

Module AA – Measurement Teaching Guide

Objectives

- Identify the structure and function of the cardiovascular and respiratory systems
- Define body temperature and associated terminology
- List equipment needed to measure pulse, respirations, blood pressure, temperature, intake of fluids, output, height, and weight
- Compare and contrast the various thermometers used to measure temperature
- Label components of select equipment used to measure blood pressure, height, and weight
- Compare and contrast normal and abnormal findings of the following measurements: pulse, respirations, blood pressure, and temperature
- Locate sites used to measure pulse, respirations, blood pressure and temperature
- Describe the nurse aide's role in the care of residents who have not achieved fluid balance – edema and dehydration
- Explain how to use equipment that measures blood pressure, temperature, intake of fluids, output, height, and weight
- Differentiate units of measurement nurse aides use during the care of residents – millimeters of mercury (mm Hg), degrees Fahrenheit, ounces, milliliters (mL), cubic centimeters (cc), inches, and feet
- Convert ounces to milliliters and inches to feet/inches

Supplies

- Laminated computer paper, dry erase pens, paper towels (Teaching Tip #13)
- Laminated poster paper, brad, homemade needle (Teaching Tip #14)
- Graduate display – multiple graduates, fake urine, index cards (Teaching Tip #20)
- Thickening agent (Teaching Tip #21)
- Plastic medication cups, 1 per student (Teaching Tip #22)
- Output display – catheter bag, emesis basin, urinal, graduate (Teaching Tip #23)
- Corrugated poster board, scissors, laminated pictures from magazines, paper plates (Teaching Tip #25)
- 1½-foot sections of the 3" diameter and 9½" circumference-sized swim noodles (the larger of the two sizes work better); 1 section per 2 students

Advance Preparation – In General

- Review curriculum and presentation materials
- Add examples or comments in Notes Section
- Set up computer/projector
- Establish Internet connection

Advance Preparation – Teaching Tips

- **#5AA: Videos Playing a Variety of Heartbeat Rates and Rhythms:**
Familiarize self with the following videos playing a variety of heartbeat rates and rhythms and determine which you would like to play:
HEARTBEAT Sound Effect [High Quality] indicate what is being heard will be felt when checking a regular pulse
https://www.youtube.com/watch?v=rTna_f379ug *Heartbeat Sound* indicate what is being heard will be felt when checking a regular pulse
https://www.youtube.com/watch?v=qJpT_wHZeF8
Heart Beat Speeding Up indicate what is being heard will be felt when checking a pulse that is speeding up:
<https://www.youtube.com/watch?v=Aiuio8IAOlq> *Irregular Heart Beat Sound Effect* indicate what is being heard will be felt when checking an irregular pulse <https://www.youtube.com/watch?v=ZigEgnpsY9U> *Irregular Heartbeat* indicate what is being heard will be felt when checking an irregular pulse <https://www.youtube.com/watch?v=LFKjM32MHG0>
- **#11AA: Website:** Familiarize self with the following web site: *Anatomy of a Clinician Stethoscope*: <https://www.adctoday.com/node/7886>
- **#13AA Aneroid Blood Pressure Manometer Interactive Strategy:** In addition to using the handout as a teaching strategy, duplicate copies of the aneroid blood pressure manometer, laminate them, and use during class. Distribute dry erase pens and napkins for use by the students. Call out blood pressures and require students to mark both the systolic and diastolic pressures. Walk around the room and determine how students did. Repeat several times with different values. Collect the laminated dials and dry erase pens for use in subsequent classes.
- **#14AA: Aneroid Blood Pressure Manometer Interactive Strategy:** Enlarge a copy of the aneroid blood pressure manometer, create a needle that attaches with a brad, affix to corrugated poster board, and use for demonstration in class.
- **#16AA Thermometer Display:** Create a display of a variety of thermometers and include equipment required for each.

- **#18AA Pass Around the Milliliter:** Either pass around a 30 mL medicine cup or a small syringe with 1 mL of colored water for students to view.
- **#19AA: Video About the Milliliter and Cubic Centimeter:** Familiarize self with the following video: *Understanding mL (milliliter), Liter, & Cubic Centimeter* to explain the milliliter and cubic centimeter:
<https://www.youtube.com/watch?v=luDoyp2G-YM>
- **#20AA Pass Around the Graduate:** Pass around an empty, clean graduate for students to view.
- **#21AA Thickening Agent:** Create thickened fluids using a thickening agent.
- **#22AA Pass Around the Little Plastic Medicine Cup:** Pass around a 30 mL medicine cup with both a 1 ounce and a 30 mL marking for students to view OR provide each student with his/her own 30 mL medicine cup to keep.
- **#23AA Devices That Collect Output Display:** Create a display of a variety of devices that collect urine output either with or without fake body fluids.
- **#24AA Fake Urine in Graduates Display:** Create an output display of graduates with varying amounts of fake urine; either include the amounts for each on index cards in front of each graduate OR require students to measure the fake urine individually or in pairs.
- **#25AA: Creating Food Intake Trays:** Use corrugated poster board and cut out several pieces the size of trays. Cut out and laminate pictures of foods from magazines or product boxes to create simulated foods reflecting various states of consumption. Using paper plates, place meals with laminated foods reflecting percentages of food intake on them. Create meal trays with the corrugated poster board and plates of food for students to evaluate and assign percentages of intake for each.
- **#27AA: Video About the Physician Mechanical Beam Scale, Weight Portion:** Familiarize self with the following video: *LearningTools: Reading Weight Measurements on a Physician Mechanical Beam Scale* to reinforce components of and determining weight:
<https://www.youtube.com/watch?v=b6G88qVl3m8>
- **#28AA: Video About the Physician Mechanical Beam Scale, Height Portion:** Familiarize self with the following video: *LearningTools: Reading Height Measurements on a Physician Mechanical Beam Scale* to reinforce components of and determining height:
<https://www.youtube.com/watch?v=XeBhvbm5yrl>

Advance Preparation – Activities

- **#2AA Blood Pressure and Factors of Select People** – Duplicate activity for each student. Distribute to students and instruct to use per verbal instructions.
- **#3AA: Meet the Stethoscope** – Distribute stethoscopes/alcohol wipes. You may want to jot down the tasks on the dry-erase board.
- **#4AA: Hearing and Seeing Blood Pressure Readings** – Familiarize self with two required videos, *Reading Blood Pressure and LearningTools: Blood Pressure Basics - Audio-Visual Coordination Skills*:

<https://www.youtube.com/watch?v=oi0FVbsiwEk> and
<https://www.youtube.com/watch?v=bHXvhOQ0hYc>,

- **#5AA: Aneroid Blood Pressure** – Duplicate activity for each student. Determine whether this activity will be used as an in-class assignment, homework assignment, or as a quiz grade. Distribute to students and instruct to use accordingly.
- **#6AA Working with the Inflation Bulb and the Air-release Valve** – Beforehand, cut swim noodles in 1½-foot sections. Pair students and distribute a swim noodle and a BP cuff to each pair.
- **#7AA: Fahrenheit Temperature** – Duplicate activity for each student. Determine whether this activity will be used as an in-class assignment, homework assignment, or as a quiz grade. Distribute to students and instruct to use accordingly.
- **#8AA: Explaining Fractions of a Whole** – Familiarize self with one required video, *Finding a Fraction of a Number*:
https://www.youtube.com/watch?v=MUVC3lIPw_w
and one required web site, *Unit 10, Section 3: Fractions of Quantities*:
https://www.cimt.org.uk/projects/mepres/book7/bk7i10/bk7_10i3.htm
- **#9AA: Intake Calculation** – Duplicate activity for each student. Determine whether this activity will be used as an in-class assignment, homework assignment, or as a quiz grade. Distribute to students and instruct to use accordingly.
- **#10AA: Let's Make a Chart** – Duplicate activity for each student. Determine whether this activity will be used as an in-class assignment, homework assignment, or as a quiz grade. Distribute to students and instruct to use accordingly.
- **#11AA: Urine** – Duplicate activity for each student. Determine whether this activity will be used as an in-class assignment, homework assignment, or as a quiz grade. Distribute to students and instruct to use accordingly.
- **#12AA: Weight and Height** – Duplicate activity for each student. Determine whether this activity will be used as an in-class assignment, homework assignment, or as a quiz grade. Distribute to students and instruct to use accordingly.

Module AA – Measurement Definition List

Vital Signs:

Afebrile – without a fever

Analog Watch – a watch that has moving hands and typically marked from numbers 1 through 12

Aneroid Manometer – that part of the sphygmomanometer (BP cuff) that includes the dial that indicates the systolic and diastolic pressures during blood pressure checks

Apical Pulse – a pulse point located over the heart

Apnea – no breathing

Arteries – blood vessels that carry blood with oxygen and nutrients away from the heart and to the cells

Atria (right and left) – two upper chambers of the heart

Blood pressure – the amount of force exerted by the blood against the walls of the artery

Body temperature – how much heat is in the body and balances the heat created by the body and heat lost to the environment

Brachial Pulse – pulse points located in the crooks of the elbows typically used during blood pressure checks

Bradycardia – a pulse rate less than 60 beats per minute

Bradypnea – a respiratory rate less than 12 breaths per minute

Cardiovascular System – also called the circulatory system and is the continuous movement of blood through the body

Carotid Pulse – pulse points located in both sides of the neck

Centigrade – metric scale used to measure temperature, expressed in degrees

Cheyne-Stokes – alternating periods of slow, irregular breathing and rapid, shallow breathing, plus short periods of absent breathing

Diaphragm – that part of the stethoscope located on the chest-piece used to listen to the presence or absence of brachial artery blood flow during blood pressure check

Diarrhea – frequent passage of loose, watery stools (bowel movements)

Diastole – the resting phase of the heart when the heart fills with blood; the bottom number of a blood pressure reading (diastolic)

Dyspnea – painful or difficult breathing

Eupnea – normal breathing

Exhale – when carbon dioxide is expelled out of the nose and the mouth from the lungs

Expiration – also called exhalation and involves the breathing out of carbon dioxide through the nose and mouth; the chest falls

Fahrenheit – scale used to measure temperature, expressed in degrees

Febrile – with a fever

Fever – an elevated temperature

Heart – the pump of the cardiovascular (circulatory) system consisting of four chambers

Hypertension – high blood pressure

Hyperventilation – rapid and deep breathing

Hypotension – low blood pressure

Hypoventilation – slow, shallow breathing that may be irregular

Inhale – when air (or oxygen) is pulled in through the nose and down into the lungs

Inspiration – also called inhalation and involves the breathing in of oxygen through the nose; chest rises

Lungs – elastic, spongy, cone-shaped air-filled structures involved and the location where the exchange of oxygen and carbon dioxide occur

Millimeters of Mercury – (mm Hg) the unit of measure for blood pressure

Objective – information collected by the nurse aide's senses

Orthostatic Hypotension – abnormal low blood pressure occurring when the resident suddenly stands up; resident complains of weakness, faintness, dizziness, and seeing spots

Pain – whatever the resident says that it is

Pedal Pulse – pulse points located in the top of the feet and used to check circulation of the leg

Pulse – is the beat of the heart felt at an artery, as a wave of blood passes through the artery; is the numbers of heart beats per minute

Pulse Force – the strength of the pulse and should be easy to feel

Pulse Rate – the number of heart beats (or pulses) per minute

Pulse Rhythm – the regularity of the heart beats (pulses) and should be the same interval between beats

Radial Pulse – pulse points located in the wrists, which is used most often, easy to reach, easy to find, and used for routine vital signs

Respiration – the process that supplies oxygen to the cells and removes carbon dioxide from cells

Respiratory rate (or respirations) – the number of inspirations (inhalations) the person takes in a minute

Respiratory System – involves the breathing in of oxygen (inspiration) and the breathing out of carbon dioxide (expiration)

Sphygmomanometer – also known as the BP cuff; is the equipment used to check a person's blood pressure

Stethoscope – instrument used to listen to heart sounds, lung sounds, and the brachial pulse during blood pressure checks

Subjective – information provided by the resident

Systole – the working phase of the heart when the heart is pumping blood to the body; the top number of a blood pressure reading (diastolic)

Tachycardia – a pulse rate more than 100 beats per minute

Tachypnea – a respiratory rate more than 20 breaths per minute

Temporal Pulse – a pulse point located in the temples of the head

Temporal Thermometer – a thermometer that measures heat from skin over the forehead, specifically over temporal artery

Thermometer – a device used to check a resident's temperature

Tympanic Thermometer – a thermometer that uses the ear as the site to check a resident's temperature

Veins – blood vessels that carry blood with waste products away from the cells and to the heart

