Professional Diploma in Nutrition

Module 1

Lesson 1:
Health is Your Wealth

EQF Level 5
Professional Diploma
European Qualifications Framework

What is Anthropometry?

- External measurement of body composition
- Tells you how much of your weight is muscle or fat as a % of you total BW
- Measure lean body mass, fat stores and body water
- No method is 100% accurate

Anthropometric Measurements

- % Weight Change
- Height
- Adiposity
- Muscle mass
- Estimates of body water content and body composition

The Scales Don’t Tell Us Everything

Scales do not:

- Tell you if your weight is healthy or unhealthy
- Tell you where your weight is - which is the biggest danger
- Account for muscle mass

Factors Affecting Body Weight

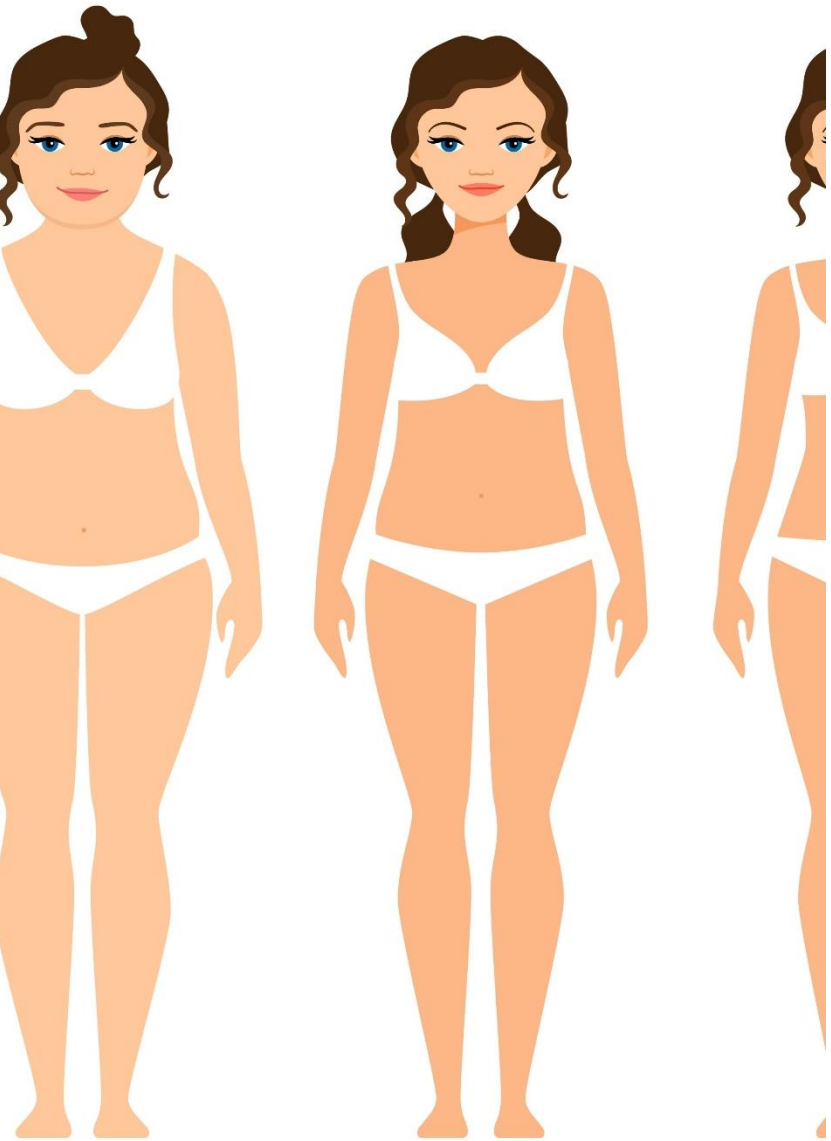
- Accuracy of scales
- Fluid retention, oedema, or ascites
- Time of day
- Amputations

Calories

- Kilograms = pounds divided by 2.2.
- Pounds = Kilograms x 2.2
- Meters = inches multiplied by .0254.
- Inches = meters / 0.0254
- 1 foot = 12 inches
- 1 stone = 14 lbs or 6.6kg

Example

- 140lbs= (140/2.20) = 63.6 kg
- 5 foot 4 inches = (5 x 12=60 + 4) = 64 inches
- 64 inches x 0.0254 = 1.62m



% Weight Change

- A single body weight measurement is not very useful
- Recording weight at regular intervals - beneficial
- Does not differentiate between lean tissue, fat and fluid

- Can identify malnutrition or underlying disorder:
  - Unintentional weight loss >10% in 3-6 months
  - Or weight loss >5% in 3-6 month period when starting BMI is <20Kg/m²
  - >5% weight loss in 6-12months without trying

