

Full Practice Exam — Set 3

Science · Class 8 · Full Syllabus Practice Exam

TIME 60 minutes	QUESTIONS 50	TOTAL MARKS 60	MAX. SCORE ___ / 60
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Name: _____ Class/Sec: _____ Date: _____

INSTRUCTIONS

- There are **50 questions** in this paper. All questions are compulsory.
- Each question has four options (A), (B), (C) and (D). Exactly **one** option is correct.
- Questions 1–45 carry **1 mark** each. Questions 46–50 (Achievers Section) carry **3 marks** each.
- There is no negative marking. Study every diagram and table carefully.

Section 1 — Logical Reasoning

Q1–Q10 · 1 mark each

- What comes next in the series? 5, 11, 23, 47, ____
 (A) 90 (B) 93
 (C) 95 (D) 99
- Find the **odd one out**: Escherichia, Rhizobium, Streptococcus, Yeast
 (A) Escherichia (B) Yeast
 (C) Streptococcus (D) Rhizobium
- What comes next in the letter series? C, D, G, L, ____
 (A) R (B) U
 (C) T (D) S
- In a certain code, MOUSE is written as 13-15-21-19-5. How is TIGER written in the same code?
 (A) 20-9-7-5-18 (B) 20-9-6-5-18
 (C) 19-9-7-5-18 (D) 20-9-7-5-19
- Pointing to a man, Priya said, 'His mother is the only daughter of my mother's mother.' How is the man related to Priya?
 (A) Father (B) Brother
 (C) Uncle (D) Cousin
- In a line of 45 students, Deepak is 18th from the front. What is his position from the back?
 (A) 26th (B) 27th
 (C) 29th (D) 28th
- A boat travels 20 km west, then 21 km south. How far is it from the starting point?
 (A) 29 km (B) 41 km
 (C) 420 km (D) 841 km
- Which of these does **not** belong with the rest?
 (A) Evaporation (B) Rusting
 (C) Melting (D) Freezing

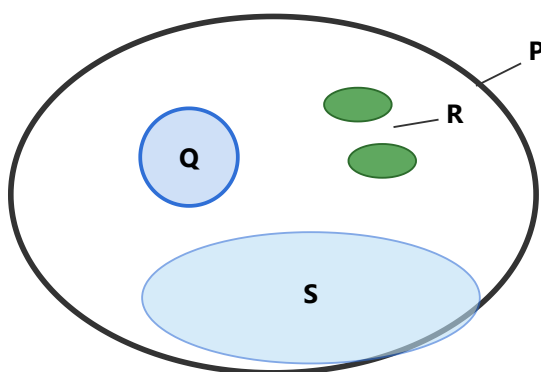
9. $4 : 20 :: 6 : \underline{\hspace{1cm}}$
- (A) 36 (B) 40
(C) 42 (D) 48
10. If 3 June is a Sunday, what day of the week is 30 June?
- (A) Thursday (B) Friday
(C) Sunday (D) Saturday

Section 2 — Science

Q11–Q35 · 1 mark each

11. Sugarcane, cotton and maize need warm, wet conditions and are sown with the onset of the monsoon. They are examples of _____ crops.
- (A) Kharif (B) Rabi
(C) Perennial (D) Zaid
12. Which of these microorganisms is used to produce antibiotics such as penicillin?
- (A) Rhizobium (B) Penicillium
(C) Lactobacillus (D) Saccharomyces (yeast)
13. Which of these diseases is caused by a **virus**, unlike the others which are caused by bacteria or protozoa?
- (A) Cholera (B) Typhoid
(C) Malaria (D) Measles
14. The process by which certain soil bacteria convert atmospheric nitrogen into a form plants can use is called _____.
- (A) Nitrogen fixation (B) Photosynthesis
(C) Respiration (D) Transpiration
15. Which of the following is a **natural** polymer rather than a synthetic one?
- (A) Nylon (B) Silk
(C) Polythene (D) PVC
16. Ropes and parachutes are often made from nylon rather than cotton mainly because nylon has _____.
- (A) Very quick biodegradability (B) Poor water resistance
(C) High tensile strength and elasticity (D) A very low melting point
17. Which non-metal is combined with rubber in a process called vulcanisation to make it more elastic and durable?
- (A) Iodine (B) Phosphorus
(C) Carbon (D) Sulphur
18. Which of these metals does **not** react with dilute hydrochloric acid to release hydrogen gas?
- (A) Copper (B) Magnesium
(C) Zinc (D) Iron
19. _____ is an alloy formed mainly from iron combined with carbon and other elements to make it stronger and more resistant to rusting.
- (A) Bronze (B) Steel
(C) Brass (D) Solder

