Subject – Science(solution)
Unit – 2 Nutrition in Animals

Animal nutrition includes :

- **nutrient requirement,**
- **mode of intake of food and**
- **its utilisation in the body.**

Components of food and their function.

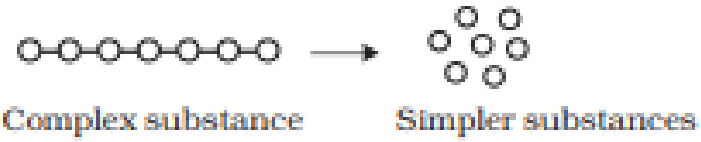
Table 8.1 **Primary Functions of the Six Major Nutrients**

Nutrient	Primary functions
Water	Dissolves and carries nutrients, removes waste, and regulates body temperature
Protein	Builds new tissues, antibodies, enzymes, hormones, and other compounds
Carbohydrate	Provides energy
Fat	Provides long-term energy, insulation, and protection
Vitamins	Facilitate use of other nutrients; involved in regulating growth and manufacturing hormones
Minerals	Help build bones and teeth; aid in muscle function and nervous system activity

Digestion

The components of food such as carbohydrates are complex substances. These complex substances cannot be utilised as such. So they are broken down into simpler substances.

The breakdown of complex components of food into simpler substances is called digestion



DIFFERENT WAYS OF TAKING FOOD

The mode of taking food into the body varies in different organisms.

- *Bees and humming-birds suck the nectar of plants,*
- *infants of human and many other animals feed on mother's milk.*
- *Snakes like the python swallow the animals they prey upon.*
- *Some aquatic animals filter tiny food particles floating nearby and feed upon them.*

Amazing fact

Starfish feeds on animals covered by hard shells of calcium carbonate. After opening the shell, the starfish pops out its stomach through its mouth to eat the soft animal inside the shell. The stomach then goes back into the body and the food is slowly digested.

Fig. 2.1 *Starfish*

➢ Exercise

1. What Animal nutrition includes?

Animal nutrition includes :

- **nutrient requirement,**
- **mode of intake of food and**
- **its utilisation in the body.**

2. What do you mean by digestion?

The components of food such as carbohydrates are complex substances. These complex substances cannot be utilised as such. So they are broken down into simpler substances.

The breakdown of complex components of food into simpler substances is called digestion

Complex substance Simpler substances

Table 2.1 Various modes of feeding

Name of animal	Kind of food	Mode of feeding
Snail		
Ant		
Eagle		
Humming-bird		
Lice		
Mosquito		
Butterfly		
House fly		

3. (Scraping, chewing, siphoning, capturing and swallowing, sponging, sucking etc.)

Name of animal	Kind of food	Mode of feeding
Snail	Grass	Chewing
Ant	Insects	Scrapping
Eagle	Flesh	Swallowing
Humming bird	Nectar	Sucking
Lice	Blood	Sucking
Mosquito	Blood	Sucking
Butterfly	Nectar	Sucking
House fly	Decaying matter	Brewing

Subject – Mathematics
Integers

➢ Making Multiplication Easier

Consider the following:

(i) We can find $(-25) \times 37 \times 4$ as

$[(-25) \times 37] \times 4 = (-925) \times 4 = -3700$

Or, we can do it this way,

$(-25) \times 37 \times 4 = (-25) \times 4 \times 37 = [(-25) \times 4] \times 37 = (-100) \times 37 = -3700$

(ii) Find 16×12

16×12 can be written as $16 \times (10 + 2)$.

$16 \times 12 = 16 \times (10 + 2) = 16 \times 10 + 16 \times 2 = 160 + 32 = 192$

(iii) $(-23) \times 48 = (-23) \times [50 - 2] = (-23) \times 50 - (-23) \times 2 = (-1150) - (-46)$

$= -1104$

(iv) $(-35) \times (-98) = (-35) \times [(-100) + 2] = (-35) \times (-100) + (-35) \times 2$

$= 3500 + (-70) = 3430$

(v) $52 \times (-8) + (-52) \times 2$

$(-52) \times 2$ can also be written as $52 \times (-2)$.

Therefore, $52 \times (-8) + (-52) \times 2 = 52 \times (-8) + 52 \times (-2)$

$= 52 \times [(-8) + (-2)] = 52 \times [(-10)] = -520$

EXAMPLE 2 Find each of the following products:

(i) $(-18) \times (-10) \times 9$ (ii) $(-20) \times (-2) \times (-5) \times 7$

(iii) $(-1) \times (-5) \times (-4) \times (-6)$

SOLUTION

(i) $(-18) \times (-10) \times 9 = [(-18) \times (-10)] \times 9 = 180 \times 9 = 1620$

(ii) $(-20) \times (-2) \times (-5) \times 7 = -20 \times (-2 \times -5) \times 7 = [-20 \times 10] \times 7 = -1400$

(iii) $(-1) \times (-5) \times (-4) \times (-6) = [(-1) \times (-5)] \times [(-4) \times (-6)] = 5 \times 24 = 120$

Example 4 In a class test containing 15 questions, 4 marks are given for every correct answer and (–2) marks are given for every incorrect answer. (i) Gurpreet attempts all questions but only 9 of her answers are correct. What is her total score? (ii) One of her friends gets only 5 answers correct. What will be her score?

