely spaced pregnancies:

Conception before 16 months postpartum.

Conception:

The beginning of pregnancy when a sperm fertilizes an egg and an embryo is formed.

Desirable weight:

BMI between 19.8 and 26.0.

E.D.D.:

Expected date of delivery or due date.

**Failure-to-thrive (FTT):**

When an infant fails to grow adequately in height and weight. This is generally due to an inadequate intake of food either from a poor diet, physical problem, poor absorption due to a gastrointestinal problem or the existence of a medical condition that causes altered growth needs.

Fetal growth retardation (FGR) [formerly Intrauterine growth retardation (IUGR)]:

A fetal weight <10th percentile for gestational age.

Frankfort Plane:

An imaginary straight line drawn from the bottom of the bone of the eye socket to the hole in the ear. This line should be parallel to the floor and/or perpendicular to the surface of the measuring board. This procedure may be aided by the staff person gently holding the applicant's chin, open handed, to position the head for the applicant.

Gestation:

The state of pregnancy or the period of carrying the developing embryo/fetus from fertilization (conception) to birth. This period is usually 40 weeks. (At 20 weeks gestation, a woman is "20 weeks along" in her pregnancy, or about halfway through the pregnancy).

Gestation Wheel:

A tool providing information on dates and time periods throughout a woman's pregnancy. Use a gestation wheel to determine a woman's current week and trimester of gestation, and her estimated date of delivery.

Growth chart:

One in a series of grids or graphs that help the WIC CPA determine whether weight, height, and length are all appropriate for each other (*i.e.*, weight to height or weight to length) and for age (*i.e.*, weight to age and height or length to age). The results are reported in percentiles, a relationship of these measures to the average population.



Growth spurts:

Sometimes a child's increase in height will be greater than their increase in weight. This may cause a decrease in their weight for length/height, even by a percentile division. Growth spurts are a normal part of development, however any drastic changes in weight and length/height should always be monitored closely.

Height-for-weight:

A relationship (ratio) used to express weight in terms of height.

Ideal body weight (IBW):

A weight table used by health care providers and insurance companies to determine if one is within a particular weight range for both height and body frame size.

Large for gestational age:

A birth weight ≥ 9 pounds (4000 grams) or $\geq 90^{\text{th}}$ percentile weight for gestational age at birth.

Linear growth:

Growth that appears as a straight line on a growth chart, where the child can increase in height or weight without any fluctuations or growth spurts.

Low birth weight (LBW):

A birth weight less than or equal to $5\frac{1}{2}$ pounds (2500 grams).

Malnutrition:

A condition caused by either an excess or deficiency of energy or nutrient intake or by an imbalanced intake of energy or nutrients.

Menses:

The days during the menstrual cycle when blood flows.

Mid-Axillary line:



An imaginary straight line that runs on the side of the body from the mid-shoulder to the heels. The line should be perpendicular to the floor, and as a result, the heels *may not always* touch the wall or the back of the measuring instrument.

Neonate:

A newborn infant up to 28 days after birth.

Obese:

BMI >29.0.

Overweight:

BMI between 26.1 and 29.0.

Precautionary Measure:

Protective steps taken to prevent the spread of disease and parasites such as head lice; e.g., be sure either to cover measuring board headpieces with fresh scale paper or wipe the headpieces down with a disinfecting solution between participants.

Pregnancy:

The state in which the mother is carrying the embryo/fetus, from conception to birth.

Prematurity:

Birth # 37 weeks gestation.

Prenatal:

During pregnancy before birth of child.

Pre-pregnancy weight:

Weight prior to pregnancy.

Prepubertal:

The two year period occurring immediately before puberty. During this time, accelerated growth and appearance of secondary sex characteristics occur.

Preterm delivery:

Birth of an infant at # 37 weeks of gestation.



Small for gestational age (SGA):

For infants and children < 2 years of age, <10th percentile weight for gestational age at birth, based on a generally accepted intrauterine growth reference.

Stance:

Normal position of the knees and feet. Persons should be placed this way before measuring. There are three possible positions: 1) knees together and feet together, 2) knees together and feet apart, and 3) knees apart and feet together. The important point to remember is the correct positioning occurs at the point when the knees touch first or the feet touch first. Some people may have their thighs touch first before their knees touch, and that is acceptable.

Standard weight:

The “ideal” or “normal” weight for height determined by standardized charts, associated with greatest health and longevity.

Trimesters:

The length of the pregnancy determined in terms of months:

- < one through three months = first trimester;
- < four through six months = second trimester;
- < seven through nine months (or birth) = third trimester.

Underweight:

BMI #19.8.





Answer Key to Questions and Practical Activities

Chapter 1: Why Do We Weigh and Measure Participants

1. *d*
2. *anthropometrics*
3. *length*

Chapter 2: Weighing and Measuring Equipment and Procedures

4. *b*
5. *a*
6. *c*
7. *a, e, f, l*
8. *b*

Chapter 3: Using Growth Charts

9. *a*
10. *a*
11. *a*
12. 3 years, 5 months, 18 days 3½ years
13. 2 years, 6 months, 21 days 2½ years
14. *c*
15. *f*

Chapter 4: Prenatal and Postpartum Measurements

16.
 - a. December 19
 - b. She is 34 weeks gestation.
 - c. August 22
 - d. 24 weeks
17. *c*



18. a. Normal
 b. Underweight
 c. Obese
 4. Obese
 e. Underweight
 f. Normal
 g. Normal
19. *f = false*
20. *f = false*
21. 5 pound weight loss (-5 lb)

Chapter 5: Special Considerations

22. *a*
23. *c*
24. *a*

Practical Activities

Activity #1: Determining Age

Year	Month*	Day	[*All months are rounded to 30 days]
	5	40	
2002	6	10	
2000	5	30	
2	0	10	or 2 years, 0 months, 10 days

~~Marisol is 2 years and 10 days old.~~

Activity #2: Growth Chart Plotting

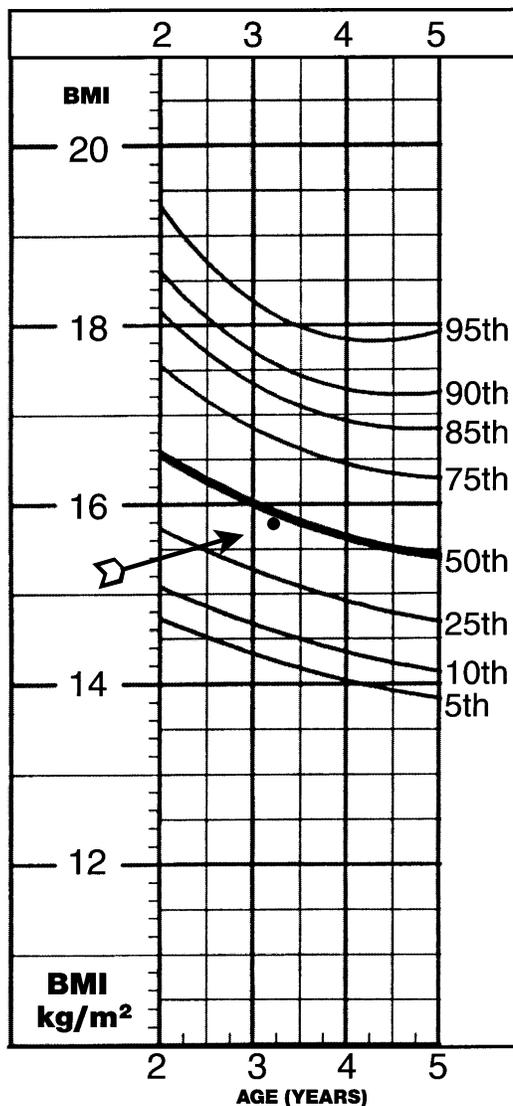
Following the procedure outlined, the correct answer is shown as follows. Using the boys 2-5 years growth chart on the next two pages, Joshua plots just above the 75th percentile for stature for age and at the 75th percentile for weight for age. His BMI, 15.8, for age plots just below the 50th percentile.