20. Compressed Natural Gas (CNG) is preferred over petrol as a vehicle fuel mainly because it _____.
 (A) Cannot be compressed into cylinders (B) Is more expensive to produce
 (C) Burns more cleanly, producing fewer pollutants (D) Is a solid fuel
21. Which process separates crude petroleum into useful fractions such as petrol, diesel and kerosene?
 (A) Crystallisation (B) Filtration
 (C) Fermentation (D) Fractional distillation
22. The amount of heat energy produced on complete combustion of a unit mass of a fuel is called its _____.
 (A) Calorific value (B) Ignition temperature
 (C) Combustion point (D) Latent heat
23. Which of these is an example of **rapid combustion**, producing a flame almost at once?
 (A) Rusting of an iron gate (B) LPG burning on a kitchen stove
 (C) Digestion of food in the body (D) Respiration inside a cell
24. The diagram shows a plant cell with four structures labelled P, Q, R and S. Based on the diagram, which labelled part is mainly responsible for trapping sunlight for photosynthesis?



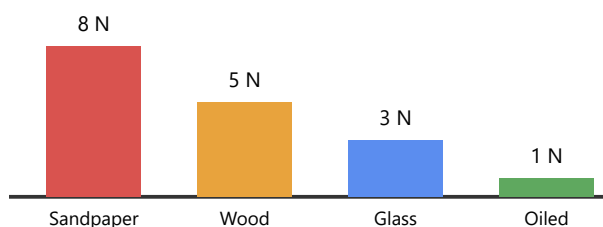
A plant cell with four structures labelled P, Q, R and S

- (A) P (B) Q
 (C) R (D) S
25. Which structure controls the entry and exit of substances into and out of a cell?
 (A) Cell wall (B) Nucleus
 (C) Cell membrane (D) Cytoplasm
26. A single-celled organism such as Amoeba reproduces asexually by splitting into two equal daughter cells. This process is called _____.
 (A) Multiple fission (B) Budding
 (C) Fragmentation (D) Binary fission
27. In flowering plants, the transfer of pollen grains from the anther to the stigma is called _____.
 (A) Pollination (B) Fertilisation
 (C) Germination (D) Photosynthesis
28. Which of these animals is **oviparous**, laying eggs rather than giving birth to live young?
 (A) Dog (B) Hen
 (C) Elephant (D) Human

29. The force that opposes the relative motion between two surfaces in contact is called _____.

- (A) Gravity
- (B) Magnetism
- (C) Friction
- (D) Tension

30. The bar chart shows the force needed to pull an identical block at a steady speed across four different surfaces. Based on the chart, which surface offers the **least** friction?



Force (in newtons) needed to pull the same block at constant speed across four surfaces

- (A) Sandpaper
- (B) Wood
- (C) Glass
- (D) Oiled surface

31. Sound travels fastest through _____, compared with liquids and gases.

- (A) Solids
- (B) Liquids
- (C) Gases
- (D) A vacuum

32. The loudness of a sound is measured in the unit called the _____.

- (A) Hertz
- (B) Decibel
- (C) Newton
- (D) Watt

33. A liquid that conducts electric current and undergoes chemical changes as current passes through it is called an _____.

- (A) Insulator
- (B) Semiconductor
- (C) Electrolyte
- (D) Alloy

34. Which effect is observed when an electric current is passed through copper sulphate solution using copper electrodes?

- (A) Magnetic effect only
- (B) No effect at all
- (C) Heating effect only
- (D) Chemical effect — copper gets deposited on one electrode

35. The bending of light as it passes from one transparent medium into another of different density is called _____.

- (A) Refraction
- (B) Reflection
- (C) Dispersion
- (D) Diffraction

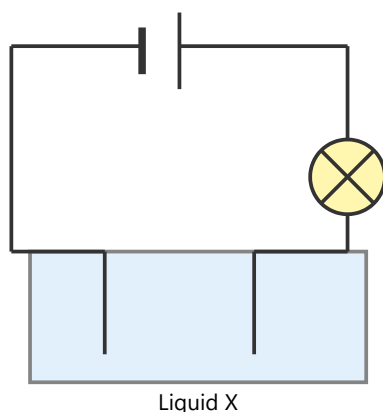
Section 2 — Science (contd.)

Q36–Q45 · 1 mark each

36. Why do farmers often grow a cereal crop like wheat and a leguminous crop like gram in rotation, season after season?

- (A) Leguminous crops need no water at all
- (B) Leguminous roots host nitrogen-fixing bacteria that replenish soil nitrogen used up by the cereal crop
- (C) Rotation always makes the soil more acidic
- (D) Cereal crops permanently destroy soil fungi

- 37.** Why does raw milk left at room temperature turn sour and curdle within a few hours, while pasteurised, refrigerated milk stays fresh for days?
- (A) Refrigeration destroys all the nutrients in milk (B) Raw milk contains no bacteria at all
(C) Pasteurisation and cold storage slow the growth of souring bacteria present in raw milk (D) Pasteurisation removes all the water from milk
- 38.** Why is stainless steel, an alloy of iron with chromium and nickel, preferred over plain iron for kitchen utensils?
- (A) It reacts readily with acidic foods (B) It is a poor conductor of heat
(C) It is lighter than plastic (D) It resists rusting and corrosion far better than plain iron
- 39.** Why does a sharp knife cut vegetables far more easily than a blunt knife, even when the same force is used to press down?
- (A) The sharp edge has a much smaller contact area, so the same force produces a far greater pressure (B) The sharp knife is heavier than the blunt one
(C) The blunt knife is made from an entirely different material (D) Sharpness has no effect on cutting at all
- 40.** Why does an ice skate have a thin blade instead of a flat sole?
- (A) The thin blade increases friction to stop the skater (B) The thin blade reduces the contact area, increasing the pressure on the ice so it melts slightly for smoother gliding
(C) The blade only makes the skate lighter, nothing else (D) The blade shape has no effect on pressure
- 41.** The figure shows a circuit with a battery and a bulb connected to two electrodes dipped into a beaker of liquid X. The bulb glows brightly. What does this show about liquid X?



A battery and bulb connected to two electrodes dipped in liquid X

- (A) It must be a complete electrical insulator (B) It must be pure water with nothing dissolved in it
(C) It must contain freely moving ions that can carry electric charge (D) It must be kept at a very low temperature

42. Why do astronauts standing close together outside a spacecraft need radios to talk, instead of speaking directly to each other?
- (A) An astronaut's suit blocks all sound from being produced
(B) Radios only work properly in daylight
(C) Sound travels faster than radio waves in space
(D) The Moon and open space have almost no atmosphere, so there is no medium for sound to travel through
43. Why does a person's recorded voice sound noticeably deeper when the recording is played back at a slower speed?
- (A) Slower playback reduces the frequency of vibration reaching the ear, lowering the pitch
(B) Slower playback increases the amplitude of the sound only
(C) Slower playback removes the sound completely
(D) A recorder cannot change the pitch of a sound at all
44. Why do mammals such as humans usually produce only one or two eggs per reproductive cycle, unlike fish that release thousands of eggs at a time?
- (A) Mammals are biologically unable to produce more than one egg
(B) Internal fertilisation and parental care make survival of the young far more likely, so fewer eggs are needed
(C) Fish eggs are always infertile
(D) Humans do not undergo fertilisation at all
45. Why does a concave lens cause parallel light rays to spread out (diverge) after passing through it, rather than meeting at a point?
- (A) Concave lenses always converge light, just like concave mirrors
(B) A concave lens is thicker at the centre than at the edges
(C) A concave lens is thinner at the centre than at the edges, so it bends parallel rays outward, away from the axis
(D) Lenses of any shape have no effect on the direction of light

Achievers Section

Q46–Q50 · 3 marks each

46. Consider the following statements.
- (i) All alloys are pure substances.
(ii) A convex mirror always forms a virtual, diminished image of an object placed in front of it, no matter how far the object is.
(iii) A convex lens can form a virtual, magnified image of an object when the object is placed between the lens and its focal point.
- Which of the statements is/are correct?
- (A) (i) only
(B) (ii) only
(C) (ii) and (iii) only
(D) (i) and (ii) only
47. Assertion (A): Diamond, a form of carbon, does not conduct electricity.
Reason (R): Graphite, another form of carbon, has free electrons that allow it to conduct electricity, unlike diamond, where all the electrons are held in fixed covalent bonds.
- (A) Both A and R are true, and R is the correct explanation of A.
(B) Both A and R are true, but R is not the correct explanation of A.
(C) A is true, but R is false.
(D) A is false, but R is true.

