Components of a balanced diet

Student activity • observation and reasoning

YEAR 10 / LESSON 49 / BIOLOGY + SCIENCE (DOUBLE AWARD)

The question

How can different foods contribute to a balanced diet?

Use the supplied examples, record your reasoning and correct it using evidence.

Equipment

- Student booklet, pencil and ruler
- Printed food-label examples selected by the teacher; fictional menus are supplied in the reference box

Paper, modelling and written reasoning only. No chemicals or biological samples are handled.

Course coverage: Shared Biology / Double Award: 2.24–2.25. Nutrient sources and functions.

Plan, model or apparatus sketch

Draw and label the apparatus or biological model; identify one limitation.

Method and reasoning

Read the whole sequence before starting

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1. Make a source-and-function table for carbohydrate, protein, lipid, vitamins A, C and D, calcium, iron, water and dietary fibre.

2. Use the reference examples to check the table; recognise that foods normally supply several nutrients.

3. Compare two fictional menus for variety and missing nutrient sources without labelling individual foods morally good or bad.

4. Explain why vitamins and minerals are needed in small amounts but do not supply energy.

5. Suggest inclusive substitutions using legumes, fortified alternatives or other suitable foods; check actual labels rather than assuming all alternatives are identical.

6. Explain why a balanced diet depends on suitable proportions over time and individual needs, not one perfect meal.

Cleanup

- Return models and keep the corrected work.

Record your evidence

Blank spaces are for your own work

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Reference and task data

Examples: starchy foods supply carbohydrate for respiration; beans/eggs supply protein for growth and repair; oils supply lipid for energy storage and membranes. Carrots provide beta-carotene used to make vitamin A for vision; fruit/peppers supply vitamin C for collagen formation; oily fish/fortified foods supply vitamin D supporting calcium absorption. Dairy/fortified alternatives provide calcium for bones and teeth; pulses/meat provide iron for haemoglobin. Water is a solvent and transport medium; wholegrains and vegetables provide fibre supporting bowel function. Fictional comparison menus (no portion sizes supplied): A—rice, chicken and water; B—rice, beans, mixed vegetables, orange and a calcium-fortified drink. Compare nutrient variety only; neither menu alone establishes a balanced daily intake.

Example / trial	Observation / evidence	Explanation / limit
Evidence / comparison		
Explanation		
Limit / correction		

Show your calculations, labelled model or correction here.

Explain and evaluate

Use evidence and show calculation steps where relevant

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1. Why is protein needed?

2. Do vitamins provide energy?

3. Give a vitamin C source and function.

4. How do vitamin D and calcium relate?

5. Why is iron needed?

6. What is one role of fibre?