

SAMPLE PAPER

PAPER CODE : A

NAME : _____

Reg. No. : _____

Class: X
Time: 2 Hours (11:00 AM to 1:00 PM)

Date:
Max. Marks: 270

INSTRUCTIONS

1. The question paper contains **90** questions in four parts (Part A : Science , Part B: Mental Ability) and **24** pages.

Part A contains 70 questions, Part B contains 20 questions

Each question has four options A, B, C & D, out of which **only one option is correct.**

Each question carries **+3 marks** for correct answer and **-1 mark** for wrong answer.

Please ensure that the Question Paper you have received contains all the QUESTIONS and Pages. If you found some mistake like missing questions or pages then contact immediately to the Invigilator.

2. Indicate the correct answer(s) for each question by filling appropriate bubble(s) in your OMR sheet.
3. Use only HB pencil for darkening the bubble(s).
4. Use of Calculator, Log Table, Slide Rule and Mobile is not allowed.
5. For example if only 'B' choice is correct then, the correct method for filling the bubble is

A	B	C	D
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The answer of the question in any other manner (such as putting ☑ , cross ⊗ , or partial shading ● etc.) will be treated as wrong.

PART A : SCIENCE

Q.1 to Q.70 has four choices (A), (B), (C), (D) out of which only **ONE** is correct.

1. Examine the following elements :
N, O, F, Ne
P, S, Cl, Ar
Br, Kr
I, Xe
In modern periodic table, on which side these elements are placed-
(A) Top left side (B) Bottom left side (C) Top right side (D) Middle side
2. A saturated hydrocarbon has 50 hydrogen atom. The number of carbon atom in the hydrocarbon will be:
(A) 24 (B) 26 (C) 25 (D) 23
3. Rutherford's alpha-particle scattering experiment was responsible for the discovery of
(A) Atomic Nucleus (B) Electron (C) Proton (D) Neutron
4. Which of the following pairs represents isotones (same no of neutrons)?
(A) ${}_6\text{C}^{12}$, ${}_6\text{C}^{13}$, ${}_6\text{C}^{14}$ (B) ${}_{18}\text{Ar}^{40}$, ${}_{20}\text{Ca}^{42}$, ${}_{21}\text{Sc}^{43}$
(C) ${}_{18}\text{Ar}^{40}$, ${}_{20}\text{Ca}^{40}$, ${}_{21}\text{Sc}^{41}$ (D) ${}_7\text{N}^{14}$, ${}_8\text{O}^{16}$, ${}_9\text{F}^{19}$

ROUGHWORK

5. Dry ice is –
(A) Water in solid state (B) Water in gaseous state
(C) CO₂ in liquid state (D) CO₂ in solid state
6. Name the process by which a drop of ink spreads in a beaker of water –
(A) Diffusion (B) Vaporization (C) Condensation (D) Sublimation
7. Which of the following is not a chemical change-
(A) Electrolysis of water
(B) Boiling of water
(C) Digestion of food
(D) Burning of magnesium ribbon in oxygen to form magnesium oxide.
8. Of these, the metal which occurs in a free state is ____
(A) Na (B) Mg (C) Zn (D) Pt
9. Which of the following statements about the following reactions is correct?
$$\text{ZnO} + \text{CO} \rightarrow \text{Zn} + \text{CO}_2$$

(A) ZnO is being oxidizing (B) CO is being reduced
(C) CO₂ is being oxidized (D) ZnO is being reduced

ROUGHWORK

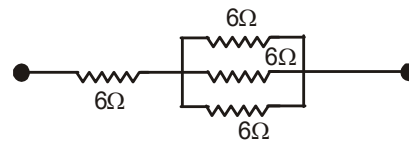
10. Nitrogen molecule involves formation of
(A) single covalent bond (B) double covalent bond
(C) triple covalent bond (D) ionic bond
11. Graphite is used as a lubricant because it is
(A) greyish black (B) insoluble in water
(C) having high melting point (D) soft, slippery
12. Which of the following is a combustion reaction –
(A) Boiling of water (B) Melting of wax (C) Burning of petrol (D) None of these
13. Two particles are placed at some distance. If the mass of each of the two particles is doubled, keeping the distance between them unchanged, the value of gravitational force between them will be
(A) $\frac{1}{4}$ times (B) 4 times (C) $\frac{1}{2}$ times (D) unchanged
14. If the index finger points towards the north and the middle finger towards the east, by using Fleming's left hand rule what will be the direction of motion or the force acting on the conductor?
(A) South (B) West (C) Top (D) Bottom