48. Match List I with List II, then choose the option that gives all four pairings correctly.

List I	List II
(1) Binary fission	(a) Hydra
(2) Budding	(b) Spirogyra
(3) Fragmentation	(c) Amoeba
(4) External fertilisation	(d) Frog

List I (mode of reproduction) to be matched with List II (organism, scrambled)

- (A) 1-b, 2-a, 3-c, 4-d
 (B) 1-a, 2-c, 3-b, 4-d
 (C) 1-c, 2-b, 3-a, 4-d
 (D) 1-c, 2-a, 3-b, 4-d

49. The table shows what a student observed when small, equal-sized pieces of four metals were dropped into separate test tubes of dilute hydrochloric acid.

Metal	Observation with dilute HCl
Magnesium	Vigorous, rapid bubbling
Zinc	Moderate, steady bubbling
Iron	Slow, few bubbles
Copper	No visible reaction

Reaction of four metals with dilute hydrochloric acid

- (A) Magnesium > Zinc > Iron > Copper
 (B) Copper > Iron > Zinc > Magnesium
 (C) Zinc > Magnesium > Copper > Iron
 (D) Iron > Magnesium > Zinc > Copper

50. A person of weight 600 N stands first on ordinary shoes with a total contact area of 300 cm², and then on skis with a total contact area of 3000 cm². Calculate the pressure exerted on the snow in each case, and find how many times greater the pressure is with shoes than with skis.

- (A) 0.2 N/cm² with shoes, 2 N/cm² with skis; skis exert 10 times greater pressure
 (B) 2 N/cm² with shoes, 0.2 N/cm² with skis; shoes exert 10 times greater pressure
 (C) Both exert exactly 2 N/cm², since the weight is unchanged
 (D) 2 N/cm² with shoes, 20 N/cm² with skis; skis exert greater pressure

Answer Key

1	C	2	B	3	D	4	A	5	B
6	D	7	A	8	B	9	C	10	D
11	A	12	B	13	D	14	A	15	B
16	C	17	D	18	A	19	B	20	C
21	D	22	A	23	B	24	C	25	C
26	D	27	A	28	B	29	C	30	D
31	A	32	B	33	C	34	D	35	A
36	B	37	C	38	D	39	A	40	B
41	C	42	D	43	A	44	B	45	C
46	C	47	A	48	D	49	A	50	B

Solutions

1. Answer: (C) 95

Each number is doubled and then increased by 1: $5 \times 2 + 1 = 11$, $11 \times 2 + 1 = 23$, $23 \times 2 + 1 = 47$, $47 \times 2 + 1 = 95$.

2. Answer: (B) Yeast

Escherichia, Rhizobium and Streptococcus are all bacteria. **Yeast** is a unicellular fungus, so it is the odd one out among these microorganisms.

3. Answer: (D) S

The gap between successive letters increases by 2 each time: C to D is +1, D to G is +3, G to L is +5. The next gap is +7. $L + 7 = S$.

4. Answer: (A) 20-9-7-5-18

Each letter is replaced by its position in the alphabet: T=20, I=9, G=7, E=5, R=18, giving **20-9-7-5-18**.

5. Answer: (B) Brother

Priya's mother's mother is Priya's maternal grandmother. Her only daughter is Priya's own mother. The man's mother is therefore also Priya's mother, which makes him Priya's **brother**.

6. Answer: (D) 28th

Position from the back = $45 - 18 + 1 = 28\text{th}$.

7. Answer: (A) 29 km

Distance = $\sqrt{20^2 + 21^2} = \sqrt{400 + 441} = \sqrt{841} = 29 \text{ km}$.

8. Answer: (B) Rusting

Evaporation, freezing and melting are physical changes in which no new substance is formed. **Rusting** is a chemical change that forms a new substance, iron oxide, so it does not belong with the rest.

9. Answer: (C) 42

The second number equals the first multiplied by one more than itself: $4 \times (4 + 1) = 20$. So $6 \times (6 + 1) = 42$.