Ventricles (Right and Left) – two lower chambers of the heart

Vital Signs – (also called TPR & BP) include the measurement of temperature, pulse, respiration, and blood pressure that show how well vital organs are functioning

Intake and Output (I&O):

Catheter Bag – collection device for urine that is connected to an indwelling (Foley) catheter which drains the bladder

Commode Hat (or specimen pan) – a plastic collection container placed under a commode lid, used when resident has bathroom privileges and is on output and/or has a urine or stool specimen ordered

Cubic Centimeter (or cc) – a unit of measure in the metric system used to count the volume of anything (including fluids); is equal to 1 milliliter

Dehydration – when fluid output is more than fluid intake

Diarrhea – frequent passage of loose, watery stools (bowel movements)

Edema – when fluid intake is more than fluid output and body tissues swell with water

Emesis Basin – a plastic, shallow basin shaped like a kidney that fits against the resident's neck and collects body fluids when a resident is nauseated and during mouthcare

Encourage Fluids – a doctor’s order that increases the resident’s fluid intake

Fluid Balance – fluid intake roughly equals fluid output

Food Intake – comparison of the amount of food eaten by a resident at mealtime with the amount of food provided

Gastric Suction Material – stomach contents that are suctioned out using a nasogastric tube

Graduate – an accurate measuring device for fluids used in a health care setting

Hydration – having the right amount of fluid in the body

Intake (input) – the amount of fluid taken in by the body

Intake and Output (I&O) – used to evaluate fluid balance whereby intake and output are measured and documented

Milliliter (mL) – a unit of measure in the metric system used to count fluids; is equal to 1 cubic centimeter

Nothing by Mouth (NPO) – a doctor’s order that states that a resident is not to eat or drink anything

Output – the amount of fluid lost from the body

Restrict Fluids – a doctor’s order that limits the resident’s fluid intake

Special Fluid Orders – orders a doctor writes that state how much fluid a resident must drink per day in order to maintain fluid balance

Thickened Liquids – a doctor’s order that states that all fluids taken in by resident are thickened

Urinal – a plastic, elongated device used by men to urinate into, particularly when confined to bed or on output

Vomiting – the ejection of food and fluids from the stomach via the esophagus and mouth

Vomit – food and fluids ejected from the stomach via the esophagus and mouth

Height and Weight:

Height Rod – the device used on a standing scale that measures a resident’s height (or tallness)

Kilogram – a unit of measure in the metric system used to determine weight

Module AA – Measurement (Vital Signs)	
<p>(S-1) Title Slide (S-2, 3, 4, 5 & 6) Objectives</p> <ol style="list-style-type: none"> 1. Identify the structure and function of the cardiovascular and respiratory systems. 2. Define body temperature and associated terminology. 3. List equipment needed to measure pulse, respirations, blood pressure, temperature, intake of fluids, output, height, and weight. 4. Compare and contrast the various thermometers used to measure temperature. 5. Label components of select equipment used to measure blood pressure, height, and weight. 6. Compare and contrast normal and abnormal findings of the following measurements: pulse, respirations, blood pressure, and temperature. 7. Locate sites used to measure pulse, respirations, blood pressure and temperature. 8. Describe the nurse aide’s role in the care of residents who have not achieved fluid balance – edema and dehydration. 9. Explain how to use equipment that measures blood pressure, temperature, intake of fluids, output, height, and weight. 10. Differentiate units of measurement nurse aides use during the care of residents – millimeters of mercury (mm Hg), degrees Fahrenheit, ounces, milliliters (mL), cubic centimeters (cc), inches, and feet. 11. Convert ounces to milliliters and inches to feet/inches. 	
Content	Notes
(S-7) Title Slide	
<p>(S-8) Vital Signs</p> <ul style="list-style-type: none"> • Show how well vital organs are functioning – heart and lungs, plus the regulation of temperature • Include temperature, pulse, respiration, and blood pressure • May also be called TPR & BP 	
<p>(S-9) Vital Signs – Importance</p> <ul style="list-style-type: none"> • Changes in vital sign measurements can indicate that resident’s condition is worsening • Can reflect how body is responding to medication and/or treatment • The value of a vital sign may be the basis for a medication that the nurse gives to the resident • Accuracy when taking vital signs is crucial; never guess; if unsure ask for help • Report abnormal vital signs immediately to the nurse and per facility policy 	
<p>(S-10) The 5th Vital Sign – Pain</p> <ul style="list-style-type: none"> • Facilities may consider pain the 5th vital sign because it is considered as important as the other vital signs • Whereas other vital signs are objective (collected by the 	

Module AA – Measurement (Vital Signs)	
<p>nurse aide’s senses), pain is different because it is subjective and reported to health care provider by the resident</p> <ul style="list-style-type: none"> • Pain is whatever the resident says it is and response to pain varies from resident to resident • Will learn more about pain later in the course 	
<p>(S-11) Respiratory System</p> <ul style="list-style-type: none"> • Respiratory system – the breathing in of oxygen into the lungs and the breathing out of carbon dioxide from the body 	
<p>(S-12) Structure and Function of the Lungs</p> <ul style="list-style-type: none"> • The location in the respiratory system where the exchange of oxygen and carbon dioxide occur • Left lung has two lobes and right lung has three lobes 	
<p>(S-13) Respiration</p> <ul style="list-style-type: none"> • Is the process that supplies oxygen to the cells and removes carbon dioxide from cells • Involves <ul style="list-style-type: none"> ○ Inspiration (inhalation) – breathing in of oxygen through nose; chest rises ○ Expiration (exhalation) – breathing out of carbon dioxide through nose and mouth; chest falls • Each respiration involves one inspiration and one expiration • Respiratory rate (or respirations) – is the number of inspirations (inhalations) the person takes in a minute 	
<p>(S-14) Respiratory Site</p> <ul style="list-style-type: none"> • Watch the chest rise and fall • Count the chest rises (inspirations) only 	
<p>(S-15) Respiratory Values – Normal</p> <ul style="list-style-type: none"> • Called eupnea • Rate = between 12 and 20 breaths per minute, • Regular, quiet, with both sides of chest rising and falling equally • Document 	
<p>(S-16) Respiratory Values – Abnormal</p> <ul style="list-style-type: none"> • Bradypnea – less than 12 breaths per minute • Tachypnea – more than 20 breaths per minute • Apnea – none (apnea) • Hypoventilation – slow, shallow breathing that may be irregular • Hyperventilation – rapid, deep breathing • Dyspnea – painful or difficult breathing • Cheyne-Stokes – alternating periods of slow, irregular 	

Module AA – Measurement (Vital Signs)	
<p>breathing and rapid, shallow breathing, plus short periods of apnea</p> <ul style="list-style-type: none"> • Document and notify nurse 	
<p>(S-17) Checking Respirations – Equipment</p> <ul style="list-style-type: none"> • Analog watch with a second hand • Note pad/assignment sheet and pen 	
<p>TEACHING TIP #1AA Class Assessment Analog Watch Use</p> <p>Every class is different and brings different educational needs regarding use of the analog watch. Younger students may have only used digital watches or cellular phones to tell time. These students will not be able to use these devices while in lab, clinical, or during the NNAAP skills component.</p> <p>Determine whether students in each class need basic instruction or review of content related to the analog watch. The next 3 slides may be reviewed quickly or slowly depending on the class.</p>	
<p>HANDOUT #1AA: Analog Watch (Optional)</p> <p>This handout may be used as a complement to teaching the counting of respirations and counting pulse using an analog watch.</p> <p>Distribute handout to the students.</p> <p>TEACHING TIP #2AA: Analog Watch Handout (Optional)</p> <p>Refer to handout and for the next 3 slides point out each particular part in the handout depicted on each slide.</p>	
<p>(S-18) Analog Watch</p> <ul style="list-style-type: none"> • Definition – a watch that has moving hands and typically marked with from numbers 1 through 12 • Has an hour hand, minute hand, and second hand • The nurse aide uses the second hand to count respirations and pulse rate 	
<p>(S-19) Analog Watch – 60 Seconds</p> <ul style="list-style-type: none"> • When counting respirations for 60 seconds, while watching the second hand, start counting and stop counting on the same number 	
<p>TEACHING TIP #3AA: Analog Watch – Practice</p> <p>Allow students to call out answers for slide #20.</p>	
<p>(S-20) Using an Analog Watch – Practice</p>	

Module AA – Measurement (Vital Signs)	
<ul style="list-style-type: none"> • Counting respirations for 60 seconds <ul style="list-style-type: none"> ○ Start with second hand on 3, stop with second hand on <u>3</u> ○ Start with second hand on 6, stop with second hand on <u>6</u> ○ Start with second hand on 10, stop with second hand on <u>10</u> ○ Start with second hand on 12, stop with second hand on <u>12</u> ○ Start with second hand on 8, stop with second hand on <u>8</u> ○ Start with second hand on 1, stop with second hand on <u>1</u> 	
<p>(S-21) Respirations – Observation and Documentation</p> <ul style="list-style-type: none"> • The nurse aide counts respiratory rate (respirations) for 60 seconds (1 minute) • For respiratory rate, recall that 1 respiration equals 1 inspiration (chest rising) • While watching the second hand of an analog watch, the nurse aide starts counting and stops counting on the same number; do not wait until 12 • Document on the resident’s record if the respirations <ul style="list-style-type: none"> ○ Fall within the range of 12 and 20 and are ○ Regular, quiet, with both sides of chest rising and falling equally • Document on the resident’s record and notify the nurse, if respirations are abnormal 	
<p>(S-22) Stealth Respirations</p> <ul style="list-style-type: none"> • Check respirations right after checking pulse (without moving hand from wrist) so resident does not realize respirations are being counted; tend to change pattern if resident is aware it is being checked 	
<p>TEACHING TIP #4AA: Counting Respirations 30 Seconds Times 2</p> <p>You may want to:</p> <ul style="list-style-type: none"> • Describe the process of counting respirations for 30 seconds and multiplying by 2, if respirations are regular; and to count respirations for a full minute if respirations are irregular. • Stress importance of following facility policy and procedure for counting respirations. 	
<p>(S-23) Checking Respirations – Example #1</p> <ul style="list-style-type: none"> • Nurse aide begins counting respirations when the second hand is on 4 and stops counting respirations when the 	

Module AA – Measurement (Vital Signs)	
<p>second hand lands on <u>4</u></p> <ul style="list-style-type: none"> • Nurse aide counts 16 chest rises in 60 seconds • 16 is the number the nurse aide would document 	
<p>(S-24) Checking Respirations – Example #2</p> <ul style="list-style-type: none"> • Nurse aide begins counting respirations when the second hand is on 10 and stops counting respirations when the second-hand lands on <u>10</u> • Nurse aide counts 24 chest rises in 60 seconds • 24 is the number the nurse aide would document • Nurse aide would notify the nurse. Why? 	
<p>(S-25) Cardiovascular System</p> <ul style="list-style-type: none"> • Cardiovascular (circulatory) system – continuous movement of blood through the body 	
<p>(S-26) Structure and Function of the Blood Vessels</p> <ul style="list-style-type: none"> • The transportation system of the cardiovascular (circulatory) system <ul style="list-style-type: none"> ○ Veins – carry blood with waste products away from the cells and to the heart ○ Arteries – carry blood with oxygen and nutrients away from the heart and to the cells 	
<p>(S-27) Structure and Function of the Blood Vessels</p> <ul style="list-style-type: none"> • Pulse – the beat of the heart felt at an artery, as a wave of blood passes through the artery <ul style="list-style-type: none"> ○ Pulse rate – is the number of heart beats (or pulses) per minute ○ Pulse rhythm – is the regularity of the heart beats (pulses) and should be the same interval between beats ○ Pulse force – is the strength of the pulse and should be easy to feel 	
<p>(S-28) Pulse Sites</p> <ul style="list-style-type: none"> • Temporal • Carotid – never check pulse rates on both carotid arteries at the same time • Apical – over the heart and taken with a stethoscope • Brachial – typically used during blood pressure checks • Radial – used most often, easy to reach, easy to find, used for routine vital signs • Pedal – used to check circulation of the leg 	
<p>ACTIVITY #1AA Pulse Sites</p> <p>Ask students to locate the temporal, carotid, brachial, and radial pulses.</p>	
<p>(S-29) Radial Pulse Site</p>	