BOYS: 2-5 YEARS

Name Joshua Record # _____

Body mass index-for-age percentiles



English Formula:

$$BMI = \frac{wt. lb}{ht. in} \div ht. in \times 703$$

(fractions and ounces must be converted to decimal values)

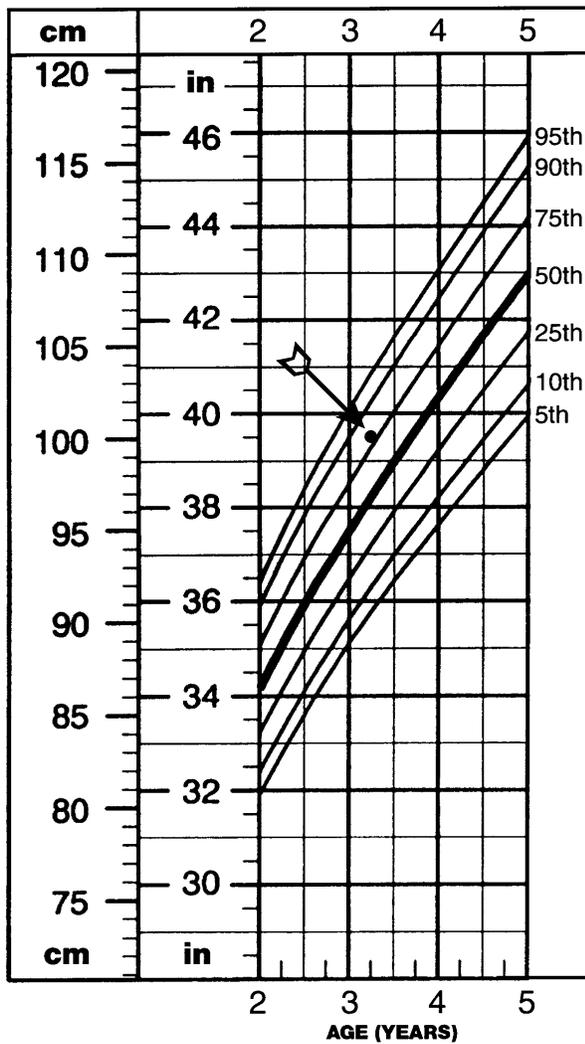
DATE	AGE	LENGTH	WEIGHT	HEAD CIRC.	COMMENT
	Birth				



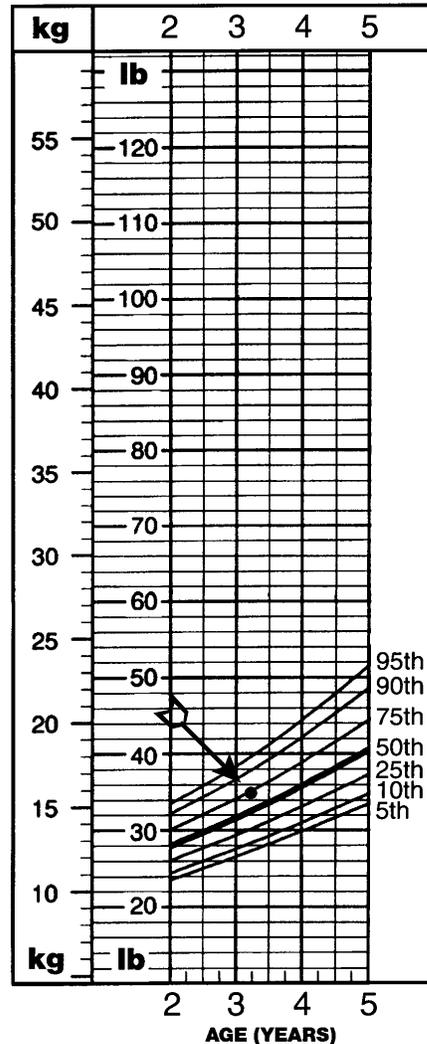
BOYS: 2-5 YEARS

Name Joshua Record # _____

Stature-for-age percentiles



Weight-for-age percentiles



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Activity #3: Prenatal Weight Gain Grid

According to the “Body Mass Index Chart” on the range of Prenatal Weight gain Form (WIC-4), a woman measuring 68 inches, or 5 feet 8 inches, and weighing 120 pounds would be classified on the Underweight grid, the light and dark pink grids.

Activity #4: Prenatal Weight Gain Grid Plotting

Rosa's prepregnancy weight, 146 pounds, and her height, 5 feet 2 inches, result in a BMI of 26.7, which is in the Overweight category. The grey grid should be used. Today Rosa is 18 weeks gestation; this should be plotted on the horizontal axis. She has gained 4 pounds; this should be plotted on the vertical axis. The intersection of these lines shows Rosa's weight gain. It falls within the acceptable range of the overweight recommended weight gain range, as seen on the chart that follows on the next two pages.



RANGE OF PRENATAL WEIGHT GAIN

Name Rosa Date _____ Record # _____

Body Mass Index Weight Category

- Underweight
- Normal weight
- Overweight
- Obese

Recommended Wt. Gain Range

- 28-40 lbs
- 25-35 lbs
- 15-25 lbs
- 15 lbs

Due Date: 11 - 22

Current weeks gestation: 18

Current wt: 150

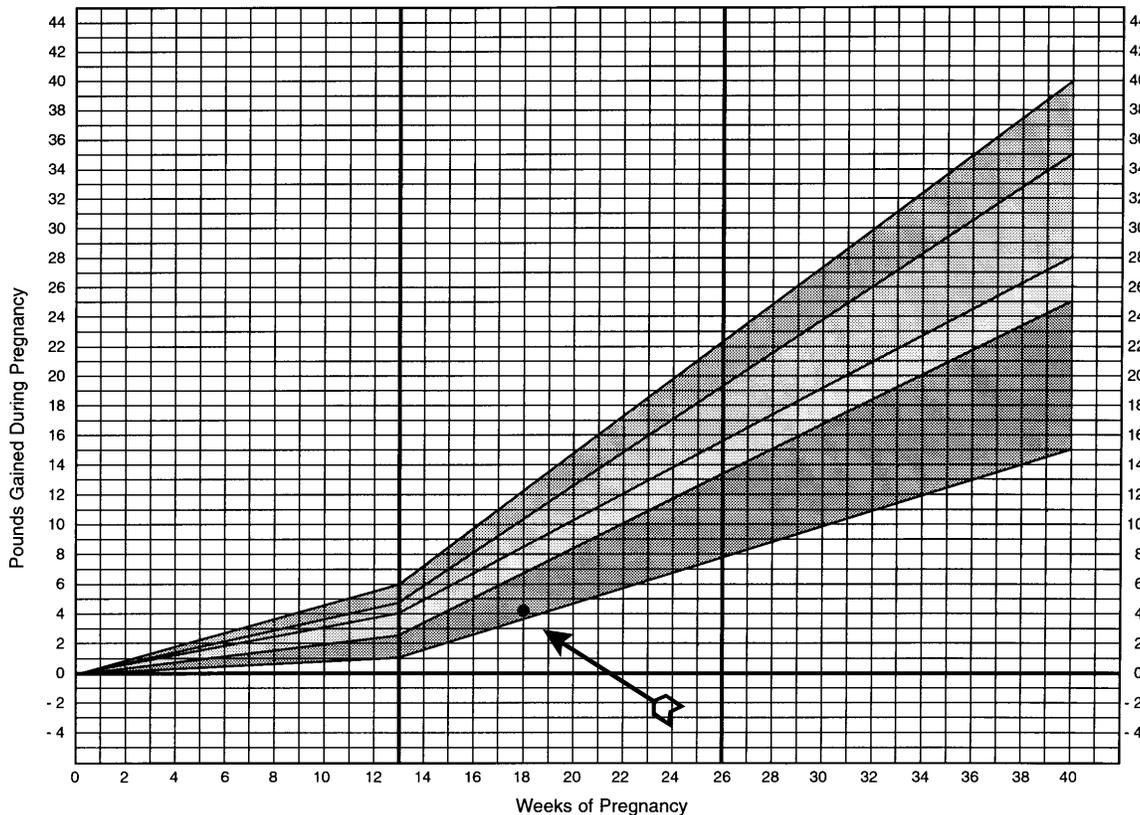
Pre-pregnancy wt: 146

Current wt. gain: 4

INSTRUCTIONS

- Determine Body Mass Index Weight Category according to instructions on back side.
- Determine number of current weeks gestation.
- Obtain current weight and calculate the weight gained (or lost) from the pre-pregnancy weight. If pre-pregnancy weight is unknown, plot the weight obtained on the first prenatal visit at the midpoint of the Recommended Weight Gain Range based on the appropriate Body Mass Index Weight Category (i.e., underweight, normal weight, overweight, obese) and current weeks gestation.
- Plot the intersection of the weight gained and current weeks gestation. If the pattern varies from the appropriate recommended weight gain range (shaded area), investigation of the cause is indicated.

Prenatal Weight Gain Grid



Adapted from the National Academy of Science's Nutrition during Pregnancy, 1990



ESTIMATING PRENATAL BMI CATEGORY

(Instructions for Use)

1. Pre-pregnancy weight: Ask the client how much she weighed immediately prior to conception. Record this weight. If she does not know, record "unknown" and see instructions on front side.
2. Height in inches: Measure the client's height without shoes. Record in inches, if the measurement falls between 1/8 inch increments, round up.
3. BMI category: Determine the client's pre-pregnancy BMI category using the nomogram below. Find the point where the woman's height and pre-pregnancy weight intersect. To estimate BMI, read the bold number on the dashed line that is closest to this point. Record the BMI number and the BMI category (e.g., obese, overweight, normal weight, or underweight)

Pre-pregnancy weight (lbs): 146

Body Mass Index

Height (in): 62

Underweight – BMI < 19.8

BMI #: **26.7**

Normal – BMI 19.8 – 26.0

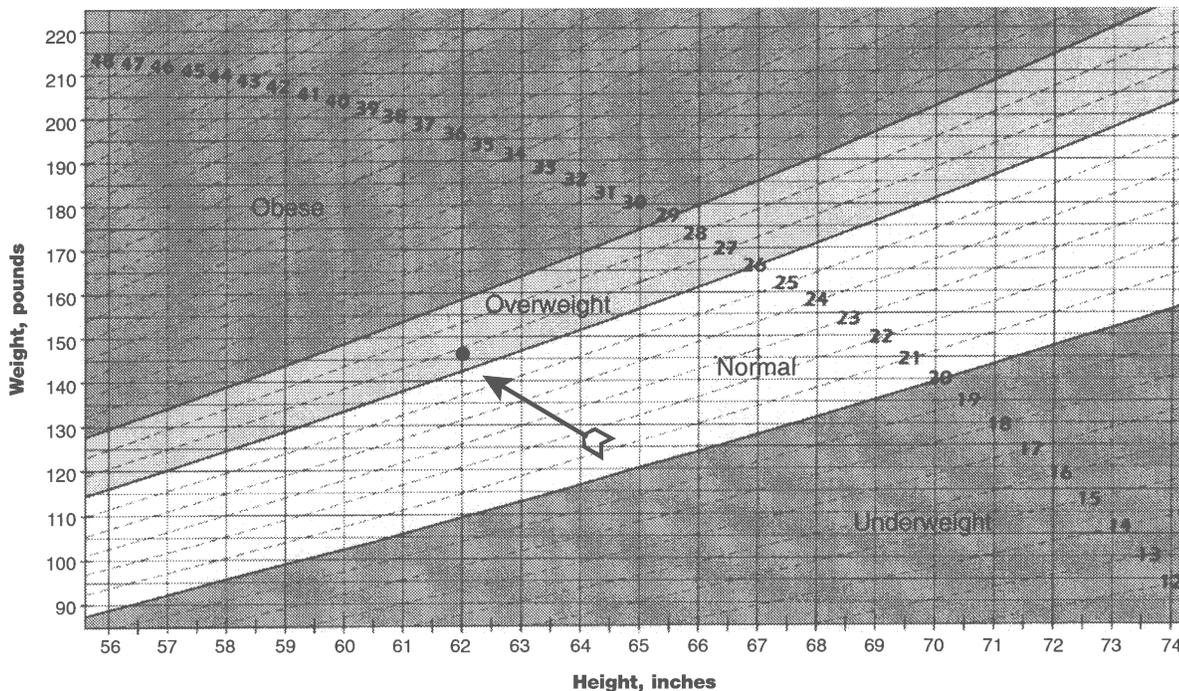
BMI Category: Overweight

Overweight – BMI 26.1 – 29.0

English BMI Formula: $BMI = \frac{wt. lb}{ht. in} \div ht. in \times 703$

Obese – BMI >29.0

Chart for Estimating Body Mass Index (BMI) Category and BMI (Pounds and Inches)



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WIC-4 4/02







Answers to Exercises

Exercise “A” (page 44) Answer:

The correct answers for Luis using the Boys Birth to 36 months Growth Chart are:

Length for Age = below the 25th percentile

Weight for Age = on the 10th percentile

Weight for Height = between the 25th and 50th percentile divisions
(See plotted growth chart on pages 93-94.)

Exercise “B” (page 51) Answer:

Johnny is plotted on the boys **2 to 5 WIC** growth chart.

Since Johnny is older than 2, we need to plot his stature and weight for age on the boys **2 to 5 WIC** growth chart. On the back of the 2 to 5 WIC growth chart stature for age chart, locate his height, 34 inches on the vertical axis, and his age 2 years, 3 months on the horizontal axis. On the Boys 2 to 5 WIC weight for age chart, locate his weight, 23 lbs 8 oz, on the vertical axis and his age, 2 years 3 months or 2¼ years, on the horizontal axis.

Mark the point of intersection. The answers are:

Stature for Age = on the 25th percentile

Weight for Age = below the 5th percentile

BMI = 14.3

BMI for age = below the 5th percentile

(See plotted growth chart on pages 95-96.)



Exercise “C” (page 64) Answer

Line up the arrow labeled “Last Menses Began” on the inner wheel with March 9 on the outer circle. Carmen’s current week of gestation can now be determined by looking at the point on the inner wheel which is directly above July 3 on the outer circle. Therefore, Carmen’s last completed week of gestation is 16 weeks. Her estimated date of delivery, as found by looking at the arrow at 40 weeks, is December 14. Keep in mind that different gestation wheels may vary by a day or two.

The correct grid to use for Carmen is the normal weight status grid since her prepregnancy BMI was within the normal range of 19.8 - 26.0. Subtract her prepregnancy weight of 113 pounds from her current weight of 124 pounds to obtain her weight gain of 11 pounds. The week of gestation, 16th week, is plotted on the horizontal axis. Her weight gain of 11 pounds is plotted on the vertical axis. (See plotted grid on pages 97-98.)

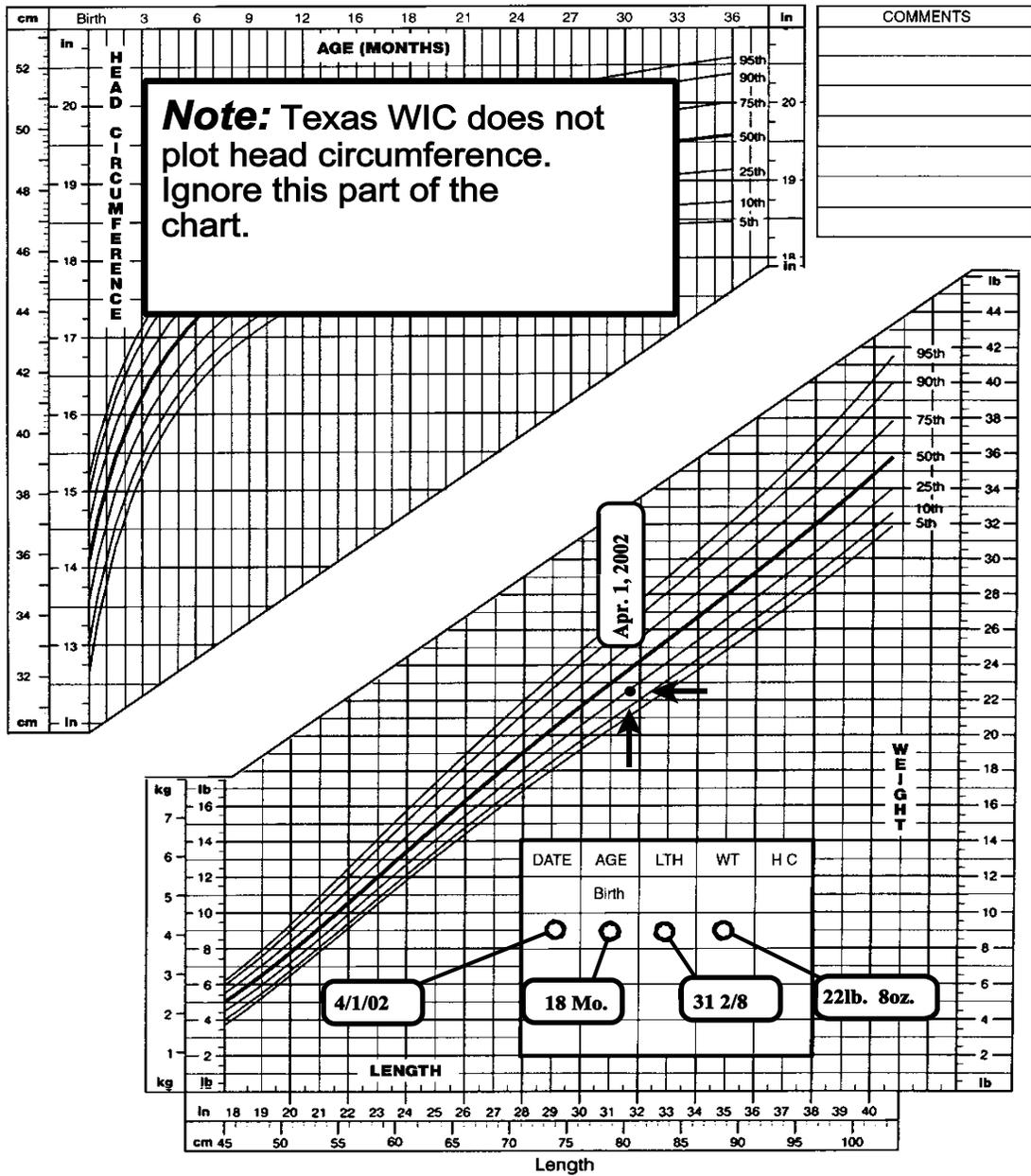


Exercise A:

Boys from Birth to 36 Months° Front° Weight for Length Chart

BOYS: BIRTH TO 36 MONTHS Name Luis Record # _____

Head circumference-for-age and weight-for-length percentiles

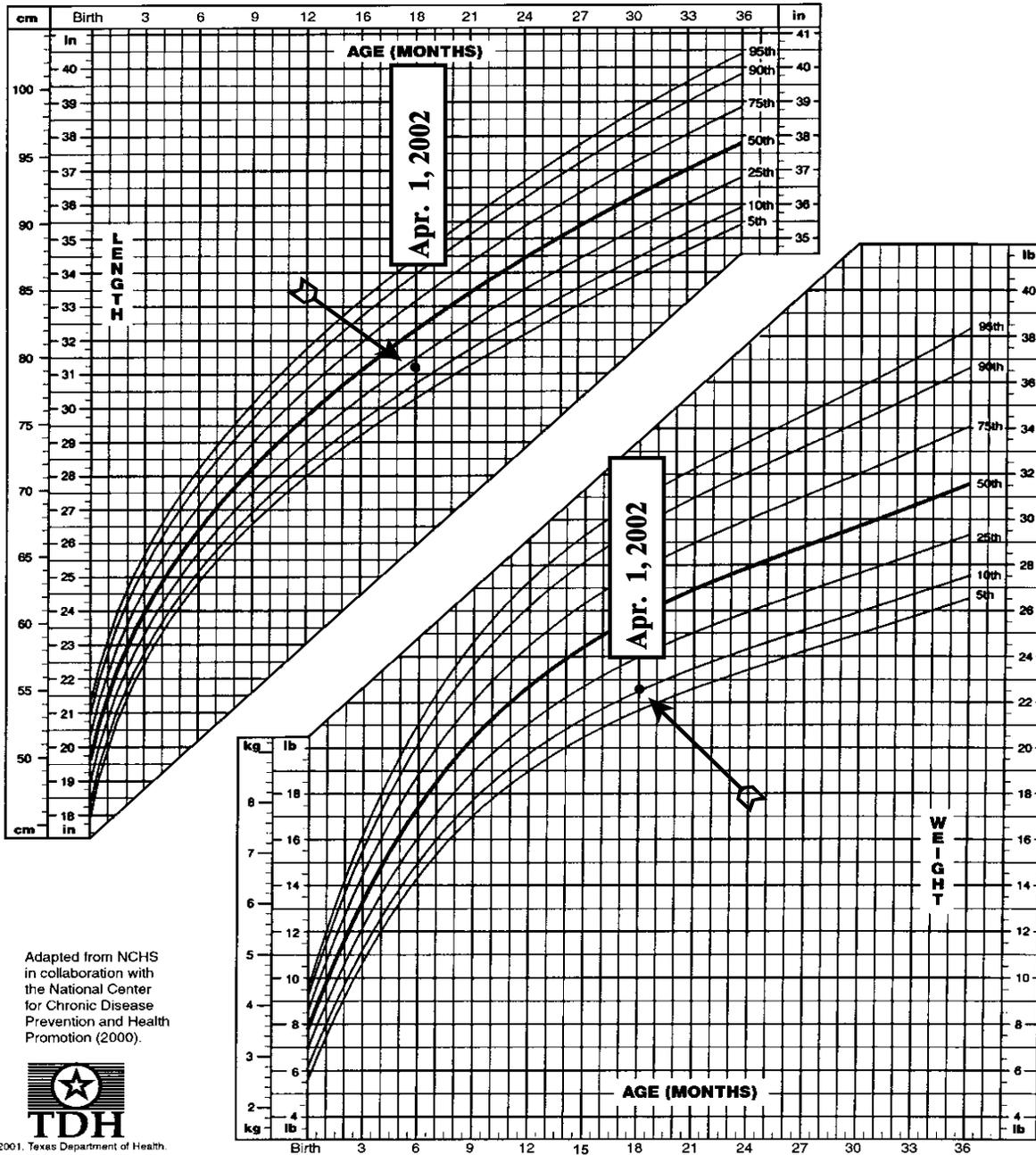




Boys from Birth to 36 Months^o Back^o Length-for-Age and Weight-for-Age Charts

BOYS: BIRTH TO 36 MONTHS Name Luis Record # _____

Length-for-age and weight-for-age percentiles



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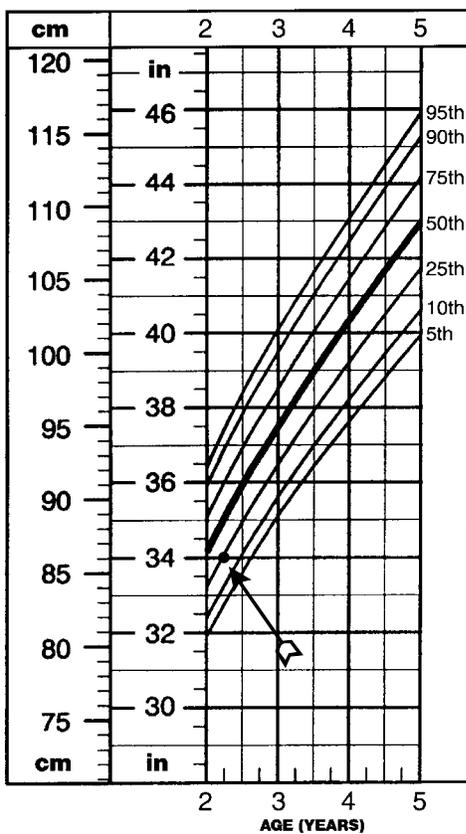
Exercise B:

Plot Johnny's weight for length and weight for age using the back of the **Boys: 2 to 5 Years ° Stature-for-Age and Weight-for-Age**

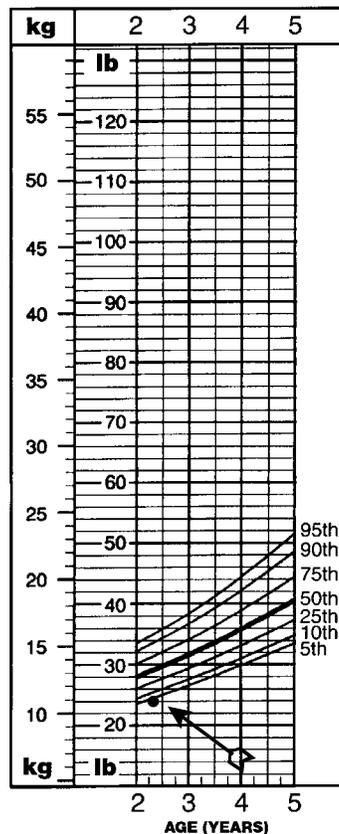
BOYS: 2-5 YEARS

Name Johnny Record # _____

Stature-for-age percentiles



Weight-for-age percentiles



Adapted from NCHS in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).



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Turn to the next page for **Body mass index-for-age percentiles**.

next page

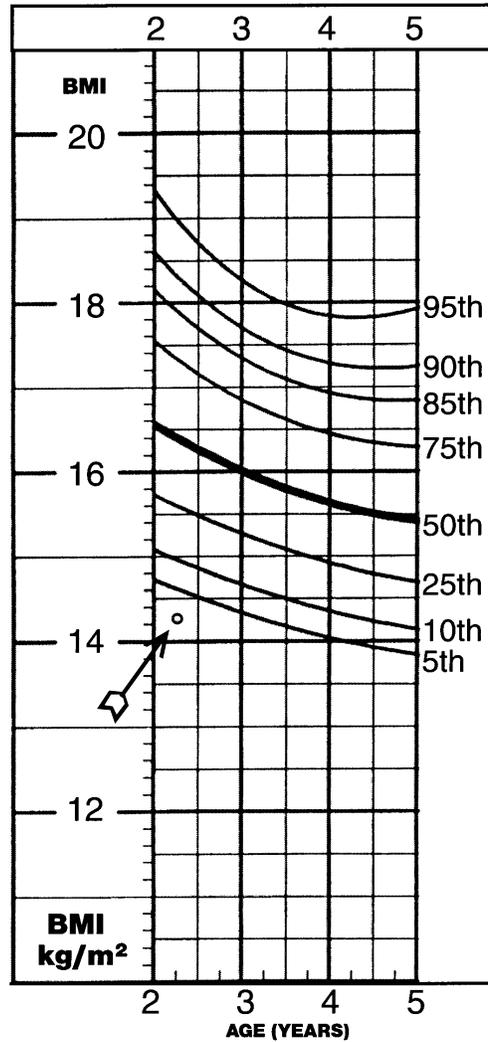


Use this side of the chart to plot Johnny's **BMI for age** percentile.

BOYS: 2-5 YEARS

Name Johnny Record # _____

Body mass index-for-age percentiles



English Formula:

$$\text{BMI} = \frac{\text{wt. lb}}{\text{ht. in}^2} \div \text{ht. in} \times 703$$
 (fractions and ounces must be converted to decimal values)

DATE	AGE	LENGTH	WEIGHT	HEAD CIRC.	COMMENT
	Birth				
	2.25y	34 in.	23.5 lb.		



Exercise C:

Range of Prenatal Weight Gain^o Back

Since Carmen’s BMI status is “normal,” use the **NORMAL Weight Gain** grid found on the front side of this form.

ESTIMATING PRENATAL BMI CATEGORY

(Instructions for Use)

1. Pre-pregnancy weight: Ask the client how much she weighed immediately prior to conception. Record this weight. If she does not know, record “unknown” and see instructions on front side.
2. Height in inches: Measure the client's height without shoes. Record in inches, if the measurement falls between 1/8 inch increments, round up.
3. BMI category: Determine the client's pre-pregnancy BMI category using the nomogram below. Find the point where the woman's height and pre-pregnancy weight intersect. To estimate BMI, read the bold number on the dashed line that is closest to this point. Record the BMI number and the BMI category (e.g., obese, overweight, normal weight, or underweight)

Pre-pregnancy weight (lbs): 113

Body Mass Index

Height (in): 61

Underweight – BMI < 19.8

BMI #: **21**

Normal – BMI 19.8 – 26.0

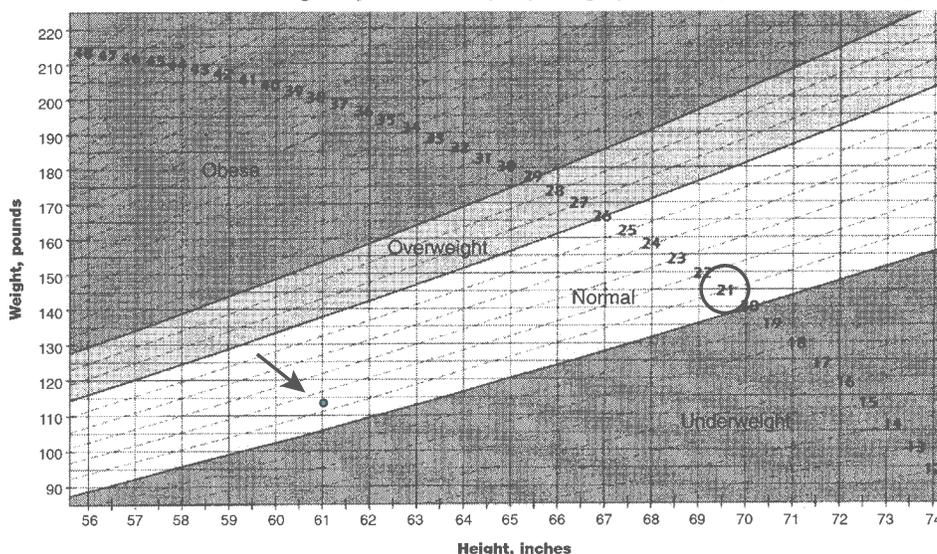
BMI Category: Normal

Overweight – BMI 26.1 – 29.0

English BMI Formula: $BMI = \frac{wt. lb}{ht. in} \div ht. in \times 703$

Obese – BMI >29.0

Chart for Estimating Body Mass Index (BMI) Category and BMI (Pounds and Inches)



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WIC-4 4/02





Exercise C: (continued)

Range of Prenatal Weight Gain^o Front

Since Carmen’s weight status is “normal,” use the blue and light pink areas on the grid. Her estimated date of delivery is December 14. She is 16 weeks gestation.

RANGE OF PRENATAL WEIGHT GAIN

Name Carmen Date July 3 Record # _____

Body Mass Index Weight Category

- Underweight
- Normal weight
- Overweight
- Obese

Recommended Wt. Gain Range

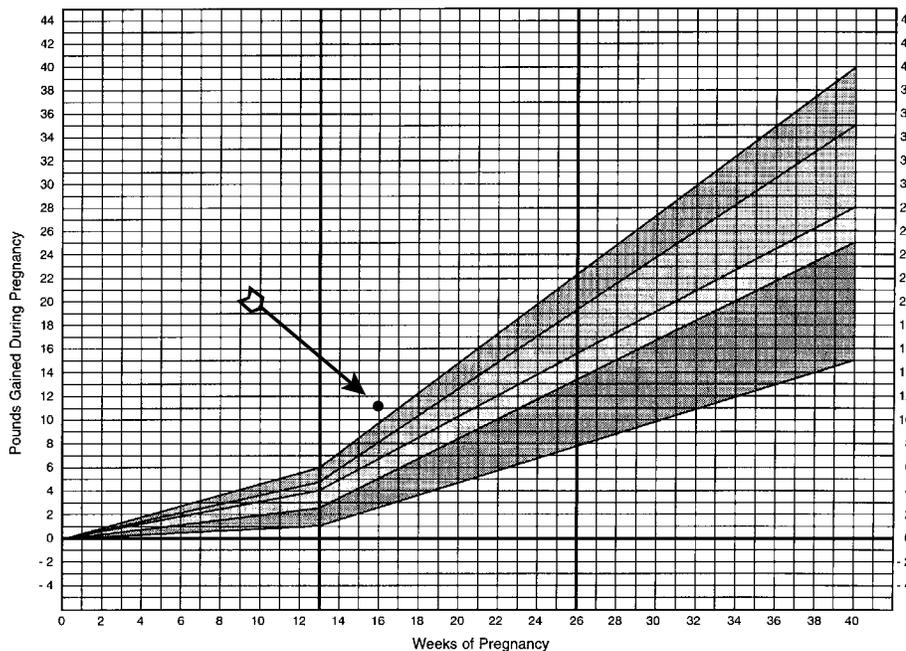
- 28-40 lbs
- 25-35 lbs
- 15-25 lbs
- 15 lbs

Due Date: December 14
 Current weeks gestation: 16
 Current wt: 124
 Pre-pregnancy wt: 113
 Current wt. gain: 11

INSTRUCTIONS

1. Determine Body Mass Index Weight Category according to instructions on back side.
2. Determine number of current weeks gestation.
3. Obtain current weight and calculate the weight gained (or lost) from the pre-pregnancy weight. If pre-pregnancy weight is unknown, plot the weight obtained on the first prenatal visit at the midpoint of the Recommended Weight Gain Range based on the appropriate Body Mass Index Weight Category (i.e., underweight, normal weight, overweight, obese) and current weeks gestation.
4. Plot the intersection of the weight gained and current weeks gestation. If the pattern varies from the appropriate recommended weight gain range (shaded area), investigation of the cause is indicated.

Prenatal Weight Gain Grid



Adapted from the National Academy of Science's Nutrition during Pregnancy, 1990

Has _____ Carmen gained too much weight?



Congratulations!

You have now completed the **Growth Assessment: Weighing and Measuring WIC Participants** Self-Paced Training Guide. You should refer to the Guide when questions or problems arise. You might want to discuss your completed workbook with your supervisor, especially looking at any areas which caused problems for you.

Our goal in producing this guide is to provide a quick and easy reference guide for you to help you provide the superior service which is typical of the service excellence being sought in WIC clinics across Texas. This commitment to delivering superior service shows every day as you screen and qualify applicants for WIC benefits and then deliver those benefits in an efficient and effective manner, one which confirms your dedication to WIC goals.

Remember that the journey to service excellence follows a long and winding road. It is a trip which never ends and is not always easy. Things like keeping up with current policy, answering the ringing telephone, and dealing with upset customers can make the trip seem difficult. But the bumps and curves in the road only keep the ride interesting.

Please be sure to fill out the *Training Profile* at the end of this guide and submit it to your Training Coordinator or Supervisor.

Bon Voyage!







Appendix A:

CDC Table for Calculated Body Mass Index Values for Selected Heights and Weights for Ages 2 to 20 Years





CDC Table for Calculated Body Mass Index Values for Selected Heights and Weights for Ages 2 to 20 Years

Body Mass Index (BMI) is determined as follows:

English Formula:

Weight in pounds ÷ Height in inches ÷ Height in inches x 703 = BMI

Metric Formula:

Weight in kilograms ÷ Height in meters ÷ Height in meters = BMI

The above BMI formulas have already been calculated and are presented in this table entitled *Calculated Body Mass Index Values for Selected Heights and Weights for Ages 2 to 20 Years*. To use the BMI table, first locate the child's height and weight in the height and weight ranges listed in the upper right corner of each page. The table of contents contains a list of height and weight ranges and may be used to locate the page numbers for specific BMI values. Please note that some height and weight measurements are found on more than one page, so be sure that *both* the height and weight measurements are within the range listed at the top of the page. Weight measurements are listed in increasing sequential order. Once the exact page has been located in the table, the point where height and weight intersect represents the BMI value. This value is then plotted on the BMI-for-age growth chart to determine whether the child is within a normal growth pattern, overweight, at risk of becoming overweight, or underweight.

In the table, English height measurements (inches) are shown in 1/2-inch increments for heights below 48 inches and 1-inch increments for heights between 48 and 78 inches. English weight measurements (pounds) are shown in 1/2-pound increments for weights under 60 pounds, 1-pound increments for weights between 60 and 110 pounds, and 2-pound increments for weights between 112 and 250 pounds. The corresponding metric values in centimeters and kilograms are included next to the English values in the table. Whenever a child's specific height or weight measurement is not listed, round to the closest number in the table.

June 2000



DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention





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Calculated Body Mass Index Height and Weight Ranges

<u>Inches</u>	<u>Pounds</u>	<u>Page</u>
29-37	18-26	1
29-43	26.5-34.5	2
29-43	35-43	3
43.5-48	35-43	4
30-44	43.5-51.5	5
44.5-51	43.5-51.5	6
32.5-46.5	52-60	7
47-56	52-60	8
35.5-51	61-77	9
52-64	61-77	10
40.5-60	78-94	11
61-71	78-94	12
44-68	95-112	13
69-77	95-112	14
48-76	114-146	15
77-78	114-146	16
55-78	148-180	17
61-78	182-214	18
66-78	216-250	19



Calculated Body Mass Index

29" -37" and 18 lbs.-26 lbs.

Whenever a child's specific height or weight measurement is not listed, round to the closest number in the table.

Height Cm	In	Weight																
		8.2 Kg	8.4	8.6	8.8	9.1	9.3	9.5	9.8	10.0	10.2	10.4	10.7	10.9	11.1	11.3	11.6	11.8
18	18.5	19	19.5	20	20.5	21	21.5	22	22.5	23	23.5	24	24.5	25	25.5	26		
73.7	29	15.0	15.5	15.9	16.3	16.7	17.1	17.6	18.0	18.4	18.8	19.2	19.6	20.1	20.5	20.9	21.3	21.7
74.9	29.5	14.5	14.9	15.3	15.8	16.2	16.6	17.0	17.4	17.8	18.2	18.6	19.0	19.4	19.8	20.2	20.6	21.0
76.2	30	14.1	14.5	14.8	15.2	15.6	16.0	16.4	16.8	17.2	17.6	18.0	18.4	18.7	19.1	19.5	19.9	20.3
77.5	30.5	13.6	14.0	14.4	14.7	15.1	15.5	15.9	16.2	16.6	17.0	17.4	17.8	18.1	18.5	18.9	19.3	19.7
78.7	31	13.2	13.5	13.9	14.3	14.6	15.0	15.4	15.7	16.1	16.5	16.8	17.2	17.6	17.9	18.3	18.7	19.0
80.0	31.5	13.1	13.5	13.8	14.2	14.5	14.9	15.2	15.6	15.9	16.3	16.7	17.0	17.4	17.7	18.1	18.4	
81.3	32	13.0	13.4	13.7	14.1	14.4	14.8	15.1	15.4	15.8	16.1	16.5	16.8	17.2	17.5	17.9		
82.6	32.5	13.3	13.6	14.0	14.3	14.6	15.0	15.3	15.6	16.0	16.3	16.6	17.0	17.3				
83.8	33	13.2	13.6	13.9	14.2	14.5	14.8	15.2	15.5	15.8	16.1	16.5	16.8					
85.1	33.5	13.2	13.5	13.8	14.1	14.4	14.7	15.0	15.3	15.7	16.0	16.3						
86.4	34	13.1	13.4	13.7	14.0	14.3	14.6	14.9	15.2	15.5	15.8							
87.6	34.5	13.3	13.6	13.9	14.2	14.5	14.8	15.1	15.4									
88.9	35	13.2	13.5	13.8	14.1	14.3	13.9	14.2	14.5	14.8	15.1	15.4						
90.2	35.5	13.1	13.4	13.7	14.0	14.3	14.6	14.9	15.2	15.5	15.8							
91.4	36	13.0	13.3	13.6	13.9	14.2	14.5	14.8	15.1	15.4								
92.7	36.5	13.0	13.3	13.6	13.9	14.2	14.5	14.8	15.1	15.4								
94.0	37	13.2	13.5	13.7	14.0	14.3	14.6	14.9	15.2	15.5	15.8							



Calculated Body Mass Index

29"–43" and 35 lbs.–43 lbs.

Whenever a child's specific height or weight measurement is not listed, round to the closest number in the table.

Height Cm In	Weight																			
	Kg	Lb	15.9	16.1	16.3	16.6	16.8	17.0	17.2	17.5	17.7	17.9	18.1	18.4	18.6	18.8	19.1	19.3	19.5	
35	35	36	36.5	37	37.5	38	38.5	39	39.5	40	40.5	41	41.5	42	42.5	43				
73.7	29	29.3	29.7	30.1	30.5	30.9	31.3	31.8	32.2	32.6	33.0	33.4	33.9	34.3	34.7					
74.9	29.5	28.3	28.7	29.1	29.5	29.9	30.3	30.7	31.1	31.5	31.9	32.3	32.7	33.1	33.5	33.9	34.3	34.7		
76.2	30	27.3	27.7	28.1	28.5	28.9	29.3	29.7	30.1	30.5	30.9	31.2	31.6	32.0	32.4	32.8	33.2	33.6		
77.5	30.5	26.5	26.8	27.2	27.6	28.0	28.3	28.7	29.1	29.5	29.9	30.2	30.6	31.0	31.4	31.7	32.1	32.5		
78.7	31	25.6	26.0	26.3	26.7	27.1	27.4	27.8	28.2	28.5	28.9	29.3	29.6	30.0	30.4	30.7	31.1	31.5		
80.0	31.5	24.8	25.2	25.5	25.9	26.2	26.6	26.9	27.3	27.6	28.0	28.3	28.7	29.1	29.4	29.8	30.1	30.5		
81.3	32	24.0	24.4	24.7	25.1	25.4	25.7	26.1	26.4	26.8	27.1	27.5	27.8	28.2	28.5	28.8	29.2	29.5		
82.6	32.5	23.3	23.6	24.0	24.3	24.6	25.0	25.3	25.6	26.0	26.3	26.6	27.0	27.3	27.6	28.0	28.3	28.6		
83.8	33	22.6	22.9	23.2	23.6	23.9	24.2	24.5	24.9	25.2	25.5	25.8	26.1	26.5	26.8	27.1	27.4	27.8		
85.1	33.5	21.9	22.2	22.6	22.9	23.2	23.5	23.8	24.1	24.4	24.7	25.1	25.4	25.7	26.0	26.3	26.6	26.9		
86.4	34	21.3	21.6	21.9	22.2	22.5	22.8	23.1	23.4	23.7	24.0	24.3	24.6	24.9	25.2	25.5	25.8	26.2		
87.6	34.5	20.7	21.0	21.3	21.6	21.9	22.2	22.4	22.7	23.0	23.3	23.6	23.9	24.2	24.5	24.8	25.1	25.4		
88.9	35	20.1	20.4	20.7	20.9	21.2	21.5	21.8	22.1	22.4	22.7	23.0	23.2	23.5	23.8	24.1	24.4	24.7		
90.2	35.5	19.5	19.8	20.1	20.4	20.6	20.9	21.2	21.5	21.8	22.0	22.3	22.6	22.9	23.2	23.4	23.7	24.0		
91.4	36	19.0	19.3	19.5	19.8	20.1	20.3	20.6	20.9	21.2	21.4	21.7	22.0	22.2	22.5	22.8	23.1	23.3		
92.7	36.5	18.5	18.7	19.0	19.3	19.5	19.8	20.1	20.3	20.6	20.8	21.1	21.4	21.6	21.9	22.2	22.4	22.7		
94.0	37	18.0	18.2	18.5	18.7	19.0	19.3	19.5	19.8	20.0	20.3	20.5	20.8	21.1	21.3	21.6	21.8	22.1		
95.3	37.5	17.5	17.7	18.0	18.2	18.5	18.7	19.0	19.2	19.5	19.7	20.0	20.2	20.5	20.7	21.0	21.2	21.5		
96.5	38	17.0	17.3	17.5	17.8	18.0	18.3	18.5	18.7	19.0	19.2	19.5	19.7	20.0	20.2	20.4	20.7	20.9		
97.8	38.5	16.6	16.8	17.1	17.3	17.6	17.8	18.0	18.3	18.5	18.7	19.0	19.2	19.4	19.7	19.9	20.2	20.4		
99.1	39	16.2	16.4	16.6	16.9	17.1	17.3	17.6	17.8	18.0	18.3	18.5	18.7	19.0	19.2	19.4	19.6	19.9		
100.3	39.5	15.8	16.0	16.2	16.4	16.7	16.9	17.1	17.3	17.6	17.8	18.0	18.3	18.5	18.7	18.9	19.2	19.4		
101.6	40	15.4	15.6	15.8	16.0	16.3	16.5	16.7	16.9	17.1	17.4	17.6	17.8	18.0	18.2	18.5	18.7	18.9		
102.9	40.5	15.0	15.2	15.4	15.6	15.9	16.1	16.3	16.5	16.7	16.9	17.1	17.4	17.6	17.8	18.0	18.2	18.4		
104.1	41	14.6	14.8	15.1	15.3	15.5	15.7	15.9	16.1	16.3	16.5	16.7	16.9	17.1	17.4	17.6	17.8	18.0		
105.4	41.5	14.3	14.5	14.7	14.9	15.1	15.3	15.5	15.7	15.9	16.1	16.3	16.5	16.7	16.9	17.1	17.3	17.6		
106.7	42	13.9	14.1	14.3	14.5	14.7	14.9	15.1	15.3	15.5	15.7	15.9	16.1	16.3	16.5	16.7	16.9	17.1		
108.0	42.5	13.6	13.8	14.0	14.2	14.4	14.6	14.8	15.0	15.2	15.4	15.6	15.8	16.0	16.2	16.3	16.5	16.7		
109.2	43	13.3	13.5	13.7	13.9	14.1	14.3	14.4	14.6	14.8	15.0	15.2	15.4	15.6	15.8	16.0	16.2	16.4		



Calculated Body Mass Index **43.5" -48" and 35 lbs.-43 lbs.**

Whenever a child's specific height or weight measurement is not listed, round to the closest number in the table.

Height Cm In	Weight																
	15.9 Kg	16.1	16.3	16.6	16.8	17.0	17.2	17.5	17.7	17.9	18.1	18.4	18.6	18.8	19.1	19.3	19.5
Lb	35	35.5	36	36.5	37	37.5	38	38.5	39	39.5	40	40.5	41	41.5	42	42.5	43
110.5 43.5	13.0	13.2	13.4	13.6	13.7	13.9	14.1	14.3	14.5	14.7	14.9	15.0	15.2	15.4	15.6	15.8	16.0
111.8 44			13.1	13.3	13.4	13.6	13.8	14.0	14.2	14.3	14.5	14.7	14.9	15.1	15.3	15.4	15.6
113.0 44.5				13.1	13.3	13.5	13.7	13.8	14.0	14.2	14.4	14.6	14.7	14.9	15.1	15.3	
114.3 45					13.0	13.2	13.4	13.5	13.7	13.9	14.1	14.2	14.4	14.6	14.8	14.9	
115.6 45.5						13.1	13.2	13.4	13.6	13.8	13.9	14.1	14.3	14.4	14.6		
116.8 46							13.1	13.3	13.5	13.6	13.8	14.0	14.1	14.3			
118.1 46.5								13.0	13.2	13.3	13.5	13.7	13.8	14.0			
119.4 47									13.0	13.2	13.3	13.5	13.7	13.8	14.0		
120.7 47.5										13.0	13.2	13.4	13.5	13.7	13.8	14.0	
121.9 48											13.1	13.2	13.4	13.5	13.7	13.8	14.0



Calculated Body Mass Index

30" -44" and 43.5 lbs.-51.5 lbs.

Whenever a child's specific height or weight measurement is not listed, round to the closest number in the table.