10. Answer: (D) Saturday

From 3 June to 30 June is $30 - 3 = 27$ days. Since $27 = 3 \times 7 + 6$, this is 3 complete weeks plus 6 extra days, so the day of the week moves forward 6 places from Sunday: Monday, Tuesday, Wednesday, Thursday, Friday, **Saturday**.

11. Answer: (A) Kharif

Kharif crops are sown at the start of the rainy season and need warm, wet conditions.

12. Answer: (B) Penicillium

Penicillium, a mould, is the source of the antibiotic penicillin.

13. Answer: (D) Measles

Measles is a viral disease, while cholera and typhoid are bacterial and malaria is caused by a protozoan parasite.

14. Answer: (A) Nitrogen fixation

Nitrogen fixation converts atmospheric nitrogen gas into compounds plants can absorb.

15. Answer: (B) Silk

Silk is a natural protein fibre produced by silkworms; the other three are synthetic polymers.

16. Answer: (C) High tensile strength and elasticity

Nylon's **high tensile strength and elasticity** make it strong yet flexible, ideal for ropes and parachutes.

17. Answer: (D) Sulphur

Sulphur is used to vulcanise rubber, improving its strength and elasticity.

18. Answer: (A) Copper

Copper is less reactive than hydrogen, so it does not displace hydrogen from dilute hydrochloric acid.

19. Answer: (B) Steel

Steel is an alloy of iron with carbon (and often other elements), giving it greater strength and rust resistance than pure iron.

20. Answer: (C) Burns more cleanly, producing fewer pollutants

CNG **burns more cleanly and produces fewer pollutants** than petrol, making it a preferred vehicle fuel.

21. Answer: (D) Fractional distillation

Fractional distillation separates petroleum into fractions based on their different boiling points.

22. Answer: (A) Calorific value

Calorific value measures the heat energy released per unit mass of fuel burnt completely.

23. Answer: (B) LPG burning on a kitchen stove

LPG burning on a stove is rapid combustion, releasing heat and light quickly with a visible flame; rusting, digestion and respiration are all slow processes without a flame.

24. Answer: (C) R

The small green oval structures labelled **R** are chloroplasts, which contain chlorophyll and trap sunlight for photosynthesis.

25. Answer: (C) Cell membrane

The **cell membrane** is selectively permeable and regulates what enters and leaves the cell.

26. Answer: (D) Binary fission

Binary fission is the division of a single cell into two equal daughter cells.

27. Answer: (A) Pollination

Pollination is the transfer of pollen from the anther to the stigma, which must happen before fertilisation can occur.

28. Answer: (B) Hen

A **hen** lays eggs that hatch outside the mother's body, making it oviparous, unlike the dog, elephant and human, which are viviparous.

29. Answer: (C) Friction

Friction opposes the relative motion between two surfaces touching each other.

30. Answer: (D) Oiled surface

The chart shows the smallest force, 1 N, is needed on the **oiled surface**, so it offers the least friction; the oil acts as a lubricant between the block and the surface.

31. Answer: (A) Solids

Particles in **solids** are closely packed, allowing sound to travel through them fastest of the three states of matter.

32. Answer: (B) Decibel

Loudness is measured in **decibels**.

33. Answer: (C) Electrolyte

An **electrolyte** conducts current and undergoes chemical change in the process, such as during electrolysis.

34. Answer: (D) Chemical effect — copper gets deposited on one electrode

Passing current through copper sulphate solution with copper electrodes produces a **chemical effect**, depositing copper from the solution onto one of the electrodes.

35. Answer: (A) Refraction

Refraction is the bending of light as it passes between media of different densities.

36. Answer: (B) Leguminous roots host nitrogen-fixing bacteria that replenish soil nitrogen used up by the cereal crop

Root nodules of leguminous plants host nitrogen-fixing bacteria that **replenish the soil's nitrogen**, which cereal crops like wheat draw down, so alternating the two keeps the soil fertile.