Module AA – Measurement (Vital Signs)	
<ul style="list-style-type: none"> • Typically used to take pulse during routine vital signs checks • Does not expose resident • Located on thumb side of wrist • First 2 or 3 fingers used; never use thumb 	
<p>(S-30) Pulse Values</p> <ul style="list-style-type: none"> • Normal pulse for adults (document) <ul style="list-style-type: none"> ○ Rate = between 60 and 100 beats per minute ○ Regular, and strong • Abnormal pulse for adults (document and notify nurse) <ul style="list-style-type: none"> ○ Bradycardia – less than 60 beats per minute ○ Tachycardia – more than 100 beats per minute ○ Irregular pulse rhythm ○ Weak in strength 	
<p>TEACHING TIP #5AA: Various Videos Playing a Variety of Heartbeat Rates and Rhythms</p> <p>Preview the following videos and determine if any/all would augment classroom instruction:</p> <p>Play video, <i>HEARTBEAT Sound Effect [High Quality]</i> and indicate what is being heard will be felt when checking a regular radial pulse https://www.youtube.com/watch?v=rTna_f379ug</p> <p>Play video, <i>Heartbeat Sound</i> and indicate what is being heard will be felt when checking a regular radial pulse https://www.youtube.com/watch?v=gJpT_wHZeF8</p> <p>Play video, <i>Heart Beat Speeding Up</i> and indicate what is being heard will be felt when checking a radial pulse that is speeding up: https://www.youtube.com/watch?v=Aiuio8IAOIg</p> <p>Play video, <i>Irregular Heart Beat Sound Effect</i> and indicate what is being heard will be felt when checking an irregular radial pulse https://www.youtube.com/watch?v=ZigEqnpsY9U</p> <p>Play video, <i>Irregular Heartbeat</i> and indicate what is being heard will be felt when checking an irregular radial pulse https://www.youtube.com/watch?v=LFKjM32MHG0</p>	
<p>(S-31) Counting Pulse – Equipment</p> <ul style="list-style-type: none"> • Watch with a second hand • Note pad/assignment sheet and pen 	

Module AA – Measurement (Vital Signs)	
<p>TEACHING TIP #6AA Class Assessment Analog Watch Use</p> <p>As previously stated, determine whether students in each class need basic instruction or review of content related to the analog watch. The next 2 slides may be reviewed quickly or slowly depending on the class.</p>	
<p>TEACHING TIP #7AA: Analog Watch Handout (Optional)</p> <p>Refer to the handout (if distributed) and for the next 2 slides point out each particular part in the handout depicted on each slide.</p>	
<p>(S-32) Analog Watch – 60 Seconds</p> <ul style="list-style-type: none"> • When counting pulse for 60 seconds, while watching the second hand, start counting and stop counting on the same number 	
<p>TEACHING TIP #8AA: Analog Watch – Practice</p> <p>Allow students to call out answers to slide #33</p>	
<p>(S-33) Using an Analog Watch – Practice</p> <ul style="list-style-type: none"> • Counting pulse for 60 seconds <ul style="list-style-type: none"> ○ Start second hand on 2, stop second hand on <u>2</u> ○ Start second hand on 5, stop second hand on <u>5</u> ○ Start second hand on 12, stop second hand on <u>12</u> ○ Start second hand on 10, stop second hand on <u>10</u> ○ Start second hand on 4, stop second hand on <u>4</u> ○ Start second hand on 6, stop second hand on <u>6</u> 	
<p>(S-34) Pulse – Checking Pulse and Documentation</p> <ul style="list-style-type: none"> • The nurse aide counts pulse rate for 60 seconds (1 minute) • While watching the second hand of an analog watch, the nurse aide starts counting and stops counting on the same number • Document on the resident’s record if the pulse falls within the range of 60 and 100 and is regular and strong • Document on the resident’s record and notify the nurse, if pulse is abnormal 	
<p>TEACHING TIP #9AA: Counting Pulse 30 Seconds Times 2</p> <p>You may want to:</p> <ul style="list-style-type: none"> • Describe the process of counting pulse rate for 30 seconds and multiplying by 2, if pulse is regular; and to count pulse rate for a full minute if pulse is abnormal • Stress importance of following facility policy and procedure for counting pulse 	

Module AA – Measurement (Vital Signs)	
<p>(S-35) Checking Pulse – Example #1</p> <ul style="list-style-type: none"> • Nurse aide begins counting pulse rate when the second hand is on 7 and stops counting pulse when the second hand lands on <u>7</u> • Nurse aide counts a pulse rate of 82 in 60 seconds • 82 is the number the nurse aide would document 	
<p>(S-36) Checking Pulse – Example #2</p> <ul style="list-style-type: none"> • Nurse aide begins counting pulse rate when the second hand is on 10 and stops counting pulse when the second hand lands on <u>10</u> • Nurse aide counts a pulse rate of 109 in 60 seconds • 109 is the number the nurse aide would document • Nurse aide would notify the nurse. Why? 	
<p>(S-37) Structure and Function of the Heart</p> <ul style="list-style-type: none"> • The pump of the cardiovascular (circulatory) system • Consists of 4 chambers – right and left atria, and right and left ventricles 	
<p>(S-38) Structure and Function of the Heart</p> <ul style="list-style-type: none"> • Has 2 phases <ul style="list-style-type: none"> ○ (1) Working phase, or systole, when the heart is pumping blood to the body, and the top number of a blood pressure reading and ○ (2) The resting phase, or diastole, when the heart fills with blood, and the bottom number of a blood pressure reading 	
<p>(S-39) Structure and Function of the Heart</p> <ul style="list-style-type: none"> • Blood pressure – is the amount of force exerted by the blood against the walls of the artery <ul style="list-style-type: none"> ○ Top number is the systolic pressure and the pressure when the heart contracts and pumps blood out ○ Bottom number is the diastolic pressure when the heart rests as the heart fills with blood 	
<p>(S-40) Blood Pressure</p> <ul style="list-style-type: none"> • Important indicator of health status; shows how well heart is working • Can change from minute to minute depending on: <ul style="list-style-type: none"> ○ The activity of the resident (for position, BP is higher lying in bed than seated in chair or standing; for exercising, BP increases) ○ Lifestyle choices (BP increases with smoking and drinking; BP higher if resident is overweight and decreases as weight is lost; BP may be high if resident eats a high salt diet) ○ Reaction to stressful events (BP increases with 	

Module AA – Measurement (Vital Signs)	
<p>anxiety, emotional responses, and stress)</p> <ul style="list-style-type: none"> ○ Acute injury or emergency (a blood volume decrease from injury will decrease BP; BP increases with pain) ○ Medications (raises or lowers BP depending on the medication) 	
<p>(S-41) Blood Pressure</p> <ul style="list-style-type: none"> ● Genetic factors affect blood pressure: <ul style="list-style-type: none"> ○ Age (BP increases with age) ○ Gender (women’s BP usually lower) ○ Race (black residents BP higher than white) 	
<p>(S-42) Blood Pressure Site</p> <ul style="list-style-type: none"> ● The brachial artery and the upper arm are sites most often used by the nurse aide when checking blood pressure 	
<p>(S-43) The Blood Pressure Value</p> <ul style="list-style-type: none"> ● Measured in millimeters of mercury (mm Hg) ● Recorded as a fraction, for example 120/80 <ul style="list-style-type: none"> ○ Top number is systolic ○ Bottom number is diastolic ○ Pronounced as 120 over 80 	
<p>(S-44) Blood Pressure Values</p> <ul style="list-style-type: none"> ● Normal blood pressure ranges for adult <ul style="list-style-type: none"> ○ Systolic (top number) – 90 mm Hg to 119 mm Hg ○ Diastolic (bottom number) – 60 mm Hg to 79 mg Hg ● Document on record 	
<p>(S-45) Abnormal Blood Pressure Values</p> <ul style="list-style-type: none"> ● Elevated blood pressure ranges (likely to develop high blood pressure unless steps are taken to control the blood pressure) <ul style="list-style-type: none"> ○ Systolic (top number) – 120 mm Hg to 129 mm Hg AND ○ Diastolic (bottom number) – below 80 mm Hg ● Hypertension – consistent elevated systolic or diastolic values <ul style="list-style-type: none"> ○ Systolic (top number) – 130 mm Hg or higher, OR ○ Diastolic (bottom number) – 80 mm Hg or higher ● Hypotension – too low systolic and/or diastolic values <ul style="list-style-type: none"> ○ Systolic (top number) – less than 90 mm Hg ○ Diastolic (bottom number) – less than 60 mm Hg ● Always document on the record and report abnormal blood pressures to nurse 	
<p>TEACHING TIP #10AA: Hypertension Stages</p> <p>The Mayo Clinic, the American Heart Association, and the American College of Cardiology divides hypertensive values into 2 stages:</p>	

Module AA – Measurement (Vital Signs)	
<ul style="list-style-type: none"> • Stage 1 systolic range – 130 to 139 OR diastolic range 80 to 89 • Stage 2 systolic – 140 and above OR diastolic range 90 and above <p>Depending on the stage, the doctor will prescribe lifestyle changes or lifestyle changes and medications.</p>	
<p>(S-46) Using What You Have Learned</p> <ul style="list-style-type: none"> • Using factors effecting blood pressure and normal/abnormal values for blood pressure, evaluate the health of the examples of people on the next 3 slides 	
<p>ACTIVITY #2AA Blood Pressure and Factors of Select Examples of People</p> <p>Distribute Activity #2AA Worksheet to students.</p> <p>Read the following instructions: “As I describe each example featured in this activity, answer questions for each based on personal factors and blood pressure readings. For numbers 1 – 4, write specific information for each individual. For numbers 5 – 14, place a check if the specific factor applies to the example. If a factor is not included in the description of the example, imply that it is not present.”</p>	
<p>(S-47) Blood Pressure Example #1</p> <ul style="list-style-type: none"> • BP = 116/72 • A 64-year old female • Weighs 130 pounds • She has finished baking an apple pie • She doesn’t smoke or drink 	
<p>ACTIVITY #2AA: Example #1 Scenario</p> <p>What can you say about Example #1’s blood pressure? What are factors in Example #1’s life that affect her blood pressure?</p> <p>[Answers: Blood Pressure is normal. Example #1 is female, is standing up, is calm, is not overweight, and she doesn’t smoke or drink.]</p>	
<p>(S-48) Blood Pressure Scenario for Example #2</p> <ul style="list-style-type: none"> • BP = 162/86 	

Module AA – Measurement (Vital Signs)	
<ul style="list-style-type: none"> • A 72-year old male • Weighs 260 pounds • He is eating a couple of hot dogs and potato chips for lunch and is on his 4th beer • He just sent his son to the store for cigarettes <p>What can you say about Example #2’s blood pressure? What are factors in Example #2’s life that are currently affecting his blood pressure?</p>	
<p>ACTIVITY #2AA: Example #2’s Scenario</p> <p>What can you say about Example #2’s blood pressure? What are factors in Example #2’s life that are currently affecting his blood pressure?</p> <p>[Answers: Blood Pressure is high. Example #2 is male, is overweight, is inactive (sent son to store) is eating a high salt meal, he smokes, and drinks.]</p>	
<p>(S-49) Blood Pressure Scenario for Example #3</p> <ul style="list-style-type: none"> • BP = 180/94 • A 22-year old male • Weighs 170 pounds • He just wrecked his brand new truck • He has a broken leg • He is on a stretcher in the back of an ambulance 	
<p>ACTIVITY #2AA: Example #3’s Scenario</p> <p>What can you say about Example #3’s blood pressure? What are factors in Example #3’s life that are currently affecting his blood pressure?</p> <p>[Answers: Blood Pressure is high. Example #3 is lying down. Example #3 is stressed and is hurting.]</p>	
<p>(S-50) Blood Pressure</p> <ul style="list-style-type: none"> • The nurse aide uses three senses simultaneously when checking a resident’s blood pressure: <ul style="list-style-type: none"> ○ Seeing – watches the needle’s movement in relation to the numbers on the manometer ○ Hearing – using the stethoscope, listens for sounds indicating changes in blood flow in the brachial artery ○ Touching – controls the inflation and deflation of the cuff using the thumb and index finger 	
<p>(S-51) Checking Blood Pressure - Equipment</p>	