- Good for setting goals- losing 5-10% body weight is beneficial to health

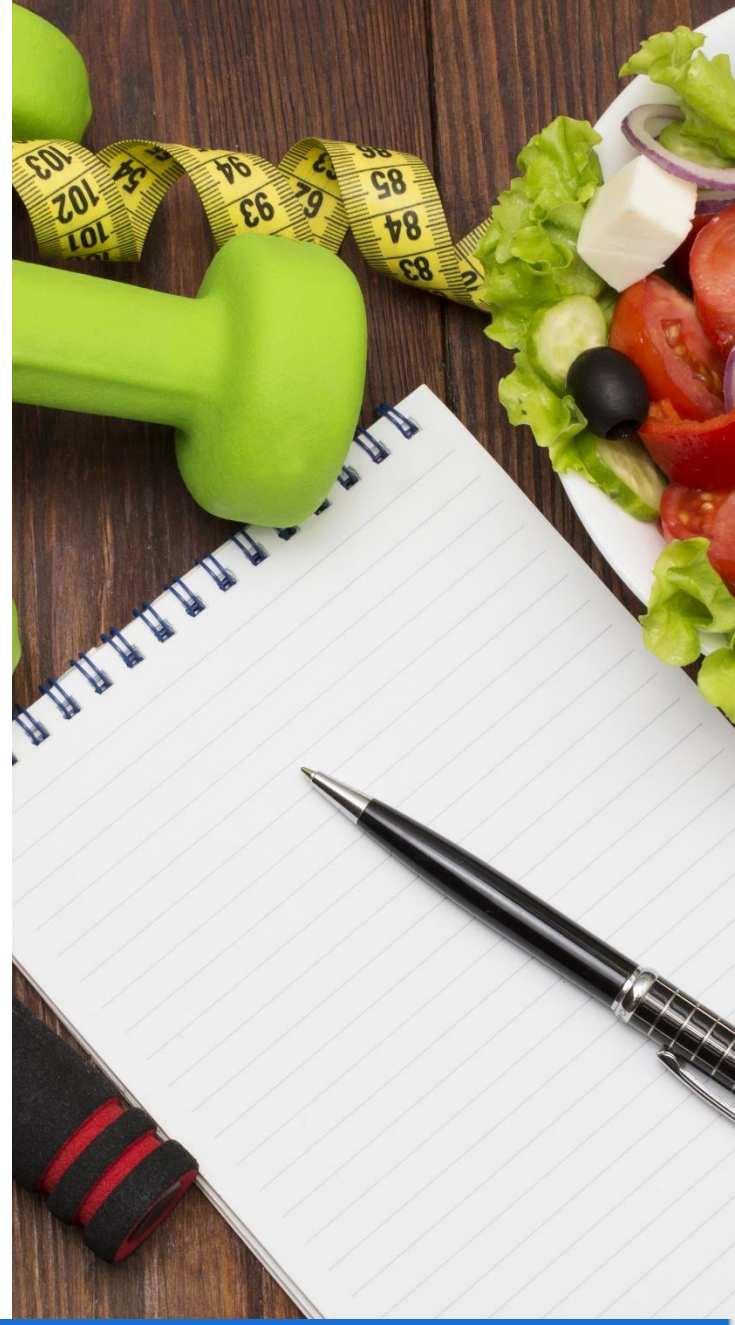
% Weight Change

$$\textit{Weight change (\%)} = \frac{\textit{(usual weight - actual weight)}}{\textit{usual weight}} \textit{ X 100}$$

For example:

$$\frac{162\text{lbs}-124\text{lbs}}{162\text{lbs}} \times 100$$

$$\frac{38}{162} \times 100 = 23.4\% \text{ weight loss}$$



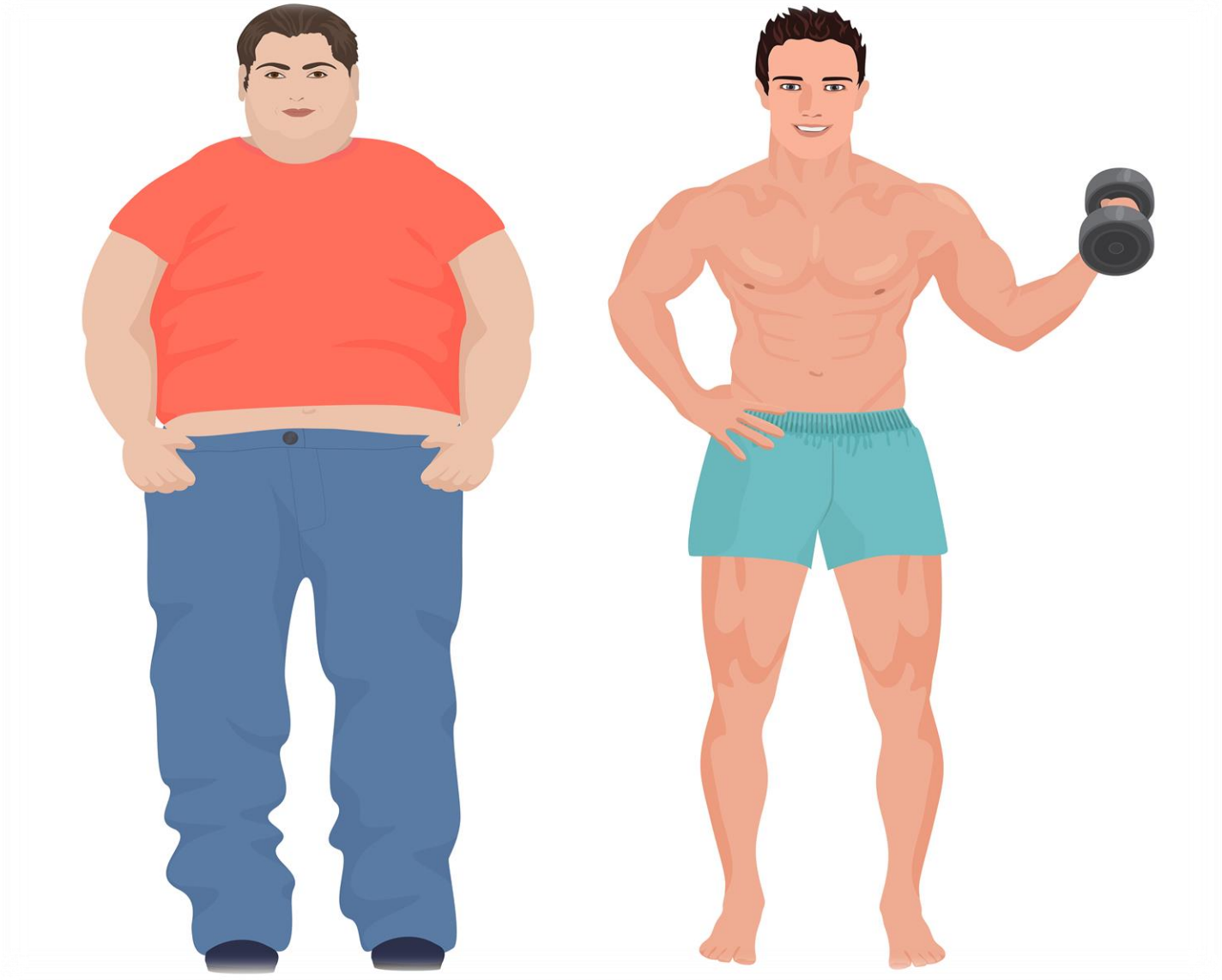
Benefits of Weight Loss

- Lower blood pressure
- Improve control of blood glucose levels
- Reduce risk of angina
- Improve blood cholesterol levels
- Ease lower back and joint pain

Body Mass Index (BMI)

- ✓ Considered good way to determine if a person is a healthy weight. Better indicator of fatness than weight alone.
- ✓ Quick indicator of health status, simple, effective and applies to adult men and women.
- ✓ Don't have to be EXACT weight to be in normal RANGE.
- ✓ Good for giving advice to groups of people.
- ✓ Cut-off ranges based on effect that the body weight has on disease.

- ✗ Does not take into account muscle mass.
- ✗ Not a measure of body fatness.
- ✗ Not appropriate for pregnant women
- ✗ Excessive abdominal fat more detrimental to health



Height
6 foot
Weight
250 lbs/ 113 kg
BMI
33.9

How to Calculate BMI

BMI equation

$$\frac{\text{Weight in kg}}{(\text{Height in m}^2)}$$

e.g. An adult who weighs 64kg and whose height is 1.62m……

e.g. $\frac{64\text{kg}}{(1.62\text{ m} \times 1.62\text{m})}$ = 24.3 kg/ m² (healthy weight)