Solution

(i) Marks given for one correct answer = 4

So, marks given for 9 correct answers = $4 \times 9 = 36$

Marks given for one incorrect answer = – 2

So, marks given for $6 = (15 - 9)$ incorrect answers = $(-2) \times 6 = -12$

Therefore, Gurpreet's total score = $36 + (-12) = 24$

(ii) Marks given for one correct answer = 4

So, marks given for 5 correct answers = $4 \times 5 = 20$

Marks given for one incorrect answer = (–2)

So, marks given for 10 $(=15 - 5)$ incorrect answers = $(-2) \times 10 = -20$

Therefore, her friend's total score = $20 + (-20) = 0$

Example 5 Suppose we represent the distance above the ground by a positive integer and that below the ground by a negative integer, then answer the following:

(i) An elevator descends into a mine shaft at the rate of 5 metre per minute. What will be its position after one hour?

(ii) If it begins to descend from 15 m above the ground, what will be its position after 45 minutes?

Solution

(i) Since the elevator is going down, so the distance covered by it will be represented by a negative integer.

Change in position of the elevator in one minute = – 5 m

Position of the elevator after 60 minutes = $(-5) \times 60 = -300$ m, i.e., 300 m below down from the starting position of elevator.

(ii) Change in position of the elevator in 45 minutes = $(-5) \times 45 = -225$ m, i.e., 225 m below ground level.

So, the final position of the elevator = $-225 + 15 = -210$ m, i.e., 210 m below ground level.

e

Exercise 1.3

1. Find each of the following products:
   (a) $3 \times (-1)$ (b) $(-1) \times 225$
   (c) $(-21) \times (-30)$ (d) $(-316) \times (-1)$
   (e) $(-15) \times 0 \times (-18)$ (f) $(-12) \times (-11) \times (10)$
   (g) $9 \times (-3) \times (-6)$ (h) $(-18) \times (-5) \times (-4)$
   (i) $(-1) \times (-2) \times (-3) \times 4$ (j) $(-3) \times (-6) \times (-2) \times (-1)$
2. Verify the following:
   (a) $18 \times [7 + (-3)] = [18 \times 7] + [18 \times (-3)]$
   (b) $(-21) \times [(-4) + (-6)] = [(-21) \times (-4)] + [(-21) \times (-6)]$
3. (i) For any integer a, what is $(-1) \times a$ equal to?
   (ii) Determine the integer whose product with (-1) is
   (a) -22 (b) 37 (c) 0
4. Starting from $(-1) \times 5$, write various products showing some pattern to show $(-1) \times (-1) = 1$.
5. Find the product, using suitable properties:
   (a) $26 \times (-48) + (-48) \times (-36)$ (b) $8 \times 53 \times (-125)$
   (c) $15 \times (-25) \times (-4) \times (-10)$ (d) $(-41) \times 102$
   (e) $625 \times (-35) + (-625) \times 65$ (f) $7 \times (50 - 2)$
   (g) $(-17) \times (-29)$ (h) $(-57) \times (-19) + 57$
6. A certain freezing process requires that room temperature be lowered from 40°C at the rate of 5°C every hour. What will be the room temperature 10 hours after the process begins?

For Help

5(a) 26 x (-48) + (-48) x (-36)

By applying distributive law

= (-48) x {26 + (-36)}

= (-48) x {26-36} ...[+ x - = -]

= (-48) x (-10)

= 480 ...(- x - = +)

Solution

Solution 1

(a) $3 \times (-1) = -3$
(b) $(-1) \times 225 = -225$
(c) $(-21) \times (-30) = 630$
(d) $(-316) \times (-1) = 316$
(e) $(-15) \times 0 \times (-18) = 0$
(f) $(-12) \times (-11) \times 10 = 1320$
(g) $9 \times (-3) \times (-6) = 162$
(h) $(-18) \times (-5) \times (-4) = -360$
(i) $(-1) \times (-2) \times (-3) \times 4 = -24$
(j) $(-3) \times (-6) \times (-2) \times (-1) = 36$