Module AA – Measurement (Vital Signs)	
<ul style="list-style-type: none"> • Stethoscope • Sphygmomanometer, also known as a blood pressure cuff (hereafter referred to as BP cuff) • Alcohol wipes • Note pad/assignment sheet and pen 	
<p>(S-52) Stethoscope</p> <ul style="list-style-type: none"> • Instrument used to listen to heart and lung sounds • For blood pressure checks, used to listen to sounds in brachial artery • May be single-head (with diaphragm only) or dual-head (with diaphragm and bell) 	
<p>(S-53) Stethoscope – Parts</p> <ul style="list-style-type: none"> • Ear pieces • Binaurals • Rubber or plastic tubing • Chest-piece (with diaphragm or diaphragm/bell) 	
<p>TEACHING TIP #11AA: Website About Stethoscope</p> <p>Show website, <i>Anatomy of a Clinician Stethoscope</i> and reinforce the parts of the stethoscope: https://www.adctoday.com/node/7886</p>	
<p>(S-54) Stethoscope – Ear Pieces</p> <ul style="list-style-type: none"> • To prevent infection, always clean before use and after use with an alcohol wipe • Insert ear pieces into ears so that they point forward toward the nose • Should fit snugly in ears to block out noise 	
<p>(S-55) Dual-head Stethoscope – Diaphragm</p> <ul style="list-style-type: none"> • Before using dual-head stethoscope to take blood pressure, determine which side of chest-piece is active • To check blood pressure, diaphragm needs to be active 	
<p>(S-56) Two Ways to Check for an Active Diaphragm</p> <ul style="list-style-type: none"> • After inserting ear pieces into ears, tap diaphragm lightly to determine if tap is heard; if tap not heard, rotate chest-piece at tubing, and repeat the tap • If chest-piece has an indicator dot, rotate chest-piece so indicator dot is closed 	
<p>(S-57) Diaphragm Concepts</p> <ul style="list-style-type: none"> • To prevent infection, always clean before use, between residents, and after use with an alcohol wipe • Warm diaphragm with hand before making contact with resident • To use diaphragm, apply enough pressure to make a seal against the brachial artery at the crook of the elbow 	

Module AA – Measurement (Vital Signs)	
<p>ACTIVITY #3AA: Meet the Stethoscope</p> <p>After placing students in pairs or triads and distributing stethoscopes/alcohol wipes, instruct them to take turns:</p> <ul style="list-style-type: none"> • Identifying the parts of the stethoscope • Rotating the chest piece while observing the indicator dot opening and closing (if dual-head chest-piece) • Examining ear pieces and practicing putting ear pieces in ears ensuring that ear pieces are cleaned between students with alcohol wipes • Determining whether diaphragm is active by inserting ear pieces into the ear and tapping diaphragm lightly to determine if tap is heard; if tap not heard, rotate chest-piece at the tubing, and repeat the tap (if dual-head chest-piece) • Noting whether the indicator dot is opened or closed when diaphragm is active (if dual-head chest-piece) <p>[Note: You may want to jot down the tasks on the dry-erase board. Be sure to wander around the room checking for progress.]</p>	
<p>TEACHING TIP #12AA: Aneroid Versus Android</p> <p>Be aware of the pronunciation of aneroid and do not mix it up with the word, android. An android has several meanings, (1) a robot with a human appearance and (2) a type of smartphone.</p>	
<p>(S-58) BP Cuff</p> <ul style="list-style-type: none"> • Two types <ul style="list-style-type: none"> ○ Manual (aneroid) and ○ Electronic (digital) 	
<p>(S-59) Electronic Type</p> <ul style="list-style-type: none"> • No stethoscope • After BP cuff is placed on arm, button is pressed causing cuff to inflate/deflate automatically • BP reading is displayed 	
<p>(S-60) Aneroid BP Cuff – Parts</p> <ul style="list-style-type: none"> • Manometer • Cuff with bladder • Inflation bulb with air-release valve • Tube from cuff to manometer • Tube from cuff to the handheld inflation bulb 	
<p>HANDOUT #2AA: Aneroid Blood Pressure Manometer</p>	

Module AA – Measurement (Vital Signs)	
Distribute handout to class. Use as a resource when describing the aneroid blood pressure manometer and how to determine the blood pressure value.	
<p>(S-61) Manometer</p> <ul style="list-style-type: none"> • Marked with long and short lines and has a needle <ul style="list-style-type: none"> ○ The long lines mark 10 mm Hg ○ The short lines mark 2 mm Hg • Watch the needle as the cuff deflates while listening for sounds through stethoscope 	
<p>(S-62) Manometer</p> <ul style="list-style-type: none"> • The long lines equal 10 mm Hg • The short lines equal 2 mm Hg • If the needle lands between 2 lines at the point that the systolic sound is heard, or the sound is no longer heard (diastolic), then the number value is rounded up to the next 2 mm Hg; odd numbers are not recorded/reported when using a manual BP cuff 	
<p>(S-63) Manometer</p> <ul style="list-style-type: none"> • When checking a blood pressure, you will be watching the needle as it drops from a higher number to a lower number, so you will be counting backwards 	
<p>ACTIVITY #4AA: Hearing and Seeing Blood Pressure Readings</p> <p>Show the two videos, <i>Reading Blood Pressure and Learning Tools: Blood Pressure Basics - Audio-Visual Coordination Skills</i> to assist students to make the leap from lecture and handout to actually hearing sounds/seeing the movement of the manometer needle.</p> <p>https://www.youtube.com/watch?v=oi0FVbsiwEk</p> <p>https://www.youtube.com/watch?v=bHXvhOQ0hYc</p>	
<p>TEACHING TIP #13AA Aneroid Blood Pressure Manometer Interactive Strategy</p> <p>In addition to using the handout as a teaching strategy, you may want to duplicate copies of the aneroid blood pressure manometer, laminate them, and use during class. Distribute dry erase pens and napkins for use by the students. Call out blood pressures and require students to mark both the systolic and diastolic pressures. Walk around the room and determine how students did. Repeat several times with different values. Collect the laminated dials and dry erase</p>	

Module AA – Measurement (Vital Signs)	
pens for use in subsequent classes.	
<p>TEACHING TIP #14AA: Aneroid Blood Pressure Manometer Interactive Strategy</p> <p>You may want to enlarge a copy of the aneroid blood pressure manometer, create a needle that attaches with a brad, affix to corrugated poster board, and use for demonstration in class.</p>	
<p>(S-64) Example of Blood Pressure Reading</p> <ul style="list-style-type: none"> • Systolic is 150 mm Hg • Diastolic is 88 mm Hg • BP is written down as 150/88 • BP is pronounced as “150 over 88” 	
<p>ACTIVITY #5AA: Aneroid Blood Pressure</p> <p>Determine whether this activity will be used as an in-class assignment, homework assignment, or as a quiz grade. Distribute to students and instruct to use accordingly.</p>	
<p>(S-65) Cuff</p> <ul style="list-style-type: none"> • After wrapping the cuff around the bare upper arm, <ul style="list-style-type: none"> ○ The cuff inflates and puts pressure on the brachial artery ○ As cuff deflates, BP is determined 	
<p>(S-66) Cuff</p> <ul style="list-style-type: none"> • Cuffs come in child-sized, small (circumference of arm is 7-9 inches), regular (circumference of arm is 9-13 inches), and extra-large (circumference of arm is 13-17 inches) • Important to choose correct size because a too big or too small cuff can impact accuracy of reading 	
<p>(S-67) Cuff</p> <ul style="list-style-type: none"> • Typically has 1 or 2 arrows (left arm/right arm) on cuff which align with brachial artery • Cuff positioned/wrapped at least an inch above the elbow • Cuff or stethoscope should not be placed over clothing 	
<p>(S-68) Tubing</p> <ul style="list-style-type: none"> • Made of rubber • Two tubes connect the: <ul style="list-style-type: none"> ○ (#1) Cuff to the manometer and ○ (#2) Cuff to the handheld inflation bulb 	
<p>TEACHING TIP #15AA: Clockwise and Counterclockwise</p> <p>Introduce the concepts of clockwise and counterclockwise, pointing out the small clocks on slides #69 and #70.</p>	

Module AA – Measurement (Vital Signs)	
<p>(S-69) Inflation Bulb with the Air-release Valve</p> <ul style="list-style-type: none"> • To inflate cuff, turn air-release valve clockwise to close valve; then squeeze the bulb; remember thumb goes up, needle goes up 	
<p>(S-70) Inflation Bulb with the Air-release Valve</p> <ul style="list-style-type: none"> • To deflate cuff and open valve, turn air-release valve counterclockwise with the thumb and index finger in a slow and controlled manner; remember thumb goes down, needle goes down 	
<p>(S-71) Inflation Bulb with the Air-release Valve</p> <ul style="list-style-type: none"> • Inflate cuff to between 160 mm Hg to 180 mm Hg • If beat is heard immediately, deflate the cuff; wait 30 – 60 seconds; inflate cuff to no more than 200 mg Hg 	
<p>(S-72) Inflation Bulb with the Air-release Valve</p> <ul style="list-style-type: none"> • Goal: learn how to inflate the cuff and how to deflate the cuff in a slow, controlled manner <ul style="list-style-type: none"> ○ Place the BP cuff on the swim noodle (keep it there) ○ Using the inflation bulb and air-release valve, take turns inflating the cuff and deflating the cuff in a slow, controlled manner 	
<p>ACTIVITY #6AA Working with the Inflation Bulb and the Air-release Valve</p> <p>Beforehand, cut swim noodles in 1½-foot sections. Swim noodles come in 2 sizes; the larger of the 2 sizes works better. Demonstrate how to place the BP cuff on the swim noodle, how to inflate the bulb, and how to deflate the bulb in a slow, controlled manner.</p> <p>Pair students and distribute a swim noodle and a BP cuff to each pair. Ask students to:</p> <ul style="list-style-type: none"> • Take turns placing the BP cuff on the swim noodle and taking the BP cuff off the swim noodle. • Next, after placing the BP cuff on the swim noodle (keep it there), take turns using the inflation bulb and air-release valve: <ul style="list-style-type: none"> ○ Inflate the cuff and ○ Deflate the cuff in a slow, controlled manner 	
<p>(S-73) Blood Pressure – Nevers</p> <ul style="list-style-type: none"> • Do not take blood pressure on an arm with an IV, dialysis shunt, or other medical device in place • Avoid taking blood pressure on a side that has been injured or burned, is paralyzed, has a cast, or has had a mastectomy 	

Module AA – Measurement (Vital Signs)	
<p>(S-74) Orthostatic Hypotension</p> <ul style="list-style-type: none"> • Defined – abnormal low blood pressure that occurs when the resident suddenly stands up; complaints of feeling weak, dizzy, faint and seeing spots before the eyes • May be a complication from being on bed rest 	
<p>(S-75) Orthostatic Hypotension – Process</p> <ul style="list-style-type: none"> • Nurse aide may be asked to take an orthostatic blood pressure measurement; process includes: <ul style="list-style-type: none"> ○ BP checked while lying down, record in note pad ○ Have resident sit up, wait 2 minutes, check BP, record in notepad ○ Have resident stand up, wait 2 minutes, check BP, record in notepad ○ Record and report findings to nurse • Throughout process, nurse aide should check to see if resident is feeling weak, dizzy, faint, or seeing spots 	
<p>(S-76) Orthostatic Hypotension – Prevention</p> <ul style="list-style-type: none"> • Per care plan and directive from nurse <ul style="list-style-type: none"> ○ Increase activity in stages: bed rest then sitting on side of bed (dangling) then walking ○ Before standing, while sitting on side of bed (dangling), have resident cough/deep breathe and move legs back-and-forth in circles, 1 to 5 minutes ○ Ask resident to report weakness, dizziness, faintness, or seeing spots 	
<p>(S-77) Body Temperature</p> <ul style="list-style-type: none"> • Defined – amount of heat created by the body; balance between the amount heat produced and the heat lost • Is typically stable • Produced – created in the body when cells use food for energy • Lost to the environment – through skin, breathing, urine, and stool 	
<p>(S-78) Body Temperature - Terminology</p> <ul style="list-style-type: none"> • Fever – an elevated temperature • Febrile – with a fever • Afebrile – without a fever • Thermometer – device used to measure body temperature • Fahrenheit (F) and Centigrade (C) – scales used to measure temperature; stated in degrees (°) 	
<p>(S-79) Factors Affecting Temperature</p> <ul style="list-style-type: none"> • Age (older lower temperature than younger) • Illness (typically increases with infection) 	