ROUGHWORK

15. A passenger travels along a straight line with velocity v_1 for first half time and with velocity v_2 for next half time, then the mean velocity v is given by,
- (A) $v = \sqrt{\frac{v_2}{v_1}}$ (B) $v = \sqrt{v_1 v_2}$ (C) $v = \frac{2v_1 v_2}{v_1 + v_2}$ (D) $v = \frac{v_1 + v_2}{2}$
16. Lungs perform 2.4 J of work during each expansion. How many times do they expand per minute if their power is 2 Watts?
- (A) 50 times (B) 40 times (C) 60 times (D) 30 times
17. Total internal reflection occurs when light travels from :
- (A) A rare medium to a denser medium and the angle of incidence is less than the critical angle
(B) A denser medium to rarer medium
(C) A rare medium to denser medium
(D) A rarer medium to a denser medium and the angles of incidence is greater than the critical angle
18. A body at rest may have
- (A) Potential Energy (B) Kinetic energy (C) Velocity (D) momentum
19. Unit of Density.
- (A) kg/m^3 (B) kg m^3 (C) $\frac{\text{m}^3}{\text{kg}}$ (D) none of these

ROUGHWORK

20. An object starts with velocity 5 m/s and after time 10s it has the velocity of 9m/s. Then the displacement is given by
 (A) 70 m (B) 90m (C) 20m (D) 0m
21. A car moves from Nagpur to Mumbai (Distance 1000km) and then comes back. Distance and displacement of car is:
 (A) 2000 km and 0 km (B) 0 km and 2000 Km
 (C) 1000 km and 0 km (D) 0 km and 2000 Km
22. A person holds a mass of 100 Kg for 1 hour. Work done is:
 (A) 100 J (B) 6000 J (C) 360000 J (D) Zero
23. Size of object is same as image. Which of the following is possible:
 (A) Convex Mirror, Object at Focus (B) Convex Mirror, Object at Center of Curvature
 (C) Concave Mirror, Object at Focus (D) Concave Mirror, Object at Center of Curvature
24. Which of the following is formula for power loss in resistance?
 (A) IR^2 (B) $\frac{V}{R^2}$ (C) V^2R (D) VI
25. Find equivalent resistance of following circuit.
 (A) 2Ω (B) 4Ω
 (C) 6Ω (D) 8Ω



ROUGHWORK

26. Which of the following is not the correct pairing of structure with function ?
(A) Golgi complex : breakdown of complex molecules
(B) Mitochondrion : Production of ATP
(C) Endoplasmic reticulum : synthesis of proteins
(D) Chloroplast : photosynthesis
27. Read the following statements & identify true & false from them :
1. Microtubules are structural components of cilia
2. Centrioles store hydrolase enzymes
3. Peroxisomes store carbohydrates, fats and proteins in plants
(A) 1 and 3 correct, 2 false
(B) 1 correct, 2 and 3 false
(C) 1, 2 and 3 correct
(D) 1 and 2 correct, 3 false
28. Site of light and dark reactions respectively are -
(A) stroma & grana
(B) thylakoids & quantasomes
(C) grana & stroma
(D) none of above
29. Which one of the following is incorrect about tuberculosis ?
(A) It is caused by *Diplococcus tuberculosis*
(B) It commonly affects liver
(C) Bacteria releases tuberculin toxin
(D) Patient's sputum contains blood.

ROUGHWORK

30. Which of the following combination is incorrect ?
- (A) Plasmodium - Malaria
(B) Trypanosoma - Sleeping sickness
(C) Entamoeba histolytica - Amoebiasis
(D) Verisella zoster - Gastroenteritis
31. Which set of diseases spread through the air ?
- (A) Common Cold, Pneumonia, Tuberculosis (B) Plague, Small Pox, Polio
(C) Typhoid, AIDS, Syphilis (D) Malaria, Dysentery, Rabies
32. Trypsin differs from pepsin in that
- (A) It digests proteins in alkaline medium in duodenum
(B) It digests proteins in acidic medium in duodenum
(C) Both of these (D) None of these
33. The path taken by food material after ingestion is represented by
- (A) Mouth → Pharynx → Oesophagus → Stomach → Small intestine
(B) Mouth → Pharynx → Oesophagus → Small intestine → Stomach
(C) Mouth → Oesophagus → Stomach → Pharynx
(D) Oesophagus → Mouth → Pharynx → Stomach

