

Respiration and Transportation in Organisms

Science · Class 7 · Topic-wise Practice Worksheet

TIME 45 minutes	QUESTIONS 18	TOTAL MARKS 24	MAX. SCORE ___ / 24
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Name: _____ Class/Sec: _____ Date: _____

INSTRUCTIONS

- There are **18 questions** in this worksheet. All questions are compulsory.
- Each question has four options (A), (B), (C) and (D). Exactly **one** option is correct.
- Questions 1–15 carry **1 mark** each. Questions 16–18 (Achievers Section) carry **3 marks** each.
- There is no negative marking. Study every diagram and table carefully.

Section A — Scientific Reasoning

Q1–Q8 · 1 mark each

- The breakdown of glucose in the presence of oxygen is called ____ respiration.

(A) Aquatic	(B) Anaerobic
(C) Artificial	(D) Aerobic
- During heavy exercise, the muscles may respire without enough oxygen, producing _____.

(A) Lactic acid	(B) Alcohol
(C) Citric acid	(D) Glucose
- Yeast respire without oxygen and produces alcohol and carbon dioxide. This process is used in _____.

(A) Rusting	(B) Fermentation
(C) Filtration	(D) Galvanisation
- In human beings, gaseous exchange takes place in tiny air sacs called _____.

(A) Trachea	(B) Bronchi
(C) Alveoli	(D) Villi
- Earthworms breathe through their _____.

(A) Lungs	(B) Gills
(C) Spiracles	(D) Moist skin
- Insects take in air through small openings called _____.

(A) Spiracles	(B) Alveoli
(C) Stomata	(D) Gills
- The blood vessels that carry blood **away** from the heart are called _____.

(A) Veins	(B) Arteries
(C) Capillaries	(D) Valves
- Which component of blood carries oxygen?

(A) White blood cells	(B) Platelets
(C) Red blood cells	(D) Plasma only

9. In the table below, which row is **incorrectly** matched?

Row	Organism	Respiratory organ
(A)	Fish	Gills
(B)	Cockroach	Tracheae
(C)	Frog (adult)	Gills only
(D)	Human	Lungs

Table 9.1 — Respiratory organs

- (A) Row (A) (B) Row (B)
(C) Row (C) (D) Row (D)
10. Exhaled air is passed through lime water and the lime water turns milky. What does this show?
(A) Exhaled air contains oxygen (B) Exhaled air is warmer
(C) Exhaled air contains nitrogen (D) Exhaled air contains carbon dioxide
11. Why does the rate of breathing increase during vigorous exercise?
(A) The muscles need more oxygen and produce more carbon dioxide, which must be removed (B) The lungs shrink
(C) The heart stops for a moment (D) The air becomes thinner
12. Which of these correctly describes the direction of blood flow?
(A) Heart → arteries → capillaries → veins → heart (B) Heart → veins → capillaries → arteries → heart
(C) Arteries → heart → veins → capillaries (D) Capillaries → heart → arteries → veins
13. In plants, water and minerals are carried upward by the _____.
(A) Phloem (B) Xylem
(C) Stomata (D) Cambium
14. The pulse felt at the wrist is caused by _____.
(A) Blood flowing back through the veins (B) Muscles contracting in the arm
(C) The rhythmic expansion of an artery each time the heart pumps (D) Air moving through the lungs
15. Why do the roots of a plant standing in waterlogged soil eventually die?
(A) They absorb too much water (B) Water washes away the minerals
(C) They become too cold (D) The soil air is driven out, so the roots cannot get oxygen for respiration

Achievers Section

Q16–Q18 · 3 marks each

16. Consider the following statements.
(i) Respiration and breathing mean the same thing.
(ii) Anaerobic respiration releases less energy than aerobic respiration.
(iii) Plants respire only at night.
Which of the statements is/are correct?
- (A) (i) only (B) (ii) only
(C) (i) and (ii) only (D) (ii) and (iii) only

17. A germinating seed is sealed in a flask with a small tube of lime water. After a day the lime water turns milky and a lit splint put into the flask goes out. What do these two observations show?