Module AA – Measurement (Vital Signs)	
<ul style="list-style-type: none"> • Stress (causes an increase) • Environment (dependent upon humidity and temperature) • Exercise (causes an increase) • Time of day (lowest in the morning; higher in afternoon and evening) 	
<p>(S-80) Sites</p> <ul style="list-style-type: none"> • Important to check with nurse or care plan to see what type of thermometer is used <ul style="list-style-type: none"> ○ Mouth (oral) ○ Rectum (rectal) – most accurate; never let go of rectal thermometer while checking temperature ○ Armpit (axilla) – least accurate ○ Ear (tympanic) ○ Temporal artery (forehead) 	
<p>(S-81) When NOT to Take an Oral Temperature</p> <ul style="list-style-type: none"> • Is unconscious • Recent facial or mouth surgery • Recent injury to face • Has sores, redness, or mouth pain • Is confused or agitated • History or seizure • Is using oxygen • Is mouth-breather • Has a feeding tube 	
<p>(S-82) When NOT to Take a Rectal Temperature</p> <ul style="list-style-type: none"> • Has diarrhea • Has rectal problem • Has heart disease • Recent rectal surgery • Is confused or agitated 	
<p>(S-83) Temperature Values</p> <ul style="list-style-type: none"> • Oral <ul style="list-style-type: none"> ○ Baseline – 98.6°F ○ Normal range – 97.6°F to 99.6°F • Rectal <ul style="list-style-type: none"> ○ Baseline – 99.6°F ○ Normal range – 98.6°F to 100.6°F • Axillary <ul style="list-style-type: none"> ○ Baseline – 97.6°F ○ Normal range – 96.6°F to 98.6°F 	
<p>(S-84) Temperature Values</p> <ul style="list-style-type: none"> • Tympanic membrane <ul style="list-style-type: none"> ○ Baseline – 98.6°F ○ Normal range – 97.6°F to 99.6°F 	

Module AA – Measurement (Vital Signs)	
<ul style="list-style-type: none"> • Temporal <ul style="list-style-type: none"> ○ Baseline – 98.6°F ○ Normal range – 97.6°F to 99.6°F 	
<p>(S-85) Types of Thermometers</p> <ul style="list-style-type: none"> • Digital – oral, rectal, axillary • Electronic – oral, rectal, axillary • Tympanic – ear • Temporal – forehead • Non-mercury, liquid-filled glass (oral – green tipped) • Non-mercury, liquid-filled glass (rectal – red tipped) 	
<p>TEACHING TIP #16AA: Thermometer Display</p> <p>Display a variety of thermometers and include equipment required for each.</p>	
<p>(S-86) Digital Thermometer</p> <ul style="list-style-type: none"> • Oral, rectal, or axillary • Displays results digitally and is quick, within 2 – 60 seconds, and beeps or flashes when done • Battery-operated • Requires a disposable sheath 	
<p>(S-87) Electronic Thermometer</p> <ul style="list-style-type: none"> • Oral, rectal, or axillary • Have oral (blue tipped) and rectal (red tipped) probes; for axillary temperature use oral (blue tipped) thermometer • Displays results digitally and is quick, within 2 – 60 seconds, and beeps or flashes when done • Battery-operated and stored in recharging device • Requires a probe cover 	
<p>(S-88) Tympanic Thermometer</p> <ul style="list-style-type: none"> • Ear • Registers temperature in seconds • May need practice to operate accurately 	
<p>(S-89) Temporal Thermometer</p> <ul style="list-style-type: none"> • Measures heat from skin over the forehead, specifically over temporal artery • Done by a stroke or scan over the area • Registers within 3 seconds • Noninvasive 	
<p>(S-90) Non-mercury, Liquid-filled Glass Thermometers – Equipment</p> <ul style="list-style-type: none"> • Thermometer • Sheath • Gloves • Watch 	

Module AA – Measurement (Vital Signs)	
<ul style="list-style-type: none"> • Pen • Notepad • Alcohol wipe • Water soluble lubricant (rectal temperature only) 	
<p>(S-91) Non-mercury, Liquid-filled Glass Thermometers</p> <ul style="list-style-type: none"> • Oral, rectal, or axillary • Color-coded <ul style="list-style-type: none"> ○ Either blue or green for oral ○ Red for rectal • Takes a long time to register – 3 to 10 minutes based on site • Held at the stem of the thermometer and read at eye level • The nurse aide must read the thermometer after it registers the temperature; held at stem; read at eye level • Most health care providers use the Fahrenheit scale to measure temperature, even though both Fahrenheit and Celsius values are typically seen on thermometer 	
<p>(S-92) Reading the Non-mercury, Liquid-filled Glass Thermometer</p> <ul style="list-style-type: none"> • For Fahrenheit readings: <ul style="list-style-type: none"> ○ The long line represents 1 degree ○ The short line represents two tenths (2/10) of a degree 	
<p>(S-93) Example of an Oral Temperature Reading</p> <ul style="list-style-type: none"> • Temperature of 102.8°F 	
<p>ACTIVITY #7AA: Fahrenheit Temperature</p> <p>Determine whether this activity will be used as an in-class assignment, homework assignment, or as a quiz grade. Distribute to students and instruct to use accordingly.</p>	

Module AA – Measurement (Intake and Output)	
Content	Notes
(S-94) Title Slide	
(S-95) Fluid Balance <ul style="list-style-type: none"> • Living things need water to survive • Adult needs about 1500 mL of water intake daily to survive • About 2000 to 2500 mL needed for normal fluid balance • Hydration – having the right amount of water in the body’s tissues 	
(S-96) Fluid Balance <ul style="list-style-type: none"> • The body takes in water by drinking fluids and eating foods • The body loses water by way of urine, feces (bowel movement), vomit, perspiration (sweat), and lungs (breathing out), plus drainage from wounds or liquids from stomach suctioning • Death can occur if the body has too much or too little water in the tissues 	
(S-97) Intake and Output <ul style="list-style-type: none"> • Intake (also called input) – the amount of fluid taken in by the body • Output – the amount of fluid lost from the body • Intake and output are typically seen together and commonly abbreviated (I&O) • For fluid balance to occur fluid intake roughly equals fluid output 	
(S-98) Fluid Balance Not Achieved – Edema <ul style="list-style-type: none"> • When fluid intake is greater than fluid output, edema occurs • Body tissues swell with water • May occur from heart or kidney disease 	
(S-99) Edema – Nurse Aide’s Role <ul style="list-style-type: none"> • Obtain accurate weights per order • Increase pillows per resident’s request • Restrict fluids per doctor’s order • Measure and record I&O accurately, if ordered • Observe for and report signs/symptoms: weight gain of 1 to 2 pounds in a day; decrease in urine output; increased heart rate; difficult breathing or shortness of breath; fatigue; swelling of ankles, feet, fingers, hands; coughing; tight, smooth, shiny skin 	
(S-100) Fluid Balance Not Achieved – Dehydration <ul style="list-style-type: none"> • When fluid intake is less that fluid output, dehydration occurs • Body tissues are lacking in water • May occur from vomiting, diarrhea, fever, or simply refusing to drink fluids 	
(S-101) Dehydration – Nurse Aide’s Role <ul style="list-style-type: none"> • Determine preferences of fluids and offer fluids each time nurse aide enters room 	

Module AA – Measurement (Intake and Output)	
<ul style="list-style-type: none"> • Assure water pitcher and cup are within reach • Measure and record I&O accurately, if ordered • Force fluids (encourage to drink more fluids), if ordered by the doctor • Observe for and report signs and symptoms of potential dehydration and presence of dehydration <ul style="list-style-type: none"> ○ Warning signs for dehydration – drinks less than six 8-ounce glasses of fluids per day; drinks little or no fluids during meals; needs help drinking fluids; has trouble swallowing fluids; has fever, vomiting, diarrhea; complaints of thirst, dry mouth; decrease in urinary output ○ Signs/symptoms of dehydration – rapid, weak pulse; irregular heartbeat; low blood pressure; dark, strong-smelling urine, in small amounts; severe thirst; dry mouth and mucous membranes; cracked lips; warm, dry, wrinkled skin; flushed face; constipation; weight loss; weakness, dizziness, confusion; headache; irritable 	
<p>(S-102) I&O</p> <ul style="list-style-type: none"> • Ordered by the doctor; found on care plan and directive from nurse • Typically calculated at the end of each shift and totaled every 24-hours • Documented on a facility-specific form in the appropriate column • Calculations and totals based on the milliliter (mL) 	
<p>(S-103) The Milliliter (mL)</p> <ul style="list-style-type: none"> • A unit of measure in the metric system • Fluids measured using the milliliter (mL) • Another unit of measure used in healthcare is called the cubic centimeter (cc); however nurse aides should use the abbreviation, mL instead of cc when documenting volume of fluid • 1 milliliter is equal to 1 cubic centimeter • Most people are familiar with the teaspoon; there are 5 mL in a teaspoon 	
<p>TEACHING TIP #17AA Use of mL Instead of cc in Healthcare</p> <p>The Institute for Safe Medication Practices has included cc (the abbreviation for cubic centimeter) on its <i>List of Error-Prone Abbreviations, Symbols, and Dose Designations</i>.</p>	
<p>TEACHING TIP #18AA: The Milliliter</p> <p>Pass around a medicine cup or a syringe with 1 milliliter of colored water for students to view.</p>	
<p>TEACHING TIP #19AA: Video About the Milliliter and Cubic Centimeter</p>	

Module AA – Measurement (Intake and Output)	
<p>Show video, <i>Understanding mL (milliliter), Liter, & Cubic Centimeter</i> to explain the milliliter and cubic centimeter: https://www.youtube.com/watch?v=luDoyp2G-YM</p>	
<p>(S-104) The Graduate</p> <ul style="list-style-type: none"> • Accurate measuring device for fluids when resident is on I&O • Even though graduate is marked in ounces, plus milliliters (mL) or cubic centimeters, fluid for I&O is measured and documented in mL • Measure fluid at eye-level on flat surface • If both intake and output are to be measured with the graduate, two separate graduates are used and labelled 	
<p>(S-105) Units of Measure for the Graduate</p> <ul style="list-style-type: none"> • The C.C. (cubic centimeter) side of the measurement scale is used in health care • Recall 1 C.C. on the graduate = 1 milliliter (mL) • Shortest line represents either 25 cc/mL or 75 cc/mL • Longest lines represent multiples of 50 cc/mL 	
<p>TEACHING TIP #20AA: The Graduate</p> <p>Pass around an empty, clean graduate for students to view.</p>	
<p>(S-106) Measuring I&O – Importance</p> <ul style="list-style-type: none"> • Used to evaluate fluid balance • Used to evaluate kidney function • Assists in planning and evaluating medical treatment • Assists with carrying out special fluid orders • Used to help prevent or detect complications from fluid intake • Fluid intake is one factor that reflects the resident’s nutritional status 	
<p>(S-107) Fluids Considered as Intake</p> <ul style="list-style-type: none"> • Liquids that the resident drinks • Semi-liquid foods that are eaten • Other fluids including intravenous (IV) fluids and tube feedings that nurse is responsible for maintaining and measuring 	
<p>(S-108) Fluids – Liquids</p> <ul style="list-style-type: none"> • Water • Milk • Coffee • Tea • Juices • Soups • Soft drinks 	
<p>(S-109) Fluids – Semi-liquid Foods</p> <ul style="list-style-type: none"> • Milkshakes 	

Module AA – Measurement (Intake and Output)	
<ul style="list-style-type: none"> • Ice cream • Sherbet • Custard • Pudding • Gelatin • Popsicles 	
<p>(S-110) Providing Drinking Water</p> <ul style="list-style-type: none"> • Residents need fresh drinking water provided each shift and if water pitcher is empty • Before providing water, check with care plan or nurse to see if resident can have ice and a straw and if special fluid orders are in place • Follow facility's procedure regarding time schedule and process 	
<p>(S-111) Providing Drinking Water – Concepts</p> <ul style="list-style-type: none"> • Ensure resident's name and room number is labeled on ice pitcher • Check for cracks and chips in water pitcher and cup when filling; also make sure they are clean; replace when needed • Never touch inside or rim of cup and pitcher • Never take resident's used water pitcher directly to ice machine; can transmit germs • Never scoop ice with resident's water pitcher • Always place ice into the water pitcher first, then fill with water 	
<p>(S-112) Special Fluid Orders</p> <ul style="list-style-type: none"> • In order to maintain fluid balance, the doctor may order amount of fluid a resident must drink a day • Encourage fluids <ul style="list-style-type: none"> ○ Resident drinks increased amount of fluids ○ Fluids that resident likes and are on resident's diet are left at bedside within easy reach; kept at appropriate temperature; may require being placed on ice in a pan ○ Nurse aide offers fluids regularly if person is dependent and cannot feed self or is confused ○ Nurse aide offers fluids each time he/she enters the room • Restrict fluids <ul style="list-style-type: none"> ○ Fluids are limited to certain amount ○ Fluids offered in small amounts ○ Water pitcher removed from room (or out of sight) ○ Resident will require frequent mouth care • Nothing by mouth (NPO) <ul style="list-style-type: none"> ○ Not allowed to eat or drink anything ○ Typically ordered before/after surgery, before certain lab tests, before special diagnostic procedures, and for certain illnesses 	

