MUHAMMAD ALI PHOTO STATE ZAFARWAL

Complete Exam Preparation Notes 2026

MATHEMATICS 9TH CLASS (NEW BOOK)

Most Important MCQs (Key to Scoring 15/15 Marks)

Chapter 1: Real Numbers

Question	Option A	Option B	Option C	Option D
1. The Sumerians used which numeral system?	Base 10	**Base 60** ✓	Base 2	Base 12
2. The concept of zero was first developed by:	Egyptians	Sumerians	**Indians** ✓	Greeks
3. Modern number systems like hexadecimal are based on:	Base 10	3.14	Base 2	**Base 16** ✓
4. Which of these is an irrational number?	0.333...	√16	**√5** ✓	2332
5. A recurring decimal is always a:	**Rational number** ✓	Irrational number	Integer	Whole number
6. Which number is rational?	√3	e	√5	**3/5** ✓
7. 0.6 is equivalent to:	2-3	**3/5** ✓	1/6	6/99
8. The decimal expansion of 1/7 is:	Terminating	Non-terminating non-recurring	**Non-terminating & recurring** ✓	None of these
9. Which property is illustrated by a + b = b + a?	Associative	Identity	Distributive	**Commutative** ✓
10. The additive identity for real numbers is:	1	**0** ✓	-1	None of these
11. Which property states a(b + c) = ab + ac?	Associative	**Distributive** ✓	Inverse	Closure
12. The multiplicative inverse of 5 is:	-5	5	0	**1/5** ✓
13. If a > b and b > c then a > c is called property:	Reflexive	Symmetric	**Transitive** ✓	Trichotomy
14. Which of the following is not an integer?	-3	0	**4.5** ✓	7
15. Which of the following is an example of a rational number?	π	**3/4** ✓	√2	e
16. What is the example of a recurring decimal?	3.14159265...	**0.3333...** ✓	2.718281828...	0.49835555
17. Which number set does the number 0 belong to?	**Whole number** ✓	Natural number	Irrational number	None of these

Question	Option A	Option B	Option C	Option D
18. Which of the following is an example of an infinite non-recurring decimal?	0.25	0.333...	5.75	**π ✓**
19. Which number system does -3 belong to:	Natural number	Whole number	**Integers ✓**	Irrational number
20. Which of the following is not a real number:	5	-2	√7	**√(-1) / Undefined ✓**

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Chapter 1: Real Numbers (Continued)

Question	Option A	Option B	Option C	Option D
21. What is the square root of 16?	**4 ✓**	-4	Both a and b	None of these
22. The value of √25 is:	**5 ✓**	-5	Both a and b	None of these
23. Which is equivalent to (√3 + √2) / (√3 - √2)?	**5 + 2√6 ✓**	1	√6	5 - 2√6
24. If x = 1 + √2 then x^2 = ?	2√2	1 + 2√2	3	**3 + 2√6 ✓**
25. If a + b = 10 and ab = 21 then $a^2 + b^2$ = ?	**58 ✓**	100	42	121
26. The solution of $2^x = 16$ is:	6	8	2	**4 ✓**
27. The solution of 2x + 5 = 15 is:	x = 3	x = 10	x = 7.5	**x = 5 ✓**
28. If √x = 5, then x = ?	10	**25 ✓**	5	15
29. The value of (√12 × √3) / √4 is:	**3 ✓**	6	9	12
30. If a = 3, b = 4 then √($a^2 + b^2$) = ?	**5 ✓**	7	12	25
31. Which is a binomial surd?	√3	**√3 + √5 ✓**	2√3	√9
32. The conjugate of √7 - √2 is:	**√7 + √2 ✓**	√7 - √2	-√7 + √2	-√7 - √2
33. Rationalize the denominator 1 / √5:	√5	**√5 / 5 ✓**	1/5	5√5
34. Which is not a surd?	√8	√12	**√16 ✓**	√18
35. Convert 25°C to Fahrenheit using F = (9/5)C + 32:	**77°F ✓**	68°F	90°F	45°F
36. A profit of 20% on a cost price of Rs. 500 means selling price is:	**Rs 600 ✓**	Rs 400	Rs 550	Rs 700
37. Compound interest on Rs 2000 at 10% for 2 years is:	**Rs 420 ✓**	Rs 200	Rs 400	Rs 240
38. If three consecutive integers sum to 51, largest number is:	15	16	17	**18 ✓**