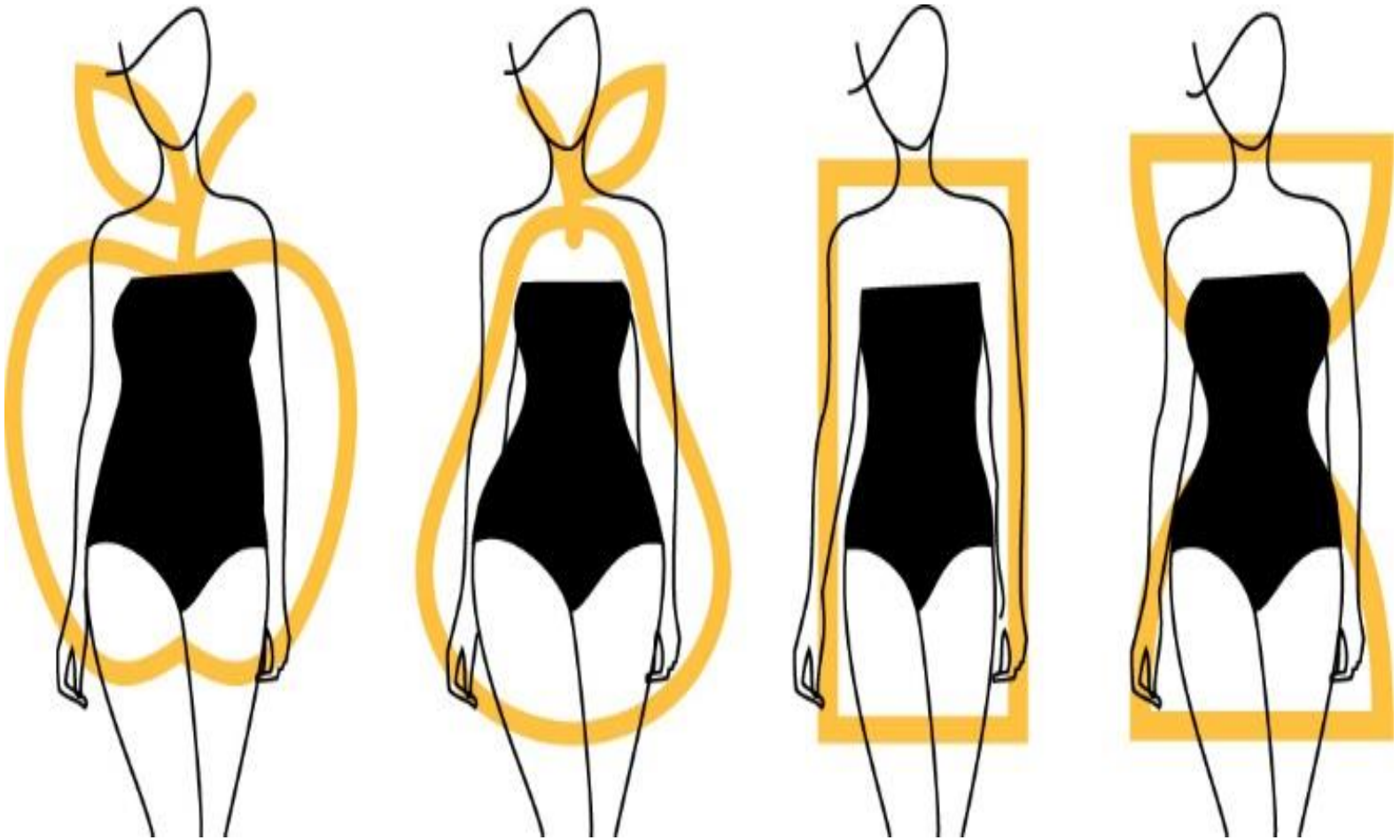
Interpretation of BMI

Table 1: Nutritional status based on the WHO and "Asian criteria" values		
Nutritional Status	WHO criteria BMI cut-off	"Asian criteria" BMI cut-off
Underweight	<18.5	<18.5
Normal	18.5 – 24.9	18.5 – 22.9
Overweight	25 – 29.9	23 – 24.9
Pre-Obese	-	25 – 29.9
Obese	≥30	≥30
Obese Type 1 (obese)	30 – 40	30 – 40
Obese Type 2 (morbid obese)	40.1 – 50	40.1 – 50
Obese Type 3 (super obese)	>50	>50

BMI Classifications	BMI (kg/m²)
Underweight	<18.5
Normal weight	18.5–24.9
Overweight	25.0–29.9
Obesity (Class 1)	30.0–34.9
Obesity (Class 2)	35.0–39.9
Extreme obesity (Class 3)	≥40.0

World Health Organisation (WHO); https://www.who.int/bmi

Which Shape is the Most Dangerous for your health?



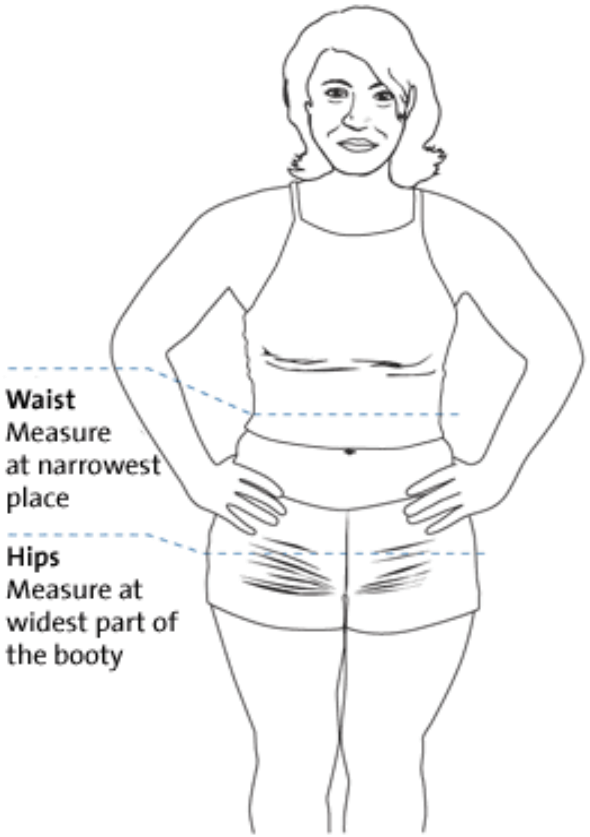
Waist Circumference

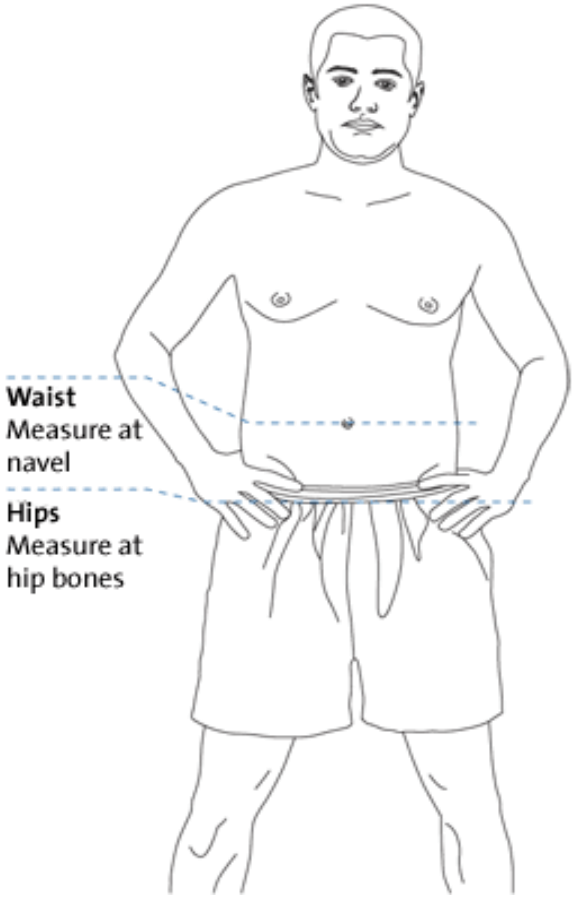
- Where you carry your weight is important
- Central Obesity or “Apple Shape”- very dangerous to health
- Use along side BMI
- Independent risk factor
- High result can indicate risk of:
  - Hypertension
  - Dyslipidaemia
  - Type 2 Diabetes
  - CVD
- Better indicator of health than BMI for elderly people and those of various ethnicities
- Little value when BMI >35kg/m^2
- Very simple and effective