Module AA – Measurement (Intake and Output)	
<ul style="list-style-type: none"> ○ Water pitcher removed from room (or out of sight) ○ Resident will require frequent mouth care ● Thickened liquids <ul style="list-style-type: none"> ○ All fluids must be thickened, even water ○ Thickness depends on resident’s ability to swallow ● Located on the care plan ● Nurse aide must measure and record intake very carefully 	
<p>TEACHING TIP #21AA Thickening Agent</p> <p>Demonstrate the creation of thickened fluids using a thickening agent.</p>	
<p>(S-113) Determining Oral Fluids as Intake</p> <ul style="list-style-type: none"> ● To determine intake, nurse aide must know serving sizes of containers that fluids are served in a facility <ul style="list-style-type: none"> ○ Typically found on the I&O sheet ○ Nurse aide will eventually know serving sizes of containers without needing to refer to I&O sheet as resource ● Two methods to measure intake of oral fluids <ul style="list-style-type: none"> ○ Measures – using a designated graduate, the nurse aide measures the amount of fluid left in the container and subtracts that amount from the total amount the container holds ○ Using fractions – knowing the amount in milliliters that a serving container holds, the nurse aide uses fractions to calculate how much fluid the resident drank based on the amount of fluid left in the container ● Follow facility policy and/or procedure when determining intake of fluids during and between meals 	
<p>(S-114) Typical Serving Sizes of Liquids</p> <ul style="list-style-type: none"> ● Water glass = 240 mL ● Tea glass = 180 mL ● Juice glass = 120 mL ● Milk carton = 240 mL ● Coffee cup = 240 mL ● Soft drink can = 360 mL ● Gelatin = 120 mL ● Soup bowl = 180 mL ● Ice chips = 1/2 amount of mL in container 	
<p>(S-115) Determining Intake – Measures</p> <ul style="list-style-type: none"> ● The nurse aide knows that the glass with the resident’s apple juice holds 240 mL of fluid ● Using the graduate and measuring the apple juice left in the glass, the nurse aide notes that the resident did not drink 120 mL of apple juice 	

Module AA – Measurement (Intake and Output)	
<ul style="list-style-type: none"> • Subtracting 120 mL of apple juice, the resident didn't drink from the number of mL the glass holds • The nurse aide determines the resident drank 120 mL of apple juice 	
<p>ACTIVITY #8AA: Explaining Fractions of a Whole</p> <p>Show the video, <i>Finding a Fraction of a Number</i> to introduce or re-introduce the students to fractions of whole numbers as they learn a method to determine fluid intake: https://www.youtube.com/watch?v=MUVC3IIPw_w</p> <p>Once the students are feeling comfortable working with fractions, allow them to practice in class together or at home using <i>Unit 10, Section 3: Fractions of Quantities</i>: https://www.cimt.org.uk/projects/mepres/book7/bk7i10/bk7_10i3.htm</p>	
<p>(S-116) Determining Intake – Fractions</p> <ul style="list-style-type: none"> • To determine fluid intake using fractions, the nurse aide needs a basic understanding of fractions in relation to a whole, which is 1 • The entire bar is = 1 and includes <ul style="list-style-type: none"> ○ 4 equal parts or 4 fourths ○ 2 equal parts or 2 halves ○ 3 equal parts or 3 thirds 	
<p>(S-117) Determining Intake – Fractions</p> <ul style="list-style-type: none"> • $\frac{2}{3}$ of 240 mL of coffee <ul style="list-style-type: none"> ○ The 2 – numerator tells the number of parts the resident drank ○ The 3 – denominator tells the number of parts that were originally in the container ○ The 240 – amount of fluid served to resident 	
<p>(S-118) Determining Intake – Fractions</p> <ul style="list-style-type: none"> • $\frac{2}{3}$ of 240 mL of coffee • 240 mL in the resident's coffee cup • Resident drank $\frac{2}{3}$ cup of coffee • Resident drank 160 mL of coffee 	
<p>(S-119) Determining Intake – Fractions</p> <ul style="list-style-type: none"> • $\frac{1}{2}$ of 240 mL of coffee • 240 mL in the resident's coffee cup • Resident drank $\frac{1}{2}$ cup of coffee • Resident drank 120 mL of coffee 	
<p>(S-120) Recall Determining Intake – Fractions</p> <ul style="list-style-type: none"> • $\frac{2}{3}$ of 240 mL of coffee <ul style="list-style-type: none"> ○ The 2 – numerator tells the number of parts the resident drank ○ The 3 – denominator tells the number of parts that were 	

Module AA – Measurement (Intake and Output)	
<p>originally in the container</p> <ul style="list-style-type: none"> ○ The 240 – amount of fluid served to resident 	
<p>(S-121) Determining Intake – Fractions (Quick)</p> <ul style="list-style-type: none"> • $\frac{2}{3}$ of 240 mL of coffee <ul style="list-style-type: none"> ○ Determine what 1 part of total coffee equals by dividing the total mL amount of coffee (240) by 3 = 80 ○ Resident drank 2 of the 3 parts of the coffee, so multiply 80 (which is 1 part) by 2 because the resident drank 2 of the 3 parts = 160 • The resident drank 160 mL of the coffee 	
<p>(S-122) Milliliters and Ounces</p> <ul style="list-style-type: none"> • A common conversion in health care is changing (or converting) ounces to milliliters • 1 ounce = 30 mL • To convert ounces to milliliters, simply multiply number of ounces by 30 	
<p>TEACHING TIP #22A Little Plastic Medicine Cup</p> <p>A plastic medication cup would be a great visual for students to pass around in class as it would demonstrate the equivalence of 30 mL and 1 ounce. An added strategy would be to provide each student with a medication cup to keep.</p>	
<p>(S-123) Conversion Problem – Apple Juice</p> <ul style="list-style-type: none"> • 8 fluid ounces of apple juice in the glass • 1 fluid ounce = 30 milliliters (mL) • 8×30 milliliters (mL) = 240 milliliters (mL) • 240 mL of apple juice in the glass 	
<p>ACTIVITY #9AA: Intake Calculations</p> <p>Determine whether this activity will be used as an in-class assignment, homework assignment, or as a quiz grade. Distribute to students and instruct to use accordingly.</p>	
<p>ACTIVITY #10AA: Let’s Make a Chart</p> <p>Determine whether this activity will be used as an in-class assignment, homework assignment, or as a quiz grade. Distribute to students and instruct to use accordingly.</p> <p>You could also make this a team activity and assign each team a row of the chart. Bring students together and check/complete the chart.</p>	
<p>(S-124) Milliliters (mL) and Cubic Centimeters (cc)</p> <ul style="list-style-type: none"> • Devices in health care are often marked in cubic centimeters (cc) • A common conversion is changing (or converting) cc to milliliters 	

Module AA – Measurement (Intake and Output)	
<p>(mL)</p> <ul style="list-style-type: none"> • 1 cubic centimeter (cc) = 1 milliliter (mL) • To convert cc to mL, simply use the exact number measured 	
<p>(S-125) Conversion Problem – Grape Juice</p> <ul style="list-style-type: none"> • 120 cubic centimeters (cc) of grape juice in the glass • 1 cc = 1 milliliter (mL) • 120 mL of grape juice in the glass 	
<p>(S-126) Fluids Considered as Output</p> <ul style="list-style-type: none"> • Urine • Vomit • Diarrhea • Wound drainage • Gastric suction material 	
<p>TEACHING TIP #23AA: Devices That Collect Output Display</p> <p>Display a variety of devices that collect output either with or without fake body fluids.</p>	
<p>(S-127) Devices That Collect Output</p> <ul style="list-style-type: none"> • Catheter bag • Urinal • Commode hat • Emesis basin 	
<p>(S-128) Foley Catheter Bag</p> <ul style="list-style-type: none"> • Connected to indwelling (Foley) catheter which drains bladder of urine • Emptied into a measuring device at end of shift (or sooner, if full) • Measurement done using measuring device instead of catheter bag; measurement markings are not as accurate as a graduate 	
<p>(S-129) The Urinal</p> <ul style="list-style-type: none"> • A plastic, elongated device, angled at the top and used by men to urinate into, particularly when confined to bed or on output • Meant for single-resident use • As a measuring device, it is marked in ounces and cc (same as mL), with 100 cc (mL) increments marked lines and 50 cc (mL) unmarked lines between 	
<p>(S-130) The Commode Hat (or Specimen Pan)</p> <ul style="list-style-type: none"> • A plastic collection container placed under the commode lid • Used when resident has bathroom privileges and <ul style="list-style-type: none"> ○ Is on output and/or ○ Has a urine or stool specimen ordered • As a measuring device, it is marked in ounces and cc (same as mL) and has a grooved edge allowing for ease of emptying into the commode • Important for resident to not put toilet paper into the hat/pan, but 	

Module AA – Measurement (Intake and Output)	
into the commode	
<p>(S-131) The Emesis Basin</p> <ul style="list-style-type: none"> • A plastic, shallow basin shaped like a kidney that fits against the resident’s neck and collects body fluids • Used <ul style="list-style-type: none"> ○ During mouthcare ○ When a resident is nauseated • As a measuring device, it is marked in ounces and cc (same as mL), with 100 cc (mL) increments 	
<p>(S-132) RECALL: Units of Measure for the Graduate</p> <ul style="list-style-type: none"> • The C.C. (cubic centimeter) side of the measurement scale is used in health care • Recall 1 C.C. on the graduate = 1 milliliter (mL) • Shortest line represents either 25 cc/mL or 75 cc/mL • Longest lines represent multiples of 50 cc/mL • [Using the graduate, next 3 slides will include graduates of urine to measure] 	
<p>(S-133) Measuring Urine #1</p> <ul style="list-style-type: none"> • Long line = 200 cc (mL) • Short line = 25 cc (mL) • Amount = 225 cc (mL) • Document = 225 mL 	
<p>(S-134) Measuring Urine #2</p> <ul style="list-style-type: none"> • Long line = 500 cc (mL) • Amount = 500 cc (mL) • Document = 500 mL 	
<p>(S-135) Measuring Urine #3</p> <ul style="list-style-type: none"> • Long line = 300 cc (mL) • Short line = 25 cc (mL) • Amount = 325 cc (mL) • Document = 325 mL 	
<p>ACTIVITY #11AA: Urine Output</p> <p>Determine whether this activity will be used as an in-class assignment, homework assignment, or as a quiz grade. Distribute to students and instruct to use accordingly.</p>	
<p>TEACHING TIP #24AA: Urine in Graduates Display</p> <p>Display several graduates with varying amounts of fake urine for students to observe. You may choose to place a card in front of the graduates, with the amounts of fake urine included; or not include the cards and require students to measure the fake urine individually or in pairs.</p>	
<p>(S-136) Determining/Documenting Food Intake</p>	

Module AA – Measurement (Intake and Output)	
<p>(S-137) Determining and Documenting Food Intake – Importance</p> <ul style="list-style-type: none"> • Determining intake of meals accurately is important in identifying the resident at risk for or already experiencing impaired nutrition • Food intake is one of the factors that reflects the resident’s nutritional status • Poor food intake at meals or changes in food intake that persists for multiple meals may indicate an underlying problem or illness and should be reported to the nurse • Much of a resident’s daily fluid intake comes from meals; when resident has decreased appetite, can result in fluid/electrolyte imbalance. 	
<p>(S-138) Determining Food Intake</p> <ul style="list-style-type: none"> • The nurse aide compares the amount of food that was eaten with the amount of food served • To measure food intake, the nurse aide needs a basic understanding of percentages in relation to a whole, which is 100% 	
<p>(S-139) Understanding Percentages of a Whole</p> <ul style="list-style-type: none"> • The entire circle = 100% and includes 4 equal parts • Each 25% is $\frac{1}{4}$ of the whole • $25\% + 25\% = 50\%$ (or $\frac{1}{2}$ of the whole) • $25\% + 25\% + 25\% = 75\%$ (or $\frac{3}{4}$ of the whole) 	
<p>(S-140) Determining Food Intake</p> <ul style="list-style-type: none"> • Follow facility procedure regarding determining and recording food intake, for example <ul style="list-style-type: none"> ○ Listing exact food that was eaten (all of chicken, all green beans, $\frac{1}{2}$ of mashed potatoes, $\frac{1}{4}$ of biscuit, all of pie) ○ Using specific words (all, good, fair, poor, refused) ○ Using percentages of food eaten (100%, 75%, 50%, 25%, 0%) 	
<p>(S-141) The Resident is Served His Meals</p> <ul style="list-style-type: none"> • Breakfast consists of 2 eggs, 2 slices of bacon, fried apples, grits, biscuit, coffee, and apple juice • Lunch consists of 4 grilled chicken tenders, mashed potatoes, broccoli, a corn muffin, coffee, and water 	
<p>(S-142) Resident Ate 0% of Meals (Refused)</p> <ul style="list-style-type: none"> • Refused meal completely or ate only one or two bites of each item 	
<p>(S-143) Resident Ate 25% of Meals (Poor)</p> <ul style="list-style-type: none"> • Ate about 25% of entrée or 50% of one item 	
<p>(S-144) Resident Ate 50% of Meals (Fair)</p> <ul style="list-style-type: none"> • About 50% of food has been eaten (for example, 50% of entrée and 25% of a vegetable) 	