Solution 2

(a) We may find that

$$18 \times [7 + (-3)] = 18 \times [7 - 3]$$
$$= 18 \times 4 = 72$$

$$[18 \times 7] + [18 \times (-3)] = 126 + (-54) = 72$$

Clearly, $18 \times [7 + (-3)] = [18 \times 7] + [18 \times (-3)]$

(b) We may observe that

$$(-21) \times [(-4) + (-6)] = -21 \times [-4 - 6]$$
$$= -21 \times [-10] = 210$$

$$[-21 \times (-4)] + [-21 \times (-6)] = 84 + 126 = 210$$

Clearly, $(-21) \times [(-4) + (-6)] = [(-21) \times (-4)] + [(-21) \times (-6)]$

Solution 3

(i) $(-1) \times a = -a$

(ii) We get the additive inverse of an integer a when we multiply it with (-1). Hence, the required integers will be

(a) $22 \times (-1) = -22$

(b) $(-37) \times (-1) = 37$

(c) $0 \times (-1) = 0$

Solution 4

$-1 \times 5 = -5$
$-1 \times 4 = -4 = -5 + 1$
$-1 \times 3 = -3 = -4 + 1$
$-1 \times 2 = -2 = -3 + 1$
$-1 \times 1 = -1 = -2 + 1$
$-1 \times 0 = 0 = -1 + 1$

So, $-1 \times (-1) = 0 + 1 = 1$

Solution 5

(a) $26 \times (-48) + (-48) \times (-36)$
$= (-48) \times 26 + (-48) \times (-36)$ $(b \times a = a \times b)$
$= (-48)[26 - 36]$ $(a \times b + a \times c) = a(b + c)$
$= (-48) \times -10 = 480$

(b) $8 \times 53 \times (-125) = 8 \times [53 \times (-125)]$
$= 8 \times [(-125) \times 53]$ $(b \times a = a \times b)$
$= [8 \times (-125)] \times 53$ $a \times (b \times c) = (a \times b) \times c$
$= [-1000] \times 53 = -53000$

(c) $15 \times (-25) \times (-4) \times (-10)$
$= 15 \times [(-25) \times (-4)] \times (-10)$
$= 15 \times [100] \times (-10)$
$= 15 \times (-1000) = -15000$

(d) $(-41) \times 102$
$= (-41) \times (100 + 2)$
$= (-41) \times 100 + (-41) \times 2$ $a \times (b + c) = (a \times b) + (a \times c)$
$= -4100 - 82 = -4182$

(e) $625 \times (-35) + (-625) \times 65$
$= 625 \times [(-35) + (-65)]$ $(a \times b) + (a \times c) = a \times (b + c)$
$= 625 \times [-100] = -62500$

(f) $7 \times (50 - 2)$
$= (7 \times 50) - (7 \times 2)$ $a \times (b - c) = (a \times b) - (a \times c)$
$= 350 - 14$
$= 336$

(g) $(-17) \times (-29)$
$= (-17) \times [-30 + 1]$
$= [(-17) \times (-30)] + [(-17) \times 1]$ $a \times (b + c) = (a \times b) + (a \times c)$
$= [510] + [-17] = 493$

(h) $(-57) \times (-19) + 57$

$= 57 \times 19 + 57 \times 1$

$= 57\,[19 + 1]$ $\qquad (a \times b) + (a \times c) = a \times (b + c)$

$= 57 \times 20 = 1140$

Solution 6

Initial temperature = 40°C

Change in temperature per hour = − 5°C

Change in temperature after 10 hours = (− 5) × 10 = − 50°C

Final temperature = 40°C + (− 50°C) = −10°C

Solutions

English

Exercise A

1. There was heavy damage to buildings in that area.	attributively
2. Gauri called several times.	attributively
3. The children were excited about the picnic.	predicatively
4. Mani was absent last week.	predicatively
5. Kolkata is a large city.	attributively
6. The wise man waited patiently.	attributively
7. The first prize was taken by a young child.	attributively, attributively
8. The last train leaves at 11.30 p.m.	attributively
9. Some dreams often seem real.	attributively, predicatively
10. This book is a good read.	attributively, attributively

History

1.At different moments in this period, new technologies made their appearances – like the Persian wheel in irrigation, the spinning wheel in weaving, and firearms in combat.

2. **Habitat refers to the environment of a region and the social and economic life style of its residents.**

Hindi

1. (क) लिपि (ख) वर्णमाला (ग) वर्ण (घ) स्वर, व्यंजन (ङ) संयुक्ताक्षर

2. (क) किसी की सहायता नहीं लेनी पड़ती (ख) 44 (ग) बिंदु

3.

स्पर्श –	न	क	प	झ
अंतस्थ –	य	र	ल	व
ऊष्म –	स	श	ष	ह

4.

हँसी	पसंद	शतरंज	शैतानियाँ	चंदन
पाँचवाँ	संन्यासी	मांस	मूँछ	झंडा