Question	Option A	Option B	Option C	Option D
39. If 5 pens cost Rs 45, the cost of 8 pens is:	100	60	90	**72 ✓**
40. A number is increased by 20% and becomes 60. Original number:	**50 ✓**	48	60	72
41. Two numbers in ratio 3:4 sum to 35. The numbers are:	**15, 20 ✓**	12, 16	9, 12	18, 24

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Chapter 2: Logarithms & Chapter 3: Sets & Functions

Question	Option A	Option B	Option C	Option D
93. log(5) + log(3) =	log 0	log 2	log(5/3)	**log 15 ✓**
94. $3^4 = 81$ in logarithmic form is:	$\log_3(4) = 81$	$\log_4(3) = 81$	**$\log_3(81) = 4$ ✓**	$\log_4(81) = 3$
95. The sequence 0, 1, 1, 2, 3, 5, 8, 13, 21... is an example of:	Roman	Odd	Even	**Fibonacci ✓**
96. Georg Cantor was a ... mathematician:	Japanese	**German ✓**	Greek	Egyptian
97. Fibonacci sequence Formula F_n =	$F_{n-1} + F_{n+2}$	**$F_{n-1} + F_{n-2}$ ✓**	$F_{n-1} - F_{n+2}$	$F_{n-1} + F_n$
98. Names of sets are represented by:	1, 2, 3...	A, B...	**Capital letters (A, B...) ✓**	None of these
99. How many methods are there to describe a set?	1	2	**3 ✓**	4
100. Set A = {a, e, i, o, u} is written in which form:	Descriptive	**Tabular ✓**	Builder	None of these
101. Symbol used for 'member of' or 'belongs to' a set:	$\subseteq$	$\in$ ✓	$\subset$	$\cup$
102. Set {2, 3, 5, 7, 11...} is called set of ... numbers:	Natural	Whole	Odd	**Prime ✓**
103. $Q \cup Q' =$	N	**R ✓**	Q'	Q
104. The set {0} is a:	**Singleton set ✓**	Empty set	Null set	Prime set
105. The set with no element is called an:	Singleton set	**Empty set ✓**	Power set	Prime set
106. Symbol used for empty set:	**{} or ∅ ✓**	E	{{}}	None of these
107. Example of equal sets:	{a,b,c}, {1,2,3}	**{1,2,3}, {2,1,3} ✓**	Both a and b	None of these

Question	Option A	Option B	Option C	Option D
108. Symbol used for equivalent sets A and B:	A = B	**A ↔ B / A ~ B ✓**	A + B	A ∪ B
109. If A is a subset of B, written symbolically as:	A ⊂ B	**A ⊆ B ✓**	A ∈ B	A ∪ B
110. Number of elements in power set of C = {a, b, c, d}:	8	**16 ✓**	24	32
111. If D = {a} then, P(D) =	{}	{a}	**{ø, {a}} ✓**	None of these
112. Intersection of odd & even number sets is:	Universal set	**Empty set ✓**	Even set	Odd set
113. Which is an example of overlapping sets:	**{1,2}, {2,3,4} ✓**	{1,2}, {1,2,3,4}	{1,2}, {3,4}	None of these