Waist Circumference

Waist Girth and Health Risk		
	Men	Women
Normal	78–94cm	64–80cm
Overweight (Elevated Risk)	94–102cm	80–88cm
Obese (High Risk)	>102cm	>88cm

Waist to Hip Ratio





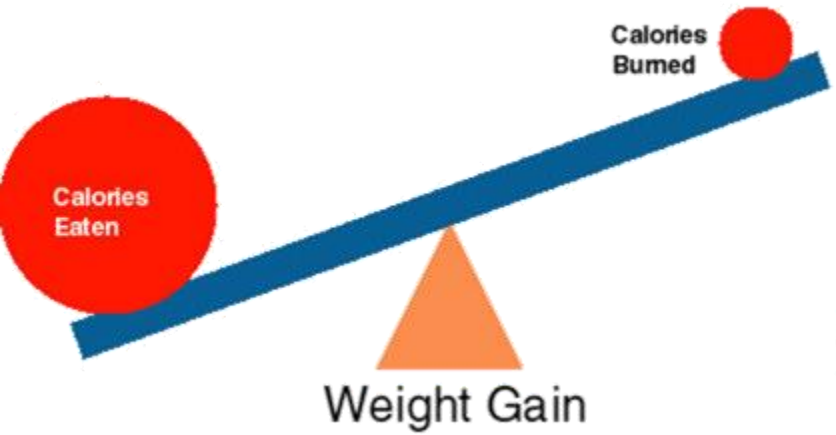
$$\frac{\text{Waist (cms)}}{\text{Hips (cms)}}$$

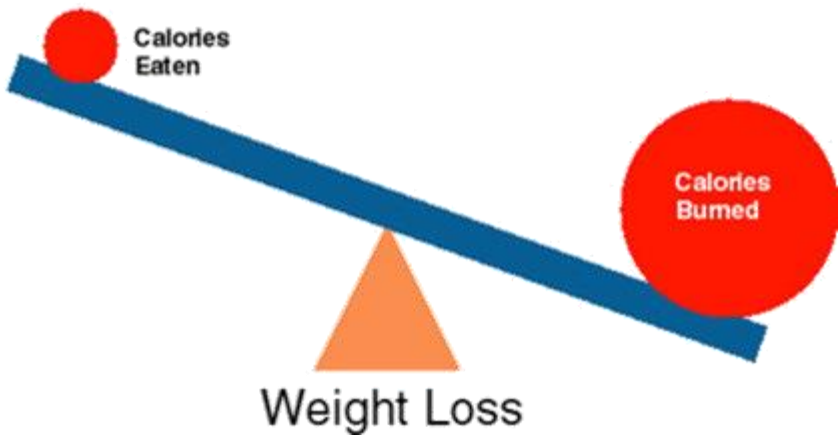
Waist to Hip Ratio

Waist-to-Hip Ratio (WHR) Norms				
Gender	**Excellent**	**Good**	**Average**	**At Risk**
Males	<0.85	0.85–0.89	0.90–0.95	≥0.95
Females	<0.75	0.75–0.79	0.80–0.86	≥0.86

RMR (calorie needs)

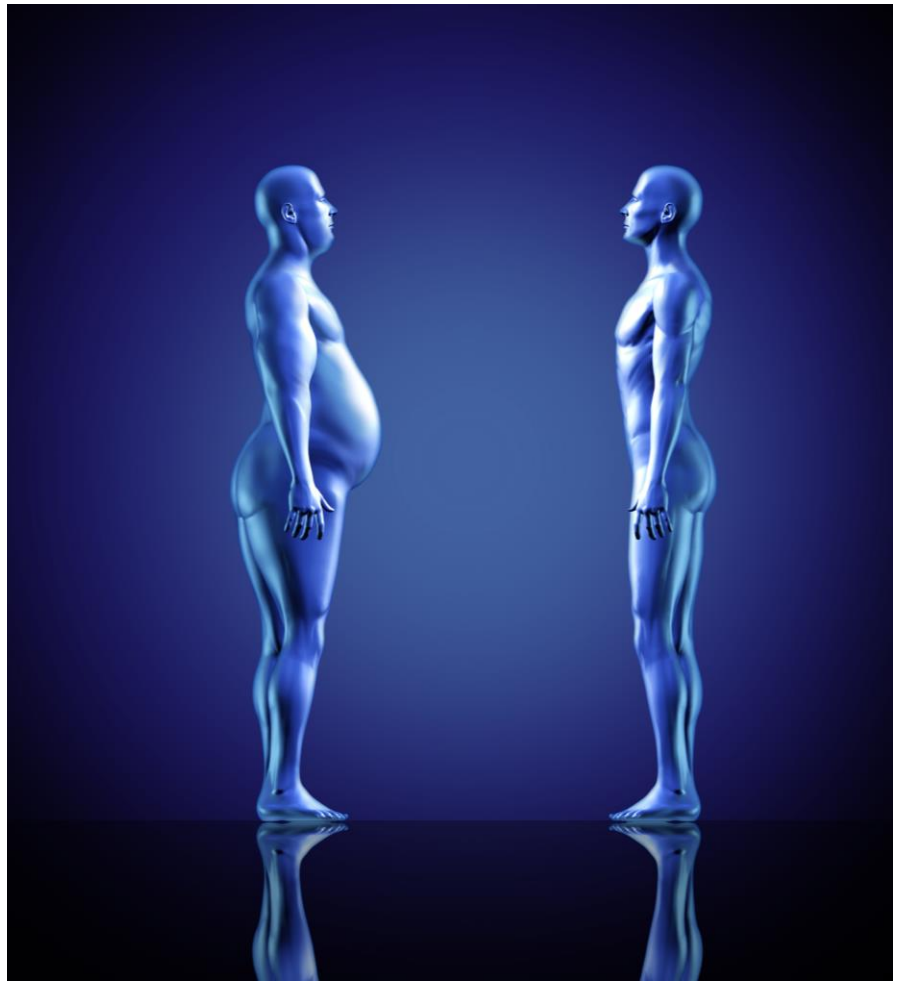
Energy Balance





Resting Metabolic Rate

- 45-70% of daily energy expenditure
- Synthesis, secretion and metabolism of enzymes and hormones
- Maintenance of body temperature
- Brain function
- Work of cardiac and respiratory muscles
- Cell function and replacement



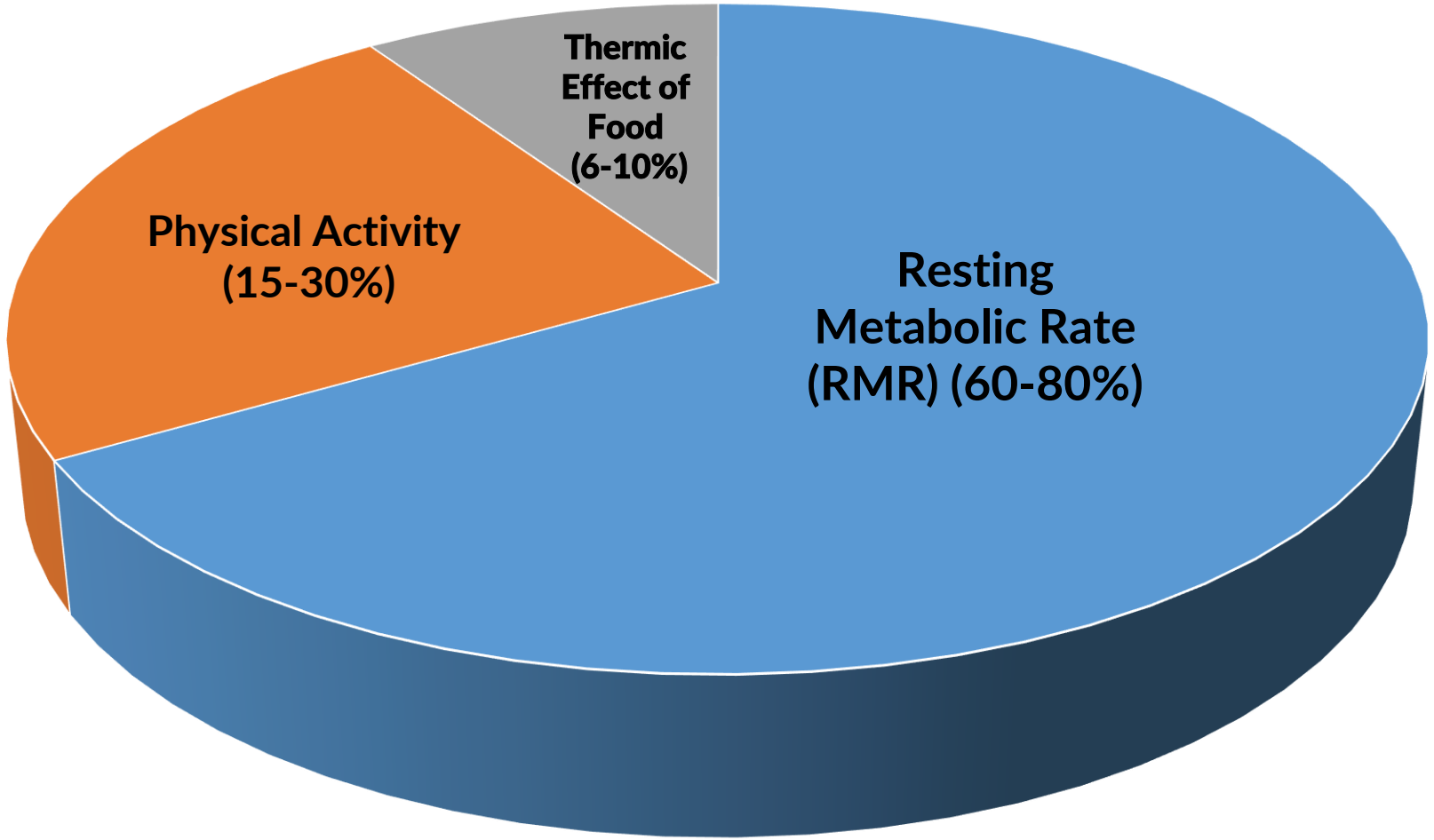
Factors Affecting Energy Requirements

1. Metabolic response to food- ingestion, digestion, absorption, transport
    - Dietary induced thermogenesis (6-10% of energy expenditure)

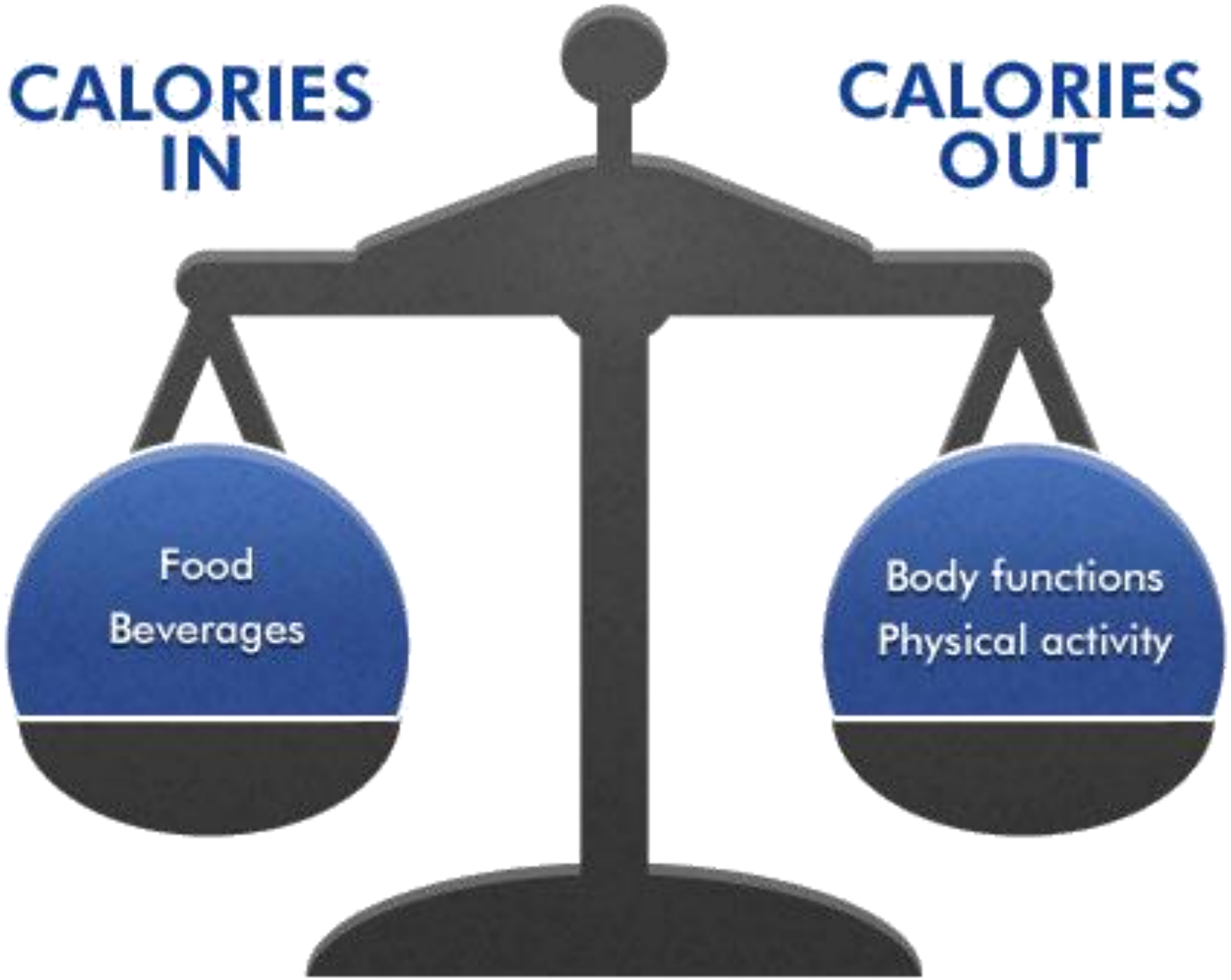
2. Physical activity- varies the most

3. Growth- varies throughout lifecycle

Energy Balance



Energy Balance



Estimating Calories

Method:

1. Estimate RMR using appropriate equation

2. Multiply by a PAL factor for exercise

3. Add or subtract 400-1000 calories/day to increase or decrease body weight

Work out RMR

Age Range	RMR (Kcal/24 hours)	
Years	Males	Females
10-17	(17.7 x kg body wt) + 657	(13.4 x kg body wt) + 692
18-29	(15.1 x kg body wt) + 692	(14.8 x kg body wt) + 487
30-59	(11.5 x kg body wt) + 873	(8.3 x kg body wt) + 846
60-74	(11.9 x kg body wt) + 700	(9.2 x kg body wt) + 687
75+	(8.4 x kg body wt) + 821	(9.8 x kg body wt) + 624

*Taken from Manual Dietetic Practise

What is your PAL?