(A) The seed is respiring, using up oxygen and releasing carbon dioxide

(B) The seed is photosynthesising

(C) The seed is dead

(D) The flask was not sealed properly

18. Match each item in Column I with its correct description in Column II.

Column I	Column II
(P) Haemoglobin	(1) Prevents the backward flow of blood
(Q) Valve	(2) Red pigment that carries oxygen
(R) Capillary	(3) Very thin vessel where exchange with tissues occurs
(S) Stomata	(4) Pores through which plants exchange gases

Table 18.1

(A) P-1, Q-2, R-4, S-3

(B) P-2, Q-1, R-3, S-4

(C) P-2, Q-3, R-1, S-4

(D) P-3, Q-1, R-2, S-4

Answer Key

1	D	2	A	3	B	4	C	5	D
6	A	7	B	8	C	9	C	10	D
11	A	12	A	13	B	14	C	15	D
16	B	17	A	18	B				

Solutions

1. Answer: (D) Aerobic

Aerobic respiration uses oxygen and releases a great deal of energy, giving carbon dioxide and water. Anaerobic respiration happens without oxygen.

2. Answer: (A) Lactic acid

When oxygen runs short, muscle cells break down glucose to **lactic acid**, which causes cramps and aching. Rest and deep breathing supply the oxygen needed to clear it.

3. Answer: (B) Fermentation

Fermentation is anaerobic respiration by yeast. The carbon dioxide makes bread rise and the alcohol is used in brewing.

4. Answer: (C) Alveoli

Alveoli are the balloon-like air sacs at the end of the smallest tubes in the lungs. Their huge combined surface area and thin walls let oxygen pass into the blood and carbon dioxide pass out.

5. Answer: (D) Moist skin

An earthworm has no lungs or gills. Oxygen dissolves in the film of moisture on its **moist skin** and passes into the blood, which is why earthworms must stay damp.

6. Answer: (A) Spiracles

Insects have **spiracles** along the sides of the body, leading into a network of air tubes called tracheae that carry air directly to the tissues.

7. Answer: (B) Arteries

Arteries carry blood away from the heart and have thick elastic walls to withstand the pressure. Veins bring blood back and have valves to stop it flowing backwards.

8. Answer: (C) Red blood cells

Red blood cells contain haemoglobin, a red pigment that binds oxygen in the lungs and releases it where the body needs it.

9. Answer: (C) Row (C)

An adult frog breathes through **lungs and its moist skin** — it loses its gills when the tadpole becomes a frog. The other three rows are correct.

10. Answer: (D) Exhaled air contains carbon dioxide

Lime water turns milky only in the presence of **carbon dioxide**. Since exhaled air produces this change much faster than inhaled air, it shows that respiration releases carbon dioxide.

11. Answer: (A) The muscles need more oxygen and produce more carbon dioxide, which must be removed

Exercising muscles use up energy quickly, so **they need more oxygen and produce more carbon dioxide**. Breathing faster and deeper supplies the extra oxygen and removes the extra carbon dioxide.

12. Answer: (A) Heart → arteries → capillaries → veins → heart

Blood leaves the heart through **arteries**, which branch into fine **capillaries** where exchange with the tissues happens, then collects into **veins** that return it to the heart.

13. Answer: (B) Xylem

Xylem carries water and dissolved minerals from the roots to the leaves. Phloem carries the food made in the leaves to the rest of the plant, a process called translocation.

14. Answer: (C) The rhythmic expansion of an artery each time the heart pumps

Each beat of the heart sends a surge of blood into the arteries, and their elastic walls expand and recoil. Feeling this **rhythmic expansion of an artery** at the wrist gives the pulse, which equals the heart rate.

15. Answer: (D) The soil air is driven out, so the roots cannot get oxygen for respiration

Roots respire and need oxygen, which they take from the air spaces between soil particles. In waterlogged soil **the water fills those spaces and drives the air out**, so the roots suffocate. This is why potted plants must not be over-watered.

16. Answer: (B) (ii) only

Statement (i) is false — breathing is only the taking in and giving out of air, while respiration is the release of energy from food inside every cell. Statement (ii) is true; glucose is only partly broken down without oxygen. Statement (iii) is false; plants respire day and night, though during the day photosynthesis masks it. Hence **(ii) only**.

17. Answer: (A) The seed is respiring, using up oxygen and releasing carbon dioxide

Milky lime water shows that carbon dioxide has been produced, and a splint going out shows that the oxygen has been used up. Together these prove that **the seed is respiring**. A flask of boiled (dead) seeds, used as a control, would show neither change.

18. Answer: (B) P-2, Q-1, R-3, S-4

Haemoglobin is the **red pigment that carries oxygen** (2). A valve **prevents the backward flow of blood** (1). A capillary is the **very thin vessel where exchange with the tissues occurs** (3). Stomata are the **pores through which plants exchange gases** (4). Hence P-2, Q-1, R-3, S-4.