- 37. Answer: (C)** Pasteurisation and cold storage slow the growth of souring bacteria present in raw milk
 Pasteurisation kills most harmful bacteria and refrigeration **slows the growth** of any that remain, so treated, chilled milk stays fresh far longer than raw milk left at room temperature.
- 38. Answer: (D)** It resists rusting and corrosion far better than plain iron
 Adding chromium and nickel to iron gives stainless steel much greater **resistance to rusting and corrosion** than plain iron, which is important for utensils that regularly contact water and food.
- 39. Answer: (A)** The sharp edge has a much smaller contact area, so the same force produces a far greater pressure
 $\text{Pressure} = \text{force} \div \text{area}$. A sharp edge concentrates the same pressing force onto a much smaller area than a blunt edge, giving a far **greater pressure**, which is why it cuts more easily.
- 40. Answer: (B)** The thin blade reduces the contact area, increasing the pressure on the ice so it melts slightly for smoother gliding
 A thin blade concentrates the skater's weight onto a very small area, producing much **greater pressure** on the ice beneath it, which helps the surface layer melt slightly and allows smoother gliding.
- 41. Answer: (C)** It must contain freely moving ions that can carry electric charge
 A bulb only glows if current flows through the circuit, and current can pass through a liquid only if it contains **freely moving ions** to carry the charge between the electrodes.
- 42. Answer: (D)** The Moon and open space have almost no atmosphere, so there is no medium for sound to travel through
 Sound needs a material medium such as air to travel. Since space and the Moon's surface have almost no atmosphere, sound cannot travel between astronauts, so they rely on **radio waves** instead.
- 43. Answer: (A)** Slower playback reduces the frequency of vibration reaching the ear, lowering the pitch
 Playing a recording more slowly stretches out the vibrations, reducing the **frequency** at which they reach the ear, and a lower frequency is heard as a lower, deeper pitch.
- 44. Answer: (B)** Internal fertilisation and parental care make survival of the young far more likely, so fewer eggs are needed
 Because fertilisation happens inside the mother's body and the young receive extended parental care, a much larger fraction of mammalian offspring survive, so **far fewer eggs** are needed compared with fish, which release eggs into open water with little protection.
- 45. Answer: (C)** A concave lens is thinner at the centre than at the edges, so it bends parallel rays outward, away from the axis
 A concave lens is thinner in the middle and thicker at the edges. This shape bends parallel rays passing through it **outward, away from the central axis**, so the rays appear to diverge rather than meet at a point.
- 46. Answer: (C)** (ii) and (iii) only
 Statement (i) is false: an alloy is a homogeneous mixture of a metal with other elements, not a pure substance.
 Statement (ii) is true: a convex mirror always forms a virtual, diminished image regardless of object distance. Statement (iii) is true: a convex lens acts as a magnifying glass, forming a virtual, magnified image when the object is closer to the lens than its focal point. Hence **(ii) and (iii) only**.
- 47. Answer: (A)** Both A and R are true, and R is the correct explanation of A.
 Diamond indeed does not conduct electricity, so the assertion is true. The reason correctly explains why: in diamond, every electron is locked into a fixed covalent bond and none are free to move, unlike in graphite, which has free electrons available to carry current. Since the reason directly accounts for diamond's lack of conductivity, it is the **correct explanation of the assertion**.
- 48. Answer: (D)** 1-c, 2-a, 3-b, 4-d
 Amoeba reproduces by binary fission, splitting into two equal cells. Hydra reproduces by budding, growing a new individual as an outgrowth. Spirogyra reproduces by fragmentation, breaking into pieces that each grow into a new filament. Frogs show external fertilisation, with eggs and sperm meeting outside the body in water. This matches binary fission with Amoeba, budding with Hydra, fragmentation with Spirogyra, and external fertilisation with the frog.

49. Answer: (A) Magnesium > Zinc > Iron > Copper

Faster, more vigorous bubbling with an acid shows a more reactive metal displacing hydrogen more readily.

Magnesium bubbled most vigorously, followed by zinc, then iron with only slow bubbling, while copper showed no reaction at all. This gives the reactivity order **Magnesium > Zinc > Iron > Copper**.

50. Answer: (B) 2 N/cm² with shoes, 0.2 N/cm² with skis; shoes exert 10 times greater pressure

Pressure = force ÷ area. With shoes: 600 N ÷ 300 cm² = 2 N/cm². With skis: 600 N ÷ 3000 cm² = 0.2 N/cm². Dividing, 2 ÷ 0.2 = 10, so the **shoes exert 10 times greater pressure** than the skis, which is why skis let a person stand on snow without sinking in.