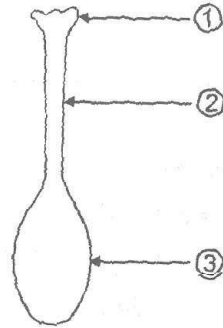
ROUGHWORK

34. Select the right order for these:-
(i) Platelets (a) with out nucleus
(ii) RBC of human (b) blood clotting
(iii) Amoeba (c) multicellular
(iv) Hydra (d) unicellular
(A) i-a, ii-b, iii-c, iv-d (B) i-a, ii-b, iii-c, iv-d
(C) i-b, ii-a, iii-c, iv-d (D) i-b, ii-a, iii-d, iv-c
35. Blood group is due to
(A) specific antigens on the surface of WBC (B) specific antibodies on the surface of RBC
(C) specific antigens on the surface of RBC (D) type of Haemoglobin
36. Bowman's capsule is a part of
(A) Ureter (B) Renal artery
(C) Renal portal vein (D) Uriniferous tubules
37. A soil is said to be fertile when
(A) It is rich in organic matter (B) It has a capacity to hold water
(C) It has a capacity to hold nutrients
(D) It holds water and all essential nutrients in a definite proportion

ROUGHWORK

38. Soil is a part of
(A) atmosphere (B) lithosphere (C) hydrosphere (D) ionosphere

39. label the following diagram –



- (A) Stigma, style, ovule (B) Stigma, style, ovary
(C) Style, stigma, ovule (D) Style, stigma, ovary

ROUGHWORK

40. Match the column –

Column - I

- (i) Ovulation
- (ii) HIV
- (iii) Pregnancy Hormone
- (iv) Milk ejecting Hormone
- (v) Goitre
- (vi) Gigantism

Column - II

- a) Progesterone
- b) Pituitary gland
- c) Oxytocin
- d) 15th day of menstrual cycle
- e) Thyroid gland
- f) AIDS

- (A) (i) – d (ii) – f (iii) – a, (iv) – c, (v) – e (vi) – b
- (B) (i) – c (ii) – d (iii) – a (iv) – e (v) – f (vi) – b
- (C) (i) – f (ii) – d (iii) – a (iv) – c (v) – e (vi) – b
- (D) (i) – d (ii) – f (iii) – a (iv) – c (v) – b (vi) – e

41. The function of kidney in mammals is to excrete

- (A) extra urea, extra water and extra amino acids
- (B) extra urea, extra water and carbohydrate
- (C) extra urea, salts and excess water
- (D) extra salts, urea and excess water

42. One heart beat in an average man lasts

- (A) 0.8 second
- (B) 0.2 second
- (C) 0.5 second
- (D) 1 minute

ROUGHWORK

43. If the CO₂ concentration in the blood increases, the breathing shall
(A) increase (B) decrease (C) affected (D) stop
44. Typical 'lub-dub' sounds heard in heartbeat are due to
(A) closing of bicuspid and tricuspid valves
(B) closing of semilunar valves
(C) closure of bicuspid-tricuspid valves followed by semilunar valves
(D) blood under pressure through aorta
45. The smallest bone in mammals is
(A) septomaxillary (B) dentary (C) femur (D) stapes
46. At high altitude, RBCs of human blood will
(A) increase in number (B) decrease in number (C) decrease in size (D) increase in size
47. Cranium in man is made up of
(A) 10 bones (B) 12 bones (C) 16 bones (D) 8 bones
48. Which of the following set of enzymes is responsible for protein digestion –
(A) Pepsin, trypsin, Renins Amylase (B) Pepsin, lipase, Renin & Amylase
(C) Pepsin, chymotrypsin, Trypsin & Renin (D) Amylase, Remin, Lipase & Trypsin

ROUGHWORK

49. What is micropropagation?
(A) germination of seed with cotyledons above the soil
(B) a technique to obtain new plants by cultivating the cells or tissues in culture medium
(C) the mature stage of endosperm
(D) to manufacture hormones
50. Diabetes insipidus is the syndrome which results due to the
(A) failure of neurohypophysial system to inhibit the excess release of ADH
(B) failure of neurohypophysial system to produce or release ADH
(C) inability of pituitary to produce oxytocin
(D) inability of pituitary to release ACTH
51. Accumulation of non bio degradable pesticides in food chain in increasing amount at each higher trophic level is known as.
(A) Pollution (B) Accumulation (C) Biomagnification (D) Fermentation
52. Ultraviolet radiation can cause.
(A) Diabetes (B) Fever (C) Skin cancer (D) Cough & cold
53. Roots grow downward as a response.
(A) Positive phototropic (B) Negative phototropic
(C) Negative geotropic (D) All of these
54. CNS consists of :
(A) Brain (B) Spinal Cord (C) Both (A) and (B) (D) None of these

ROUGHWORK

55. One molecule of Glucose produces energy equal to :
(A) 8 ATP (B) 18ATP (C) 28ATP (D) 38ATP
56. Match the following
- | I | II |
|------------|-----------------------|
| 1. Plants | a. Symbiotic relation |
| 2. Animals | b. Heterotrophs |
| 3. Fungi | c. Saprotrophs |
| 4. Linchen | d. Autotrophs |
- (A) 1 – d, 2 – c, 3 – a, 4 – b (B) 1 – b, 2 – c, 3 – d, 4 – a
(C) 1 – d, 2 – b, 3 – c, 4 – a (D) 1 – a, 2 – b, 3 – d, 4 – c
57. The advantage of RBC's being biconcave is that
(A) to increase surface area (B) they can be packed up like coins
(C) they can fit into capillaries (D) none of the above
58. Ripening of fruits, such as bananas, is hastened by:
(A) Gibberellins (B) Abscisic acid (C) Cytokinin (D) Ethylene
59. Glycolysis results in the production of:
(A) Acetic acid (B) Pyruvic acid (C) Fatty acid (D) Hydrochloric acid

ROUGHWORK

60. Darwin's theory of pangenesis shows similarity with the theory of inheritance of acquired characters. Then what shall be correct according to it ?
- (A) Useful organs become strong and developed while useless organs become extinct
 (B) Size of organs increases with ageing
 (C) Development of organs is due to will power
 (D) There should be some physical basis of inheritance
61. Geotropism is a paratonic movement which is caused by unilateral application of force of gravity. From the given figures it can be concluded that _____

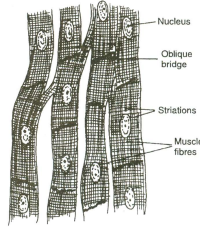


- (A) Roots are positively geotropic (B) Stem is positively geotropic
 (C) Stem shows negative geotropism (D) Both (A) and (C)
62. Indicate which is the proper sequence of blood flow through the circulatory system
- (a) Right atrium (b) Left atrium
 (c) Right ventricle (d) Left ventricle
 (e) Pulmonary artery (f) Pulmonary vein
 (g) Lungs (h) Systemic tissues
 (i) Aorta (j) Venae cavae
- (A) a-b-c-d-e-f-g-h-i-j (B) j-b-d-e-g-f-b-c-i-h
 (C) j-a-c-e-g-f-b-d-i-h (D) j-a-c-e-i-g-f-b-d-h

ROUGHWORK

63. The type of muscle show in the picture given above is

- (A) Smooth muscle
- (B) Striated muscle
- (C) Cardiac muscle
- (D) None of these



64. Which of the following is a correctly matched?

- (A) Funaria - Angiosperm
- (B) Sycon - Coelenterata
- (C) Antedon - Echinodermata
- (D) None of these

65. In a human the small intestine is directly connected to anus, which one will not occur in his body:-

- (A) Absorption of proteins
- (B) Absorption of water
- (C) Absorption of carbohydrates
- (D) Absorption of milk

66. Examine the following statement:-

- (i) Maple and drumstick seed dispersed by animals
- (ii) Xanthium seed dispersed by wind
- (iii) Anther & Filament are the parts of stamen
- (iv) The fruit of coconut dispersed by animal