	Male		Female	
Activity Level	Average	Range	Average	Range
Bed Rest	1.2	1.1-1.3	1.2	1.1-1.3
Very Sedentary	1.3	1.2-1.4	1.3	1.2-1.4
Sedentary/ maintenance	1.4	1.3-1.5	1.4	1.3-1.5
Light	1.5	1.4-1.6	1.5	1.4-1.6
Light moderate	1.7	1.6-1.8	1.6	1.5-1.7
Moderate	1.8	1.7-1.9	1.7	1.6-1.8
Heavy	2.1	1.9-2.3	1.8	1.7-1.9
Very Heavy	2.3	2.0-2.6	2.0	1.8-2.2

National Health and Medical Research Council (2005)

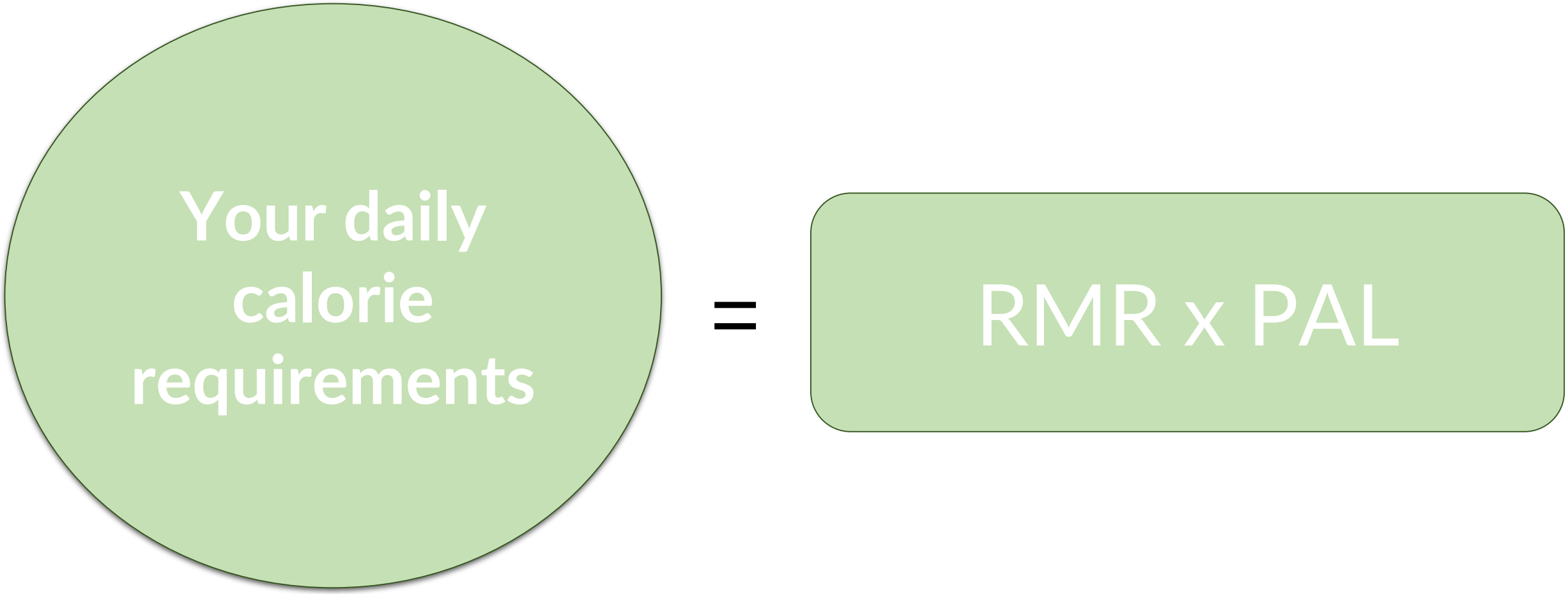
What is your PAL?

Sedentary or light activities:
Sedentary occupation and lifestyle-
Eating, Sleeping, Working, Cooking
Sitting

Light or moderately active:
sedentary occupations but do regular physical activity 1 hour

Heavy/very heavy lifestyles:
Regular strenuous work or leisure activity for several hours

Calculate Energy Requirements



Put it All Together

EXAMPLE

28 year old woman weighs 65kg

RMR equation (14.8 x kg body weight) + 487

(14.8 x 65kg) + 487 = **1, 449 Kcals**

She is moderately active - **PAL 1.6**

RMR (1,449) x PAL (1.6) = 2,318Kcals/day

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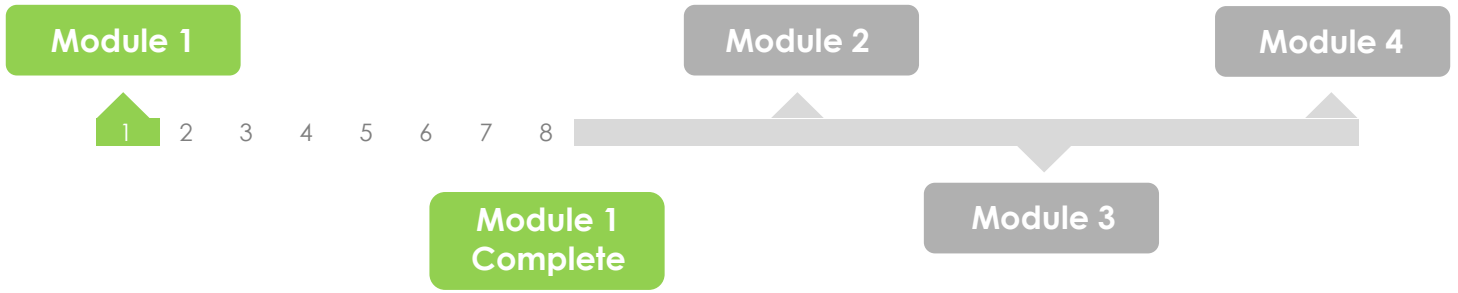
Module 1

Q&A | See You Back For Lesson 2



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