S4 Home Economics Practice Paper 1 | energy needs, protein, food budget, food safety and family resources

Senior Secondary Home Economics

S4 Home Economics practice paper with answers: energy and protein needs, food budget, food safety temperatures, textile care and time management.

1. Basal metabolic rate and daily energy requirement (16 marks)

S4 student Yan weighs 55 kg. Estimate her basal metabolic rate (BMR) at 1 kilocalorie per kilogram per hour and assume an activity factor of 1.55. She currently takes in about 2400 kcal a day, and 1 kg of body fat is equivalent to about 7700 kcal.

#	Question
1	(a) Calculate her basal metabolic rate (BMR).
2	(b) Calculate her total daily energy expenditure (TDEE).
3	(c) Calculate her daily energy surplus and the theoretical weight gain after 30 days, to two decimal places.
4	(d) State two limitations of estimating energy requirement this way.

2. Protein requirement and meal planning (17 marks)

Yan weighs 55 kg and the recommended protein intake for adolescents is 0.8 g per kg of body weight. At breakfast she ate 2 eggs (6 g protein each) and drank 250 ml of milk (8 g protein); at lunch she ate 120 g of fish containing about 20 per cent protein.

#	Question
5	(a) Calculate her recommended daily protein intake.
6	(b) Calculate the protein supplied by breakfast and its share of the daily requirement to two decimal places.
7	(c) Calculate the protein in lunch and state whether breakfast and lunch together meet the daily recommendation.
8	(d) Explain what a complete protein is and give one example of combining plant foods to complement their amino acids.

3. Family food budget and price changes (17 marks)

A family of four spends each month: staples $900, meat $1300, vegetables and fruit $800 and others $600, against a monthly food budget of $3600. Meat prices then rise by 15 per cent while all other prices stay unchanged.

#	Question
9	(a) Check the current total monthly food spending and state whether it exceeds the budget.
10	(b) Calculate meat as a percentage of food spending to two decimal places.
11	(c) Calculate the new meat spending, the amount over budget and the percentage rise in total spending to two decimal places.
12	(d) Suggest two ways to absorb the overspend without reducing nutritional intake.

4. Food safety and temperature control (17 marks)

Bacteria multiply fastest in the danger zone between 4 degrees Celsius and 60 degrees Celsius, and a refrigerator should stay at 4 degrees Celsius or below. A pot of soup was left for 4 hours at a room temperature of 25 degrees Celsius, and reheated food must reach 75 degrees Celsius at the centre.

#	Question
13	(a) Decide whether the room temperature lies in the danger zone and explain.
14	(b) Using the two hour rule, calculate how many hours the soup has exceeded the safe limit and state the correct action.
15	(c) By how many degrees must the food centre rise from refrigerator temperature to the required reheating temperature?
16	(d) State two practices that prevent cross contamination.

5. Textile properties and the cost of washing (17 marks)

A garment is 60 per cent cotton and 40 per cent polyester, and its care label says machine wash at 40 degrees Celsius. The detergent dose is 15 ml per kilogram of laundry and a 1500 ml bottle costs $45. The machine is loaded with 5 kg of laundry averaging 250 g per item.

#	Question
17	(a) Calculate the detergent needed for this wash.
18	(b) Calculate how many washes one bottle provides.
19	(c) Calculate the detergent cost per wash and per item to two decimal places.
20	(d) State one property of cotton and one of polyester, and one precaution when washing and drying this blended garment.

6. Family resources and time management (16 marks)

A family has 21 hours a week for housework: 7 hours cleaning, 8 hours cooking, 3 hours laundry and 3 hours other tasks. Buying a dishwasher would save 2 hours of cleaning each week.

#	Question
21	(a) Check the total weekly housework hours and calculate cooking as a percentage of the total to two decimal places.
22	(b) Calculate the weekly housework hours after buying the dishwasher and the freed time as a percentage to two decimal places.
23	(c) Using the idea of opportunity cost, explain what the freed hours could be used for and the cost to weigh in the decision.
24	(d) Suggest two practical techniques for scheduling housework.