Which of the following is correct

- (A) (i),(ii)
- (B) (ii),(iv)
- (C) (iii) Only
- (D) (iv) Only

ROUGHWORK

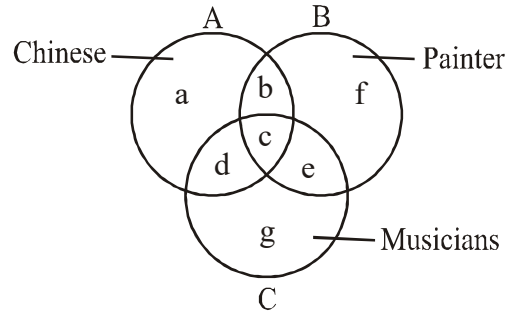
67. If you boils a hen's egg & removes the shell, a white material surrounds the yellow part, what are white & yellow parts respectively:-
(A) Yolk & Albumin (B) Albumin & Globulin
(C) Albumin & yolk (D) White yolk & yellow yolk
68. Thickening of cell wall, lignification and specialization for mechanical functions are characteristic of
(A) Parenchyma (B) Collenchyma (C) Sclerenchyma (D) Aerenchyma
69. Which of the following type of epithelium forms the lining of kidney tubules and ducts of salivary glands?
(A) Columnar epithelium (B) Cubodial epithelium
(C) Squamous epithelium (D) None of these
70. Emphysema is a condition resulting from
(A) cigarette smoking (B) liquor consumption
(C) drug addiction (D) none of the above

ROUGHWORK

PART B: MENTAL ABILITY

Q.71 to Q.90 has four choices (A), (B), (C), (D) out of which only **ONE** is correct.

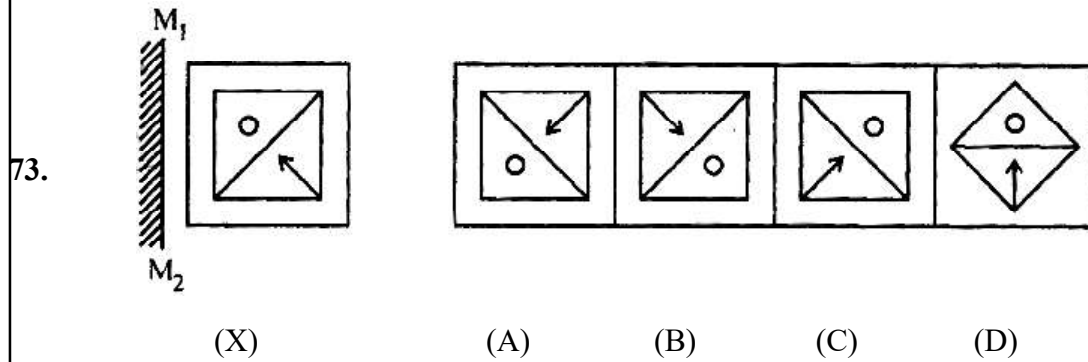
Directions (Q.56 & 57) : In the figure given below, there are three intersecting circles each representing certain section of people. Different regions are marked a - g. Read the statements in each of the following questions and choose the letter of the region which correctly represents the statements.



71. Painters who are neither Chinese nor musicians
 (A) b (B) c (C) f (D) g
72. Chinese who are painters as well as musicians
 (A) a (B) b (C) c (D) d

ROUGHWORK

Direction (Q.73) : In each of the following questions, choose the correct mirror-image of the Fig. (X) from amongst the four alternatives (1), (2), (3) and (4) given along with it. The mirror represented by a line M_1M_2



Direction (Q.74 to 76) : Study the following information carefully and answer the questions below.

A team of five is to be selected from amongst five boys A, B, C, D and E and four girls P, Q, R and S.

Some criteria for selection are –

A and S have to be together.

P cannot be put with R.

D and Q cannot go together.

C and E have to be together.

R cannot be put with B.

Unless otherwise started, these criteria are applicable to all questions below

74. If two of the members have to be boys, the team will consist of

(A) ABSPQ

(B) ADSQR

(C) BDSRQ

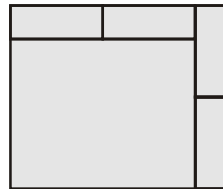
(D) CESPQ

ROUGHWORK

75. If two of the members are girls and D is one of the members, the members of the team other than D are
 (A) PQBC (B) PQCE (C) PSAB (D) PSCE
76. If including P at least three members are girls, the members of the team other than P are
 (A) QSAB (B) QSBD (C) QSCE (D) RSAD

Direction (Q.77 & 78) : In each of the following questions, one term in the number series is wrong. Find out the wrong term.

77. 6, 15, 35, 77, 165, 221
 (A) 35 (B) 77 (C) 165 (D) 221
78. 2, 6, 24, 96, 285, 568, 567
 (A) 6 (B) 24 (C) 285 (D) 567
79. What is the number of rectangles in the following figure?



