

Infinity Think Beyond — Class VIII Mathematics

Practice Paper (Mid-Term) — Set 1 — Answer Key

Based on Ganita Prakash – Part I

[illegible]

Q.No	Step-by-Step Solution	Marks per Step
SECTION – A (Q1, subparts i–xii, 1 mark each)		
	Angle sum property of a quadrilateral Answer: (c) 360° (xi) $(-6)^3 = -216$ Answer: (b) -6 (xii) $x/y = 15/5 = 3$ (constant ratio) $x = 3 \times 8$ Answer: (c) 24	
SECTION-B (Q2–7, 2 marks each)		
2	Q2 $2028 = 2^2 \times 3 \times 13^2$ The exponent of 3 is odd (1) Multiply by 3 to make all exponents even Answer: 3	2 marks
3	Q3 $5^{-2+4-1} = 5^1$ Answer: 5	2 marks
4	Q4 $360 - 75 - 95 = 110$ Answer: 80°	2 marks
5	Q5 (a) Let numbers be x, x+2, x+4 $3x + 6 = 81 \rightarrow x = 25$ Answer: 25, 27, 29 OR (b) $LXXXIV = 50+30+4$ Answer: 84, which is even	2 marks
6	Q6 $150 \div 5 = 30$ pages/min 30×12 Answer: 360 pages	2 marks
7	Q7 $a^2 - 49 = 13^2 - 49 = 169 - 49$	2 marks

Q.No	Step-by-Step Solution	Marks per Step
SECTION – A (Q1, subparts i–xii, 1 mark each)		
	Answer: 120	
SECTION-C (Q8–10, 3 marks each)		
8	Q8 (i) $XLII = 42$, $XXVIII = 28$ $42 + 28 = 70$ Answer: LXX (ii) $LVI = 56$, $XXXIV = 34$ $56 + 34 = 90$ Answer: XC	1.5 marks each
9	Q9 (a) Opposite angles of a rhombus are equal; adjacent angles are supplementary 64°, $180 - 64 = 116^\circ$, 64°, 116° Answer: 64°, 116°, 64°, 116° OR (b) $PS \parallel QR$ (opposite sides of rectangle) $\angle PSQ$ and $\angle SQR$ are alternate angles $\rightarrow \angle SQR = 40^\circ$ $\angle PSR = 90^\circ$ (rectangle angle) $\angle QSR = 90^\circ - 40^\circ$ Answer: $\angle SQR = 40^\circ$, $\angle QSR = 50^\circ$	3 marks
10	Q10 (i) $2p(4p+q) - 3q(4p+q) = 8p^2 + 2pq - 12pq - 3q^2$ Answer: $8p^2 - 10pq - 3q^2$ (ii) $(x+5)(x-5) = x^2 - 25$ $(x^2-25)(x^2+25) = x^4 - 625$ Answer: $x^4 - 625$	1.5 marks each
SECTION-D (Q11–13, 5 marks each)		
11	Q11 (i) $3840 = 2^8 \times 3 \times 5$ For a perfect cube, divide out 2^2, 3^1, 5^1 (divisor = $4 \times 3 \times 5 = 60$) $3840 \div 60 = 64 = 4^3$	3+2 marks

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SECTION – A (Q1, subparts i–xii, 1 mark each)		
	Answer: Divide by 60; cube root of quotient = 4 (ii) Side = $\sqrt[3]{2744}$ Answer: 14 cm	
12	Q12 Main (i): $3^x = 81 = 3^4 \rightarrow x = 4$ $3^{4+2} = 3^6$ Answer: 729 Main (ii): $7^6 \div 7^4 = 7^2$ Answer: 49 OR (i): $10^{-3+5} = 10^2$ Answer: 100 OR (ii): $(2^{-1})^{-3} = 2^3; 2^3 \times 2^{-1} = 2^2$ Answer: 4 OR (iii): $(a^{-2}b^3)^2 = a^{-4}b^6$ Answer: $a^{-4}b^6$	2.5+2.5 marks
13	Q13 (i) $AB \times 3 = CAB$ means $AB \times 2 = 100C$ (last two digits unchanged) $AB = 50$ works: $50 \times 3 = 150$ Answer: A=5, B=0, C=1 (ii) Try PP=33, QQ=11: $33 \times 11 = 363$ Answer: P=3, Q=1, R=6 ($33 \times 11 = 363$) (iii) $5a6b$ divisible by 18: b must be even; $11+a+b$ divisible by 9 Answer: (a,b) = (1,6), (3,4), (5,2), (7,0), (8,8) (iv)	1 mark each

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SECTION – A (Q1, subparts i–xii, 1 mark each)		
	24a7b divisible by 11: alternating sum $b-7+a-4+2$ divisible by 11 Answer: (a,b) = (0,9), (1,8), (2,7), (3,6), (4,5), (5,4), (6,3), (7,2), (8,1), (9,0) (v) $575 \times 5 = 2875$ Answer: W=5, O=7, M=2, E=8	
SECTION-E (Q14–16, case-based, 4 marks each)		
14	Q14 (i) AB = AD (given property of the kite) Answer: AD = 6 cm (ii)(a): In a kite, the axis of symmetry AC bisects the angles at the vertices where the equal sides meet (A and C) Answer: Proved — AC bisects $\angle BAD$ and $\angle BCD$ (ii)(b) OR: The axis of symmetry AC is the perpendicular bisector of the other diagonal BD Answer: Proved — AC bisects BD (iii) In a kite, the angles between the unequal sides ($\angle ABC$ and $\angle ADC$) are equal Answer: $\angle ADC = 100^\circ$	1+2+1 marks
15	Q15 (i) Area of large square Answer: a^2 (ii) Area of removed square Answer: b^2 (iii)(a): Shaded area = $a^2 - b^2$ Using the identity: $a^2 - b^2 = (a+b)(a-b)$ Answer: $(a+b)(a-b)$ (iii)(b) OR: $a^2 - b^2 = 15^2 - 7^2 = 225 - 49$ Answer: 176 cm^2	1+1+2 marks

Q.No	Step-by-Step Solution	Marks per Step
SECTION – A (Q1, subparts i–xii, 1 mark each)		
16	Q16 (i) $12000 : 18000 : 30000$ Divide by 6000 Answer: 2 : 3 : 5 (ii) Total parts = 10, unit = 1800 Nikhil's share = 3×1800 Answer: ₹5400 (iii)(a): Ojas = $5 \times 1800 = 9000$; Meera = $2 \times 1800 = 3600$ Difference = $9000 - 3600$ Answer: ₹5400 (iii)(b) OR: $18000 \div 3$ Answer: ₹6000 each	1+1+2 marks