Pressure, Winds, Storms, and Cyclones

Standard difficulty · 20 questions · 40 marks · Time: 36 minutes

Name: _____ Date: _____ Score: ____ / 40

Show your working for Sections B and C. Answers are on the last page — try every question first!

Section A — Choose the correct answer — 8 × 1 = 8 marks

1. Pressure is:

(a) mass ÷ volume **(b)** distance ÷ time
(c) force × time **(d)** force acting on a unit area

2. A force of 2,000 N acts on an area of 5 m^2. What is the pressure?

(a) 400 Pa **(b)** 10,000 Pa **(c)** 2,000 Pa **(d)** 405 Pa

3. An animal weighing 28,000 N stands on four feet, each with an area of 0.5 m^2. What pressure does it put on the ground?

(a) 7,000 Pa **(b)** 56,000 Pa **(c)** 14,000 Pa **(d)** 28,000 Pa

4. The design of a pointed nail:

(a) makes it lighter
(b) decreases pressure by making the area large
(c) increases pressure by making the area small
(d) has no effect on pressure

5. During lightning, which of these is SAFE?

(a) crouching low in an open area **(b)** lying flat on wet ground
(c) holding an umbrella with a metal rod **(d)** standing on top of a hill

6. The air pressure is 1,012 millibars. How many pascals is that? (1 mb = 100 Pa)

(a) 1,012,000 Pa **(b)** 10,120 Pa **(c)** 1,012 Pa **(d)** 101,200 Pa

7. The pressure at the edge of a cyclone is 1,006 mb and at its eye 997 mb. What is the difference?

(a) 9 mb **(b)** 997 mb **(c)** 2,003 mb **(d)** 1,006 mb

8. Which of these is UNSAFE during lightning?

(a) holding an umbrella with a metal rod **(b)** staying inside a closed car or bus
(c) crouching low in an open area **(d)** going inside a building

Section B — Short answer — 8 × 2 = 16 marks

9. Define pressure and write its SI unit.

10. Does the shape of each "increase" or "decrease" pressure? (a) a pointed nail (b) a camel's broad feet

11. During lightning, is it "safe" or "unsafe"? (a) lying flat on wet ground (b) going inside a building

12. A box weighing 1,500 N rests on a face of area 10 m^2. Find the pressure it exerts.

13. A person weighing 600 N stands on two feet with a total area of 0.05 m^2, then lies down covering 0.5 m^2. Find the pressure in each case.

14. Convert 1,003 hectopascals into pascals and into millibars. (1 hPa = 100 Pa = 1 mb)

15. Near the coast, is there a "sea breeze" or a "land breeze" (a) just before dawn (b) on a sunny afternoon?

16. A cyclone's winds blow at 267 km/h. If its centre moves at 27 km/h towards the coast, how far does it move in 5 hours?

Section C — Word problems — 4 × 4 = 16 marks

17. Explain with two examples how we increase or decrease pressure in daily life.

18. Boat A carries 4 people of 700 N each on a base of 7 m^2. Boat B carries 2 people of 700 N on 2 m^2. (a) Find the pressure each boat puts on the water. (b) Which is greater, and by how much?

19. A thunderstorm is coming. Which of these are safe and which unsafe: holding an umbrella with a metal rod; standing on top of a hill; getting out of a pool or pond; staying inside a closed car or bus? Explain how lightning forms.

20. Holes are made at four heights in a tall bottle of water, the lowest 12 cm from the base. (a) From which hole does water spurt farthest? (b) Why? (c) Use this to explain why dams have wide bases and tanks are kept high.

Want another sheet on this chapter? In the Ambiful Worksheets app every sheet is new, with its answer key, and your child never gets the same question twice.

Scan the code to get the free app, or open **worksheets.ambiful.com/get**

Answer key

Pressure, Winds, Storms, and Cyclones · AW-8S-PRS-2026-V1 · For parents — fold back or tear off before handing the sheet to your child.

Q	Answer	Working
1	**(d) force acting on a unit area**	—
2	**(a) 400 Pa**	2000 ÷ 5 = 400
3	**(c) 14,000 Pa**	total area = 4 × 0.5 = 2 m^2; 28000 ÷ 2 = 14000
4	**(c) increases pressure by making the area small**	—
5	**(a) crouching low in an open area**	—
6	**(d) 101,200 Pa**	1012 × 100 = 101,200
7	**(a) 9 mb**	1006 − 997 = 9
8	**(a) holding an umbrella with a metal rod**	—
9	**Force acting per unit area; pascal (N/m^2).**	—
10	**(a) increases (b) decreases**	—
11	**(a) unsafe (b) safe**	—
12	**150 Pa**	1500 ÷ 10
13	**standing: 12,000 Pa; lying: 1,200 Pa**	600 ÷ 0.05; 600 ÷ 0.5
14	**100,300 Pa; 1,003 mb**	1003 × 100
15	**(a) land breeze (b) sea breeze**	—
16	**135 km**	27 × 5
17	**To increase pressure we reduce area: knives are sharpened, nails are pointed. To decrease pressure we increase area: bags have broad straps, porters use a cloth ring, buildings have wide foundations.**	—
18	**(a) A: 400 Pa; B: 700 Pa (b) B, by 300 Pa**	pressure = total weight ÷ area
19	**Safe: getting out of a pool or pond; staying inside a closed car or bus. Unsafe: holding an umbrella with a metal rod; standing on top of a hill. Charges separate in tall clouds as ice and water droplets rub; when they become large, electricity sparks through the air as lightning, heating it so it expands with a thunderclap.**	—

Q	Answer	Working
20	**(a) The lowest hole (b) Liquid pressure increases with the depth of liquid above. (c) The pressure is greatest at the bottom of a dam, so it must be strongest there; a high tank gives water more pressure at the taps.**	—