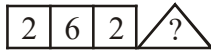
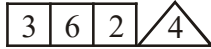
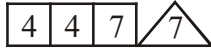
- (A) 6 (B) 7 (C) 9 (D) 11

ROUGHWORK

Direction (Q.80) : In each of the following questions, choose that set of numbers from the four alternative sets, that is similar to the given set.

80. Given set : (6, 36, 63)
 (A) (7, 49, 98) (B) (8, 64, 46) (C) (9, 84, 45) (D) (11, 111, 84)

81. Which one will replace the question mark?



- (A) 2 (B) 4 (C) 6 (D) 8

82. How many times do the hands of a clock coincide in a day?

- (A) 20 (B) 21 (C) 22 (D) 24

Direction (Q.83) : In the following question there are equations that have become wrong due to wrong order of signs. Choose the correct order of signs from the four alternatives given below. So that the equations become right.

83. $8 = 2 + 4 - 16$
 (A) $\times + =$ (B) $\div \times =$ (C) $- + =$ (D) $\times \div =$

ROUGHWORK

Direction (Q.84) : In each blank space write one of +, -, × and ÷ signs so that the equation is true.

84. $15 \ 5 \ (15 \ 3) = 80$

(A) ×, ÷, +

(B) ×, ÷, -

(C) ×, +, ÷

(D) ×, -, ÷

85. Nine carpenters can make nine chairs in nine days, then one carpenter will make three chairs in how many days?

(A) 3

(B) 9

(C) 27

(D) 18

Directions (Q.86) : Study the following information and answer the questions given below:

(i) A rectangular wooden block is having length 6 cm, breadth 4 cm and height 1 cm.

(ii) Both sides having dimension 4 cm. 1 cm are painted with black colour.

(iii) Both sides having dimension 6 cm. 1 cm are painted in red colour.

(iv) Both sides with dimension 6 cm. 4 cm are painted in green colour.

(v) The block is cut into size equal pairs of 1 cm each (from 6 cm side) and into 4 equal parts of 1 cm each (from 4 cm side).

86. If cubes having only "black as well as green" colour are removed, then how many cubes will remain?

(A) 4

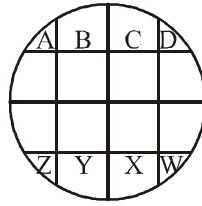
(B) 8

(C) 12

(D) None of these

ROUGHWORK

Directions (Q.87 to 89) : A posse of four policeman. A, B, C and D is combining a circular park divided into sixteen plots. P, Q, R and K are the offenders whom they have to catch after given moves. The figure below shows their positions. Note that the by-lanes are North-South and East-West.



- 87.** Who two are positioned North-West and South-East ?
 (A) W and A (B) B and Y (C) A and W (D) Z and D
- 88.** If A, B, C and D were to move clockwise four plots and W, X, Y and Z were to move anti-clockwise six plots, then who two would be in North and South directions respectively ?
 (A) B and X (B) Y and D (C) Z and A (D) W and C
- 89.** If both A, B, C, D and P, Q, R, K move clockwise three plots, then who two would be positioned North-East and South-West ?
 (A) A and W (B) B and X (C) C and X (D) D and Z

ROUGHWORK

Direction (Q.90) : There is some relationship between the two terms to the left of :: and the same relationship holds between the two terms to its right. Find out this term.

90. $MK : \frac{169}{121} :: JH : ?$

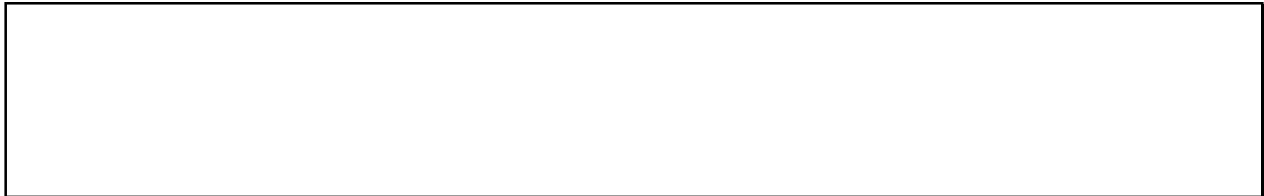
(A) $\frac{100}{64}$

(B) $\frac{100}{81}$

(C) $\frac{64}{120}$

(D) $\frac{81}{100}$

ROUGHWORK



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