Chapter 4 & 5: Algebraic Manipulations & Linear Equations

Question	Option A	Option B	Option C	Option D
165. Product of LCM and HCF = ... of two polynomials:	Sum	Difference	**Product ✓**	Quotient
166. The square root of $x^2 - 6x + 9$ is:	**±(x - 3) ✓**	±(x + 3)	x - 3	x + 3
167. The LCM of $(a - b)^2$ and $(a - b)^4$ is:	$(a - b)^2$	$(a - b)^3$	**$(a - b)^4$ ✓**	$(a - b)^6$
168. Factorization of $x^3 + 3x^2 + 3x + 1$ is:	**$(x + 1)^3$ ✓**	$(x - 1)^3$	$(x + 1)(x^2 + x + 1)$	$(x - 1)(x^2 - x + 1)$
169. A cubic polynomial has degree:	1	2	**3 ✓**	4
170. One of the factors of $x^3 - 27$ is:	x - 3	x + 3	$x^2 + 3x + 9$	**Both a and c ✓**
171. Which is a linear equation in one variable?	2x + 3y = 7	**5x - 4 = 0 ✓**	$x^2 + 3x = 8$	xy + 2 = 5
172. The solution of equation 3x - 7 = 2 is:	**3 ✓**	-3	5/3	9
173. In inequality 4x + 2 > 10, solution for x is:	**x > 2 ✓**	x < 2	x ≥ 2	x ≤ 2
174. Which symbol represents 'less than or equal to'?	>	<	**≤ ✓**	≥
175. Graphical representation of linear equation in 2 variables:	A curve	**A straight line ✓**	A parabola	A circle
176. What is the solution of 2(x - 3) = 4?	x = 2	**x = 5 ✓**	x = 3	x = 1
177. The inequality x - 5 ≥ 3 means:	x is greater than 8	x is less than 8	**x is ≥ 8 ✓**	x is ≤ 8
178. The equation x + 2y = 6 represents a:	Quadratic eq	**Linear eq ✓**	Exponential eq	None of these

Question	Option A	Option B	Option C	Option D
179. Associated equation of inequality x + 2y ≤ 8 is:	**x + 2y = 8 ✓**	x + 2y > 8	x + 2y < 8	x + 2y ≥ 8
180. Solution of system x - y = 2 and x + y = 6 is:	**(4, 2) ✓**	(2, 4)	(3, 3)	(6, 0)
181. If x = 3 is solution of 5x - 2 = k then k is:	11	**13 ✓**	15	17
182. Graphical representation of system of linear inequalities:	**A shaded region ✓**	A single point	A straight line	A curve
183. The equation 2x - y = 4 is associated equation for:	2x - y > 4	2x - y ≤ 4	2x - y ≥ 4	**All of the above ✓**
184. Solution region for system of linear inequalities is:	A vertex	**A feasible region ✓**	A line	A parabola
208. A function that is to be maximized or minimized is:	Solution function	**Objective function ✓**	Feasible function	None of these

Chapter 6: Trigonometry

Question	Option A	Option B	Option C	Option D
209. In ∠AOB the vertex is:	A	**O ✓**	B	None of these
210. The ray OA is written symbolically as:	**$\overrightarrow{OA}$ ✓**	$\overline{OA}$	↔OA	OA
211. Co-terminal angle of 65° is:	360°	-360°	**425° ✓**	-405°
212. What is the measure of a full rotation in degrees?	90°	180°	270°	**360° ✓**
213. What is the measure of a right angle in radians?	2	**π/2 ✓**	3π/2	2π
214. Which of the following is an obtuse angle?	45°	90°	**120° ✓**	180°
215. What is the measure of a straight angle in radians?	2π	3π/2	**π ✓**	π/2
216. What is the measure of 1 radian in degrees?	**57.2958° ✓**	90°	180°	360°
217. Convert 73.12° to degrees, minutes, and seconds:	73°12'12"	73°12'7"	73°7'7"	**73°7'12" ✓**
218. Convert 45°45'45" to decimal degrees:	45.1234°	45.4567°	**45.7625° ✓**	45.9876°
219. What is the value of 1° in seconds?	60"	360"	**3600" ✓**	60'
220. What is the measure of a full circle in radians?	**2π ✓**	3π/2	π	π/2