Module AA – Measurement (Intake and Output)	
<p>(S-145) Resident Ate 75% of Meals (Good)</p> <ul style="list-style-type: none"> • Most of meal has been eaten, but a large part of one item or two items have been left (for example, 25% of entrée or 75% of a vegetable not eaten) 	
<p>(S-146) Resident Ate 100% of Meals (All)</p> <ul style="list-style-type: none"> • All of meal has been eaten except for a small amount of food (for example, less than 25% of a vegetable has not been eaten) 	
<p>TEACHING TIP #25AA: Creating Food Intake Trays</p> <p>Use corrugated poster board and cut out several pieces the size of trays. Cut out and laminate pictures of foods from magazines or product boxes to create simulated foods reflecting various states of consumption. Using paper plates, place meals with laminated foods reflecting percentages of food intake on them. Create meal trays with the corrugated poster board and plates of food for students to evaluate and assign percentages of intake for each.</p>	

Module AA – Measurement (Height and Weight)	
Content	Notes
(S-147) Title Slide	
<p>(S-148) Weight and Height – Overview</p> <ul style="list-style-type: none"> • Both weight and height are measured on admission to the facility • Units of measure <ul style="list-style-type: none"> ○ Weight may be measured using pounds or kilograms, per facility policy ○ Height may be measured using feet and inches or just inches, per facility policy; centimeters typically are not used • After admission <ul style="list-style-type: none"> ○ Height typically not measured again ○ Weight measured per facility policy or per doctor’s order; as directed by nurse and care plan – daily, weekly, monthly 	
<p>(S-149) Weights of Residents in Long-term Care Facilities</p> <ul style="list-style-type: none"> • Current standards of practice in long-term care facilities recommend weighing resident on admission or readmission (to establish a baseline weight), weekly for the first 4 weeks after admission, and at least monthly thereafter to help identify and document trends such as weight loss or gain • Crucial that weight is obtained accurately and consistently so comparisons along time are more reliable <ul style="list-style-type: none"> ○ Facility-wide scales must be calibrated and functioning appropriately ○ A consistent process in place 	
<p>(S-150) Weights – Consistent Process</p> <ul style="list-style-type: none"> • Weigh the resident: <ul style="list-style-type: none"> ○ Wearing a similar type of clothing ○ At approximately the same time of the day (preferably before breakfast) ○ Using the same scale ○ Either consistently wearing or not wearing orthotics or prostheses 	
<p>(S-151) Accurate Weights – Importance</p> <ul style="list-style-type: none"> • Weight is one of the parameters that reflects the resident’s nutritional status • Fluid loss or retention can cause short term weight changes; abrupt weight changes along with change in food intake are signs of fluid and electrolyte imbalance. • Weight loss may be important indicator of a change in 	

Module AA – Measurement (Height and Weight)	
<p>resident’s health status or sign of malnourishment</p> <ul style="list-style-type: none"> • If significant weight loss noted, health care team reviews for possible causes 	
<p>(S-152) Physician Mechanical Beam Scale</p> <ul style="list-style-type: none"> • Used for measuring weight and height • Residents who cannot stand <ul style="list-style-type: none"> ○ Weighed using chair, wheelchair, bed, or mechanical lift, as directed by the nurse or care plan ○ Height measured in the bed using a tape measure and ruler 	
<p>(S-153) Physician Mechanical Beam Scale</p> <ul style="list-style-type: none"> • Balance beam with upper and lower poise bars • Weight indicators • Balance bar and window • Height rod with upper and lower sections • Head piece – resting and active • Scale platform • Pillar and pillar head 	
<p>(S-154) Balance Beam</p> <ul style="list-style-type: none"> • Has 2 poise bars – the upper bar and the lower bar • May include pounds only or pounds on the top part of each bar and kilograms on the bottom part of each bar; may have interchangeable pound and kilogram bars 	
<p>(S-155) Upper Poise Bar</p> <ul style="list-style-type: none"> • Long lines represent pounds • Short lines represent $\frac{1}{4}$ pounds each; increments include $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ 	
<p>(S-156) Lower Poise Bar</p> <ul style="list-style-type: none"> • Single lines represent increments of 50 pounds • Grooves located along the top of the lower bar align with weight increments 	
<p>TEACHING TIP #26: The Kilogram</p> <p>Introduce the kilogram (kg) as a metric measurement of weight and as a frame of reference, 1 kilogram = 2.2 pounds.</p>	
<p>(S-157) Weight Indicators</p> <ul style="list-style-type: none"> • Both upper and lower bars have movable weight indicators • The weight indicator for the lower bar fits into the groove as weight is obtained 	
<p>(S-158) Balance Bar and Balance Window</p> <ul style="list-style-type: none"> • Always ensure that the balance bar is floating freely and in the center of the window when upper/lower bars are 	

Module AA – Measurement (Height and Weight)	
<p>set on 0 and resident is not standing on scale</p> <ul style="list-style-type: none"> • If balance bar is off-center and/or touching the window when upper and lower bars are set on 0 and resident is not standing on scale, do not weigh resident and notify the nurse 	
<p>(S-159) Reading the Weight</p> <ul style="list-style-type: none"> • To determine weight: add the value for the lower bar to the value for the upper bar • 100 pounds + 38 pounds = 138 pounds 	
<p>TEACHING TIP #27AA: Video About the Physician Mechanical Beam Scale, Weight Portion</p> <p>Show video, <i>Learning Tools: Reading Weight Measurements on a Physician Mechanical Beam Scale</i> to reinforce components of and determining weight with the physician mechanical beam scale: https://www.youtube.com/watch?v=b6G88qVI3m8</p>	
<p>(S-160) Height Component – Head Piece</p> <ul style="list-style-type: none"> • Becomes active when extended upward in preparation for measuring the resident’s height • Lowered and placed on resident’s head and height measured • Becomes at rest when flat and low against height rod 	
<p>(S-161) Height Component – Rod</p> <ul style="list-style-type: none"> • 2 Units of measure <ul style="list-style-type: none"> ○ Inches ○ Centimeters • 2 sections <ul style="list-style-type: none"> ○ Movable upper section ○ Non-movable lower section 	
<p>(S-162) Height Component – Rod</p> <ul style="list-style-type: none"> • Movable upper section <ul style="list-style-type: none"> ○ Raised or lowered to adjust to resident’s height ○ “Read height here” area is the location of the weight value if resident’s height is located in this section ○ Numbers increase from top to bottom • Non-movable lower section <ul style="list-style-type: none"> ○ Height read in lower section if resident’s height is located in this area ○ Numbers increase from bottom to top 	
<p>(S-163) Measuring the Height</p> <ul style="list-style-type: none"> • When measuring in feet and inches using height rod <ul style="list-style-type: none"> ○ Long lines represent inches ○ Shorter lines represent ¼ inch each; increments 	

Module AA – Measurement (Height and Weight)	
<p>include $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$</p> <ul style="list-style-type: none"> • Read height to the nearest $\frac{1}{4}$ inch 	
<p>(S-164) Measuring the Height</p> <ul style="list-style-type: none"> • How tall is the resident? • Resident’s height is 68 inches 	
<p>(S-165) Converting Inches into Feet and Inches</p> <ul style="list-style-type: none"> • Resident’s height is 68 inches • How does the nurse aide convert 68 inches to feet and inches? 	
<p>(S-166) Converting Inches into Feet and Inches</p> <ul style="list-style-type: none"> • There are 12 inches in 1 foot • To convert inches to inches and feet, divide the number of inches by 12 • The quotient is the feet and the remainder (if there is one) is the inches 	
<p>(S-167) Height in Feet and Inches</p> <ul style="list-style-type: none"> • Resident’s height is 68 inches • How does the nurse aide convert 68 inches to feet and inches? <ul style="list-style-type: none"> ○ 1 foot = 12 inches ○ Divide 68 inches by 12 inches ○ Quotient = 5, remainder = 8 ○ Answer = 5 feet, 8 inches 	
<p>TEACHING TIP #28AA: Video About the Physician Mechanical Beam Scale, Height Portion</p> <p>Show video, <i>Learning Tools: Reading Height Measurements on a Physician Mechanical Beam Scale with Height Rod</i> to reinforce components of and determining height with the physician mechanical beam scale: https://www.youtube.com/watch?v=XeBhvbm5yrl</p>	
<p>ACTIVITY #12AA: Weight and Height</p> <p>Determine whether this activity will be used as an in-class assignment, homework assignment, or as a quiz grade. Distribute to students and instruct to use accordingly.</p>	

Handout #1AA Analog Watch

A watch that has moving hands and typically marked with numbers 1 – 12

Has an hour hand, minute hand, and second hand

The nurse aide uses the second hand to count respirations and pulse rate

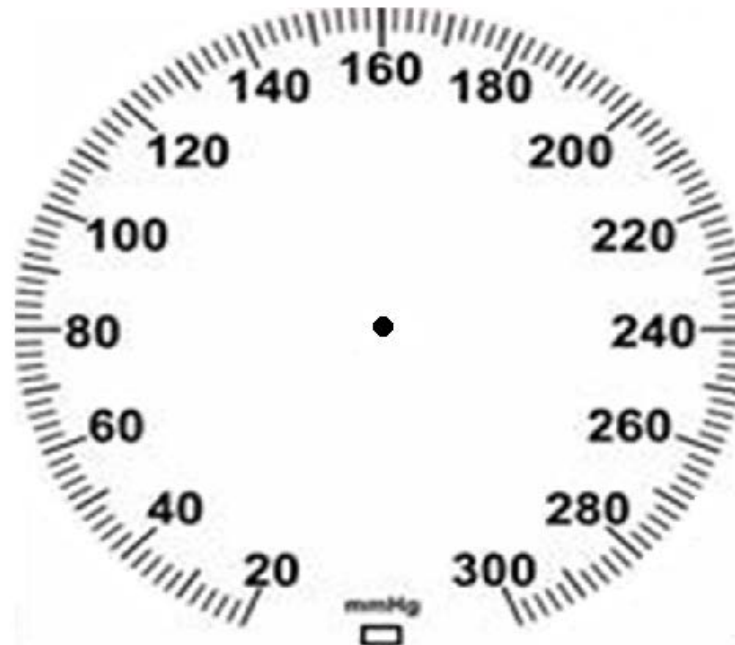


If you are counting respirations or pulse rate for 60 seconds, while watching the second hand, start counting and stop counting on the same number

Do not wait until the second hand lands on the 12 to start counting. Just remember which number you started with when you count.

Number Start	Number Stop	Number Start	Number Stop
1	1	7	7
2	2	8	8
3	3	9	9
4	4	10	10
5	5	11	11
6	6	12	12

Handout #2AA Aneroid Blood Pressure Manometer



- Long lines mark 10 mm Hg
- Short lines mark 2 mm Hg

If the needle lands between 2 lines at the point that the systolic sound is heard or the sound is no longer heard (diastolic), then the number value is rounded up to the next 2 mm Hg; odd numbers are not recorded/reported when using a manual BP cuff

When checking a blood pressure, you will be watching the needle as it drops from a higher number to a lower number, so you will be counting backwards.