Height Cm	In	Weight																
		19.7	20.0	20.2	20.4	20.6	20.9	21.1	21.3	21.5	21.8	22.0	22.2	22.5	22.7	22.9	23.1	23.4
Kg		43.5	44	44.5	45	45.5	46	46.5	47	47.5	48	48.5	49	49.5	50	50.5	51	51.5
Lb		34.0	34.4	34.8	34.0	34.4	34.8	34.0	34.4	34.8	34.0	34.4	34.8	34.0	34.4	34.8	34.0	34.4
76.2	30																	
77.5	30.5	32.9	33.3	33.6	34.0	34.4	34.8											
78.7	31	31.8	32.2	32.6	32.9	33.3	33.7	34.0	34.4	34.8								
80.0	31.5	30.8	31.2	31.5	31.9	32.2	32.6	32.9	33.3	33.7	34.0	34.4	34.7					
81.3	32	29.9	30.2	30.6	30.9	31.2	31.6	31.9	32.3	32.6	33.0	33.3	33.6	34.0	34.3	34.7		
82.6	32.5	29.0	29.3	29.6	30.0	30.3	30.6	31.0	31.3	31.6	32.0	32.3	32.6	32.9	33.3	33.6	33.9	34.3
83.8	33	28.1	28.4	28.7	29.1	29.4	29.7	30.0	30.3	30.7	31.0	31.3	31.6	32.0	32.3	32.6	32.9	33.2
85.1	33.5	27.3	27.6	27.9	28.2	28.5	28.8	29.1	29.4	29.8	30.1	30.4	30.7	31.0	31.3	31.6	32.0	32.3
86.4	34	26.5	26.8	27.1	27.4	27.7	28.0	28.3	28.6	28.9	29.2	29.5	29.8	30.1	30.4	30.7	31.0	31.3
87.6	34.5	25.7	26.0	26.3	26.6	26.9	27.2	27.5	27.8	28.1	28.4	28.6	28.9	29.2	29.5	29.8	30.1	30.4
88.9	35	25.0	25.3	25.5	25.8	26.1	26.4	26.7	27.0	27.3	27.5	27.8	28.1	28.4	28.7	29.0	29.3	29.6
90.2	35.5	24.3	24.5	24.8	25.1	25.4	25.7	25.9	26.2	26.5	26.8	27.1	27.3	27.6	27.9	28.2	28.5	28.7
91.4	36	23.6	23.9	24.1	24.4	24.7	25.0	25.2	25.5	25.8	26.0	26.3	26.6	26.9	27.1	27.4	27.7	27.9
92.7	36.5	23.0	23.2	23.5	23.7	24.0	24.3	24.5	24.8	25.1	25.3	25.6	25.9	26.1	26.4	26.7	26.9	27.2
94.0	37	22.3	22.6	22.9	23.1	23.4	23.6	23.9	24.1	24.4	24.7	24.9	25.2	25.4	25.7	25.9	26.2	26.4
95.3	37.5	21.7	22.0	22.2	22.5	22.7	23.0	23.2	23.5	23.7	24.0	24.2	24.5	24.7	25.0	25.2	25.5	25.7
96.5	38	21.2	21.4	21.7	21.9	22.2	22.4	22.6	22.9	23.1	23.4	23.6	23.9	24.1	24.3	24.6	24.8	25.1
97.8	38.5	20.6	20.9	21.1	21.3	21.6	21.8	22.1	22.3	22.5	22.8	23.0	23.2	23.5	23.7	24.0	24.2	24.4
99.1	39	20.1	20.3	20.6	20.8	21.0	21.3	21.5	21.7	22.0	22.2	22.4	22.6	22.9	23.1	23.3	23.6	23.8
100.3	39.5	19.6	19.8	20.1	20.3	20.5	20.7	21.0	21.2	21.4	21.6	21.9	22.1	22.3	22.5	22.8	23.0	23.2
101.6	40	19.1	19.3	19.6	19.8	20.0	20.2	20.4	20.7	20.9	21.1	21.3	21.5	21.8	22.0	22.2	22.4	22.6
102.9	40.5	18.6	18.9	19.1	19.3	19.5	19.7	19.9	20.1	20.4	20.6	20.8	21.0	21.2	21.4	21.6	21.9	22.1
104.1	41	18.2	18.4	18.6	18.8	19.0	19.2	19.4	19.7	19.9	20.1	20.3	20.5	20.7	20.9	21.1	21.3	21.5
105.4	41.5	17.8	18.0	18.2	18.4	18.6	18.8	19.0	19.2	19.4	19.6	19.8	20.0	20.2	20.4	20.6	20.8	21.0
106.7	42	17.3	17.5	17.7	17.9	18.1	18.3	18.5	18.7	18.9	19.1	19.3	19.5	19.7	19.9	20.1	20.3	20.5
108.0	42.5	16.9	17.1	17.3	17.5	17.7	17.9	18.1	18.3	18.5	18.7	18.9	19.1	19.3	19.5	19.7	19.9	20.0
109.2	43	16.5	16.7	16.9	17.1	17.3	17.5	17.7	17.9	18.1	18.3	18.4	18.6	18.8	19.0	19.2	19.4	19.6
110.5	43.5	16.2	16.3	16.5	16.7	16.9	17.1	17.3	17.5	17.6	17.8	18.0	18.2	18.4	18.6	18.8	18.9	19.1
111.8	44	15.8	16.0	16.2	16.3	16.5	16.7	16.9	17.1	17.2	17.4	17.6	17.8	18.0	18.2	18.3	18.5	18.7



Calculated Body Mass Index 44.5" -51" and 43.5 lbs.-51.5 lbs.

Whenever a child's specific height or weight measurement is not listed, round to the closest number in the table.

Height Cm	In	Weight																	
		19.7 Kg	20.0	20.2	20.4	20.6	20.9	21.1	21.3	21.5	21.8	22.0	22.2	22.5	22.7	22.9	23.1	23.4	
		Lb	43.5	44	44.5	45	45.5	46	46.5	47	47.5	48	48.5	49	49.5	50	50.5	51	51.5
113.0	44.5	15.4	15.6	15.8	16.0	16.2	16.3	16.5	16.7	16.9	17.0	17.2	17.4	17.6	17.8	17.9	18.1	18.3	
114.3	45	15.1	15.3	15.5	15.6	15.8	16.0	16.1	16.3	16.5	16.7	16.8	17.0	17.2	17.4	17.5	17.7	17.9	
115.6	45.5	14.8	14.9	15.1	15.3	15.5	15.6	15.8	16.0	16.1	16.3	16.5	16.6	16.8	17.0	17.2	17.3	17.5	
116.8	46	14.5	14.6	14.8	15.0	15.1	15.3	15.5	15.6	15.8	15.9	16.1	16.3	16.4	16.6	16.8	16.9	17.1	
118.1	46.5	14.1	14.3	14.5	14.6	14.8	15.0	15.1	15.3	15.4	15.6	15.8	15.9	16.1	16.3	16.4	16.6	16.7	
119.4	47	13.8	14.0	14.2	14.3	14.5	14.6	14.8	15.0	15.1	15.3	15.4	15.6	15.8	15.9	16.1	16.2	16.4	
120.7	47.5	13.6	13.7	13.9	14.0	14.2	14.3	14.5	14.8	15.0	15.1	15.3	15.4	15.6	15.7	15.9	16.0		
121.9	48	13.3	13.4	13.6	13.7	13.9	14.0	14.2	14.3	14.5	14.6	14.8	15.0	15.1	15.3	15.4	15.6	15.7	
124.5	49	13.0	13.2	13.3	13.3	13.5	13.6	13.8	13.9	14.1	14.2	14.3	14.5	14.6	14.8	14.9	15.1		
127.0	50							13.1	13.2	13.4	13.5	13.6	13.8	13.9	14.1	14.2	14.3	14.5	
129.5	51											13.1	13.2	13.4	13.5	13.7	13.8	13.9	
132.1	52															13.0	13.1	13.3	13.4



Calculated Body Mass Index

47" -56" and 52 lbs.-60 lbs.

Whenever a child's specific height or weight measurement is not listed, round to the closest number in the table.

Height	Weight																					
	23.6	23.8	24.0	24.3	24.5	24.7	24.9	25.2	25.4	25.6	25.9	26.1	26.3	26.5	26.8	27.0	27.2					
Kg	52	52.5	53	53.5	54	54.5	55	55.5	56	56.5	57	57.5	58	58.5	59	59.5	60					
Lb																						
Cm	119.4	120.7	121.9	124.5	127.0	129.5	132.1	134.6	137.2	139.7	142.2											
In	47	47.5	48	49	50	51	52	53	54	55	56	57	58	59	60							
	16.6	16.7	16.9	17.0	17.2	17.3	17.5	17.7	17.8	18.0	18.1	18.3	18.5	18.6	18.8	18.9	19.1					
	16.2	16.4	16.5	16.7	16.8	17.0	17.1	17.3	17.5	17.6	17.8	17.9	18.1	18.2	18.4	18.5	18.7					
	15.9	16.0	16.2	16.3	16.5	16.6	16.8	16.9	17.1	17.2	17.4	17.5	17.7	17.9	18.0	18.2	18.3					
	15.2	15.4	15.5	15.7	15.8	16.0	16.1	16.3	16.4	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6					
	14.6	14.8	14.9	15.0	15.2	15.3	15.5	15.6	15.7	15.9	16.0	16.2	16.3	16.5	16.6	16.7	16.9					
	14.1	14.2	14.3	14.5	14.6	14.7	14.9	15.0	15.1	15.3	15.4	15.5	15.7	15.8	15.9	16.1	16.2					
	13.5	13.7	13.8	13.9	14.0	14.2	14.3	14.4	14.6	14.7	14.8	15.0	15.1	15.2	15.3	15.5	15.6					
	13.0	13.1	13.3	13.4	13.5	13.6	13.8	13.9	14.0	14.1	14.3	14.4	14.5	14.6	14.8	14.9	15.0					
					13.0	13.1	13.3	13.4	13.5	13.6	13.7	13.9	14.0	14.1	14.2	14.3	14.5					
								13.0	13.1	13.2	13.4	13.5	13.6	13.7	13.8	13.9						
												13.0	13.1	13.2	13.3	13.5						

Training Profile

Name _____

Date of Birth _____ Social Security # _____

WIC Project Name _____

WIC Project # _____

Job Title _____

Comments on **Growth Assessment: Weighing and Measuring WIC Participants:**

Please complete this form and return to:

**Provider Training Section
Bureau of Nutrition and Clinical Services
Texas Department of Health
1100 West 49th Street
Austin, TX 78756**

[Training Profile form continues on the other side of this page.]

To be completed by the local agency Training Coordinator or Supervisor:

_____ has successfully completed the **Growth Assessment** module and has demonstrated correct weighing and measuring procedures in clinic operations. Please send a Certificate of Module Completion.

_____ Signature

_____ Date