Question	Option A	Option B	Option C	Option D
221. Convert 5π/3 radians to degrees:	**300° ✓**	150°	210°	330°
222. Convert 15° to radians:	**π/12 ✓**	π/6	π/4	π/3
223. Convert 1.2 radians to degrees:	90°	57.2958°	45°	**68.75° ✓**
224. One full revolution of a circle is ... radian:	π	**2π ✓**	3π	4π
225. Area of a sector is =	**(1/2)r²θ ✓**	πr²	4πr²	(1/2)r³θ
226. What is the value of sin(π/4)?	√2	√3	**1/√2 ✓**	1/√3
227. How many fundamental trigonometric ratios are there?	3	4	5	**6 ✓**
228. Reciprocal of sine is:	sec θ	**csc θ ✓**	cot θ	tan θ
229. cot θ =	1/sin θ	1/cos θ	**1/tan θ ✓**	√(1 - cos²θ)
230. sin θ =	**√(1 - cos²θ) ✓**	1/tan θ	sin θ / cos θ	√(1 + cos²θ)

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Chapter 6: Trigonometry (Continued) & Chapter 7: Coordinate Geometry

Question	Option A	Option B	Option C	Option D
231. If sin θ = 2/3, then value of csc θ is:	2/3	-2/3	**3/2 ✓**	-3/2
232. In right ΔABC, if m∠B = 90° then true statement is:	a² + b² = c²	a² - b² = c²	**a² + c² = b² ✓**	a² + b² = a²
233. What is the value of cot 30°?	**√3 ✓**	1/√3	1	0
234. What is the value of sin(90° - θ)?	tan θ	sin θ	**cos θ ✓**	cot θ
235. What is the value of tan θ in terms of sine and cosine?	**sin θ / cos θ ✓**	cos θ / sin θ	1 / sin θ	1 / cos θ
236. Which of the following is a Pythagorean identity?	**sin²θ + cos²θ = 1 ✓**	sin θ + cos θ = 1	tan θ + cot θ = 1	sec θ + csc θ = 1
237. What is the value of 1 + tan²θ?	sin²θ	csc²θ	cot²θ	**sec²θ ✓**
238. What is the value of 1 + cot²θ?	**csc²θ ✓**	sec²θ	tan²θ	sin²θ
239. If tan θ = 3/4, what is the value of sin θ?	5/3	4/5	**3/5 ✓**	5/4
240. What is the value of sin 45°?	**1/√2 ✓**	√3/2	1/2	1
241. What is the value of cos 30°?	1/2	**√3/2 ✓**	1/√2	1
242. What is the value of tan 60°?	**√3 ✓**	1/√3	1	0
243. What is the value of cot 45°?	**1 ✓**	√3/2	1/√3	0

Question	Option A	Option B	Option C	Option D
244. In a right triangle, if one acute angle is 30°, the other is:	**60° ✓**	45°	90°	120°
245. Right triangle: side = 2cm, hypotenuse = 4cm, other side is:	3 cm	√20 cm	**2√3 cm ✓**	4 cm
246. In 45°-45°-90° triangle, leg = 5cm, hypotenuse is:	**5√2 cm ✓**	5 cm	10 cm	10√2 cm
247. Legs 3cm and 4cm, hypotenuse is:	**5 cm ✓**	6 cm	7 cm	8 cm
248. Hypotenuse = 10cm, leg = 6cm, other leg is:	4 cm	6 cm	**8 cm ✓**	2 cm
250. Hypotenuse = 13, θ = 30°, opposite side is:	**6.5 units ✓**	7.5 units	6 units	5 units
251. Distance 50m, elevation 45°, building height is:	**50 m ✓**	25 m	35 m	70 m
294. The gradients of two parallel lines are:	**Equal ✓**	Zero	Negative reciprocals	Undefined
295. Product of gradients of two lines is -1, lines are:	Parallel	**Perpendicular ✓**	Collinear	Coincident

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Chapter 7 & 8: Coordinate Geometry & Logic

Question	Option A	Option B	Option C	Option D
296. Distance between P(1,2) and Q(4,6) is:	**5 ✓**	6	√13	4
297. Midpoint of line segment with endpoints (-2,4) & (6,-2):	(4, 2)	**(2, 1) ✓**	(1, 1)	(0, 0)
298. Line passing through points (1,2) and (4,5) is:	**y = x + 1 ✓**	y = 2x + 3	y = 3x - 2	y = x + 2
299. Equation of a line in point-slope form is:	y = m(x + c)	**$y - y_1 = m(x - x_1)$ ✓**	y = c + mx	ax + by + c = 0
300. 2x + 3y - 6 = 0 in slope-intercept form is:	**y = -(2/3)x + 2 ✓**	y = (2/3)x - 2	y = (2/3)x + 1	y = -(2/3)x - 2
301. Equation of line in symmetric representation is:	x/a + y/b = 1	$y - y_1 = m(x - x_1)$	**$(x - x_1)/\cos\alpha = (y - y_1)/\sin\alpha$ ✓**	ax + by + c = 0
302. The equation of a line in normal form is:	y = mx + c	x/a + y/b = 1	$y - y_1 = m(x - x_1)$	**x cos α + y sin α = p ✓**

Question	Option A	Option B	Option C	Option D
303. A conditional is regarded as false only when:	**Antecedent is true & consequent false** ✓	Consequent true & antecedent false	Antecedent true only	Consequent false only
304. The contrapositive of q → p is:	q → ~p	~q → p	~p → ~q	**~p → ~q / ~p → ~q** ✓
305. "Every integer > 2 is a sum of two primes" is a:	Theorem	**Conjecture** ✓	Axiom	Postulate
306. "A straight line can be drawn between any two points":	Converse	Conjecture	**Axiom / Postulate** ✓	Logic
307. "Sum of interior angles of triangle is 180°" is a:	Based on experiments	**Theorem** ✓	Axiom	Conditional
308. Which expression is related to inductive reasoning?	**Based on repeated experiments** ✓	If and only if	Proven by theorem	General principles
309. Which sentence describes deductive reasoning?	General conclusion	Repeated experiments	Units of info	**Conclusion from well-known facts** ✓
310. Which statement is true?	Set of integers is finite	Sum of quad angles 180°	**22/7 is a rational number** ✓	All isosceles are equilateral
311. Negation of "The stove is burning":	**The stove is not burning** ✓	Stove is dim	Stove is low heat	Both burning and not
312. Conjunction of p and q is true when:	Both p & q false	**Both p & q true** ✓	Only q is true	Only p is true
313. A sentence that may be true or false but not both:	Argument	**Statement** ✓	Proof	Check
314. Sum of measures of interior angles of a triangle:	90°	**180°** ✓	270°	360°
315. Circumference of a circle with radius r is:	**2πr** ✓	πr²	4πr²	None of these

Chapter 8 & 9: Logic & Similar Figures

Question	Option A	Option B	Option C	Option D
316. Symbol used for 'OR' is:	∧	**∨ ✓**	~	↔
317. Symbol ∧ stands for:	**AND ✓**	OR	NOT	Is equivalent to
318. If q is a statement, its negation is written as:	**~q ✓**	∧q	∨q	None of these
319. The conjunction of p and q is written as:	**p ∧ q ✓**	p ∨ q	p → q	None of these
320. Which is an example of a true conjunction?	**3 < 5 ∧ 7 < 8 ✓**	3 < 3 ∨ 10 < 10	2 < 5 ∧ 9 < 6	None of