Measured in millimeters of mercury (mm Hg),

Recorded as a fraction

120 (systolic)
80 (diastolic)

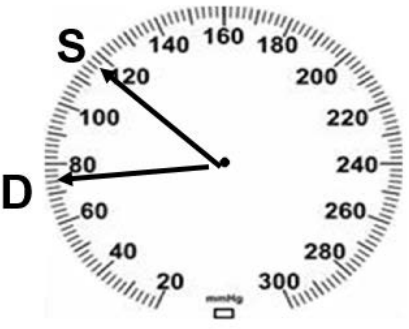
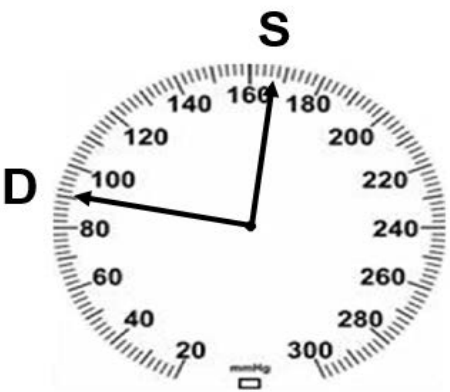
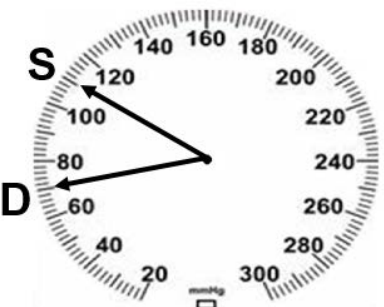
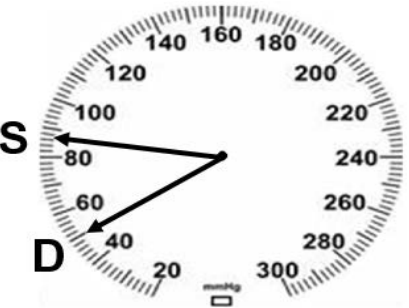
Pronounced “120 over 80”


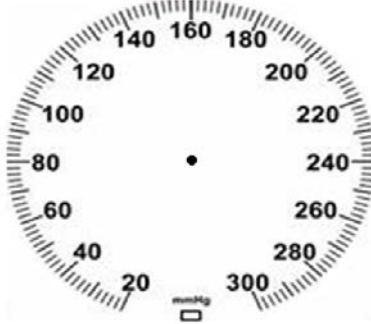
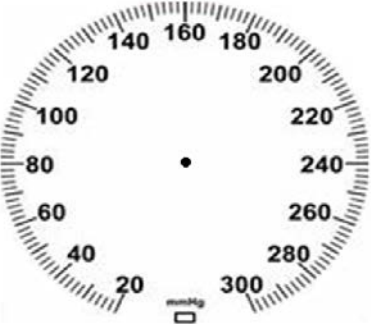
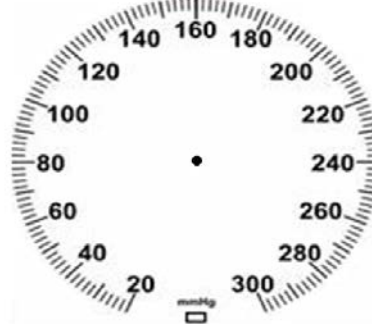


ACTIVITY #2AA Blood Pressure and Factors of Select Examples of People

For numbers 1 – 4, write specific information for each example. For numbers 5 – 14, place a check if the specific factor applies to the example. If a factor is not included in the description of the example, imply that it is not present.

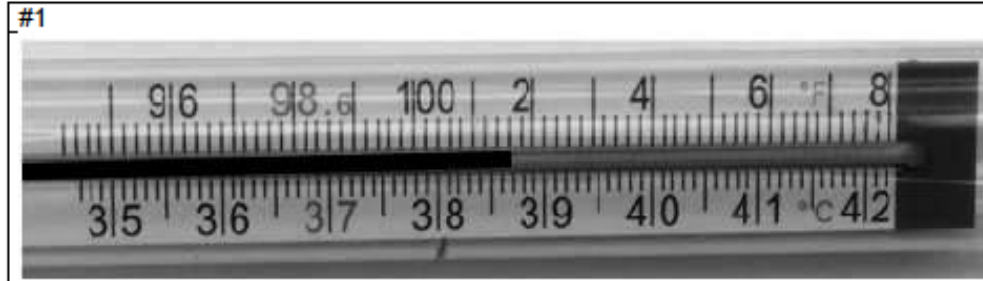
Specific Factors	Example #1	Example #2	Example #3
1. Blood pressure			
2. Age			
3. Gender			
4. Weight			
5. Lying down now?			
6. Exercising now?			
7. Smokes?			
8. Drinks alcohol?			
9. Overweight?			
10. High salt diet?			
11. Stressed now?			
12. Anxious now?			
13. Injured now?			
14. Pain now?			

Activity #5AA Aneroid Blood Pressure

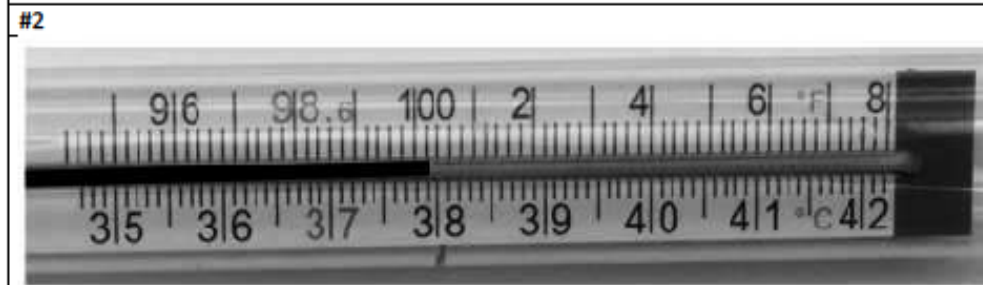
<p>#1</p> 	<p>#2</p> 
<p>What is the blood pressure?</p> <p>Is the blood pressure normal?</p> <p><input type="checkbox"/> yes</p> <p><input type="checkbox"/> no</p> <p>You will:</p> <p><input type="checkbox"/> notify the supervisor</p> <p><input type="checkbox"/> document the blood pressure</p> <p><input type="checkbox"/> both</p>	<p>What is the blood pressure?</p> <p>Is the blood pressure normal?</p> <p><input type="checkbox"/> yes</p> <p><input type="checkbox"/> no</p> <p>You will:</p> <p><input type="checkbox"/> notify the supervisor</p> <p><input type="checkbox"/> document the blood pressure</p> <p><input type="checkbox"/> both</p>
<p>#3</p> 	<p>#4</p> 
<p>What is the blood pressure?</p> <p>Is the blood pressure normal?</p> <p><input type="checkbox"/> yes</p> <p><input type="checkbox"/> no</p> <p>You will:</p> <p><input type="checkbox"/> notify the supervisor</p> <p><input type="checkbox"/> document the blood pressure</p> <p><input type="checkbox"/> both</p>	<p>What is the blood pressure?</p> <p>Is the blood pressure normal?</p> <p><input type="checkbox"/> yes</p> <p><input type="checkbox"/> no</p> <p>You will:</p> <p><input type="checkbox"/> notify the supervisor</p> <p><input type="checkbox"/> document the blood pressure</p> <p><input type="checkbox"/> both</p>

<p>#5</p> 	<p>#6</p> 
<p>Draw the following blood pressure value, labelling systolic with an S and diastolic with a D: 134/82</p>	<p>Draw the following blood pressure value, labelling systolic with an S and diastolic with a D: 122/74</p>
<p>#7</p> 	<p>#8</p> 
<p>Draw the following blood pressure value, labelling systolic with an S and diastolic with a D: 146/90</p>	<p>Draw the following blood pressure value, labelling systolic with an S and diastolic with a D: 90/60</p>
<p>#9</p> 	<p>#10</p> 
<p>Draw the following blood pressure value, labelling systolic with an S and diastolic with a D: 180/96</p>	<p>Draw the following blood pressure value, labelling systolic with an S and diastolic with a D: 96/64</p>

Activity #7AA Fahrenheit Temperature

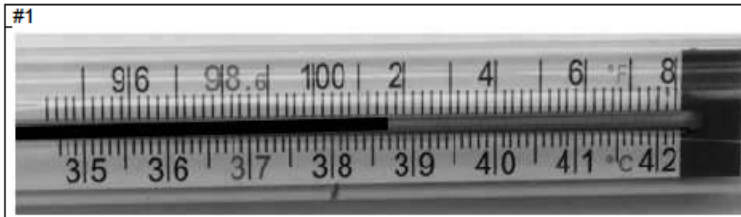


- What is the oral Fahrenheit temperature? _____
- Based on the oral temperature reading, the resident is:
 - ___ afebrile
 - ___ febrile
- Will you:
 - ___ notify the supervisor
 - ___ document the temperature
 - ___ both

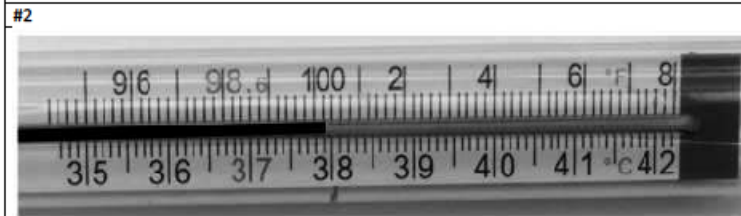


- What is the rectal Fahrenheit temperature? _____
- Based on the rectal temperature reading, the resident is:
 - ___ afebrile
 - ___ febrile
- Will you:
 - ___ notify the supervisor
 - ___ document the temperature
 - ___ both

Activity #7AA Fahrenheit Temperature



- What is the oral Fahrenheit temperature? _____
- Based on the oral temperature reading, the resident is:
 - afebrile
 - febrile
- Will you:
 - notify the supervisor
 - document the temperature
 - both



- What is the rectal Fahrenheit temperature? _____
- Based on the rectal temperature reading, the resident is:
 - afebrile
 - febrile
- Will you:
 - notify the supervisor
 - document the temperature
 - both

Activity #9AA Intake Calculations

Using the following serving sizes of containers common in health care facilities, determine intake for the fluids listed below. Use fractions.

<ul style="list-style-type: none"> • Water glass = 240 mL • Tea glass = 180 mL • Juice glass = 120 mL • Milk carton = 240 mL 	<ul style="list-style-type: none"> • Coffee cup = 240 mL • Soft drink can = 360 mL • Gelatin = 120 mL • Soup bowl = 180 mL
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Located on Meal Tray	Show Fraction Here	Intake in mL
The resident drank $\frac{1}{2}$ of his orange juice. How many mL of orange juice did the resident drink?		
The resident ate $\frac{1}{3}$ of his tomato soup. How many mL of soup did the resident eat?		
The resident drank $\frac{2}{3}$ of his coffee. How many mL of coffee did the resident drink?		
The resident ate $\frac{3}{4}$ of his gelatin. How many mL of gelatin did the resident drink?		
The resident drank $\frac{1}{4}$ of his tea. How many mL of tea did the resident drink?		

Using the following serving sizes of containers common in health care facilities, determine intake for the fluids listed below. Use clean, labelled graduate to measure.

<ul style="list-style-type: none"> • Water glass = 240 mL • Tea glass = 180 mL • Juice glass = 120 mL • Milk carton = 240 mL 	<ul style="list-style-type: none"> • Coffee cup = 240 mL • Soft drink can = 360 mL • Gelatin = 120 mL • Soup bowl = 180 mL
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Located on Meal Tray	Show Subtraction Here	Intake in mL
<p>The resident drank part of his orange juice. The nurse aide measured 45 mL in graduate that resident didn't drink. How many mL of orange juice did the resident drink?</p>		
<p>The resident drank part of his coffee. The nurse aide measured 100 mL in graduate that resident didn't drink. How many mL of coffee did the resident drink?</p>		
<p>The resident drank most of his water. The nurse aide measured 80 mL in graduate that resident didn't drink. How many mL of water did the resident drink?</p>		





Activity #10AA Let's Make a Chart

Using fractions, let's make a chart. The serving sizes of common containers found in health care facilities are listed along the side of the chart. The amounts of fluid drank/eaten are listed across the chart. You will write in the amount in mL that was drank in the appropriate box. I will do the first one for you. $\frac{1}{4}$ of 120 mL was drank, which equals 30 mL. I did not include my work in the example, but you need to. Work out your fractions below.

<ul style="list-style-type: none"> • Water glass = 240 mL • Tea glass = 180 mL • Juice glass = 120 mL • Milk carton = 240 mL 	<ul style="list-style-type: none"> • Coffee cup = 240 mL • Soft drink can = 360 mL • Gelatin = 120 mL • Soup bowl = 180 mL
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	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{3}$	$\frac{2}{3}$
120 mL	30 mL				
180 mL					
240 mL					
360 mL					

Activity #11AA Urine Output

#1 Urine	#2 Urine
	
Amount in milliliters	Amount in milliliters
#3 Urine	#4 Urine
	
Amount in milliliters	Amount in milliliters

Activity #12AA: Weight and Height

#1 Weight



Write the resident's weight in pounds. _____

Show calculation:

#2 Weight



Write the resident's weight in pounds. _____

Show calculation:

#3 Weight



Write the resident's weight in pounds. _____

Show calculation:

#4 Weight



Write the resident's weight in pounds. _____

Show calculation:

#1 Height



Write the resident's height in inches _____

Write the resident's height in feet and inches _____

Show calculation:

#2 Height



Write the resident's height in inches _____

Write the resident's height in feet and inches _____

Show calculation:

#3 Height



Write the resident's height in inches _____

Write the resident's height in feet and inches _____

Show calculation:

#4 Height



Write the resident's height in inches _____

Write the resident's height in feet and inches _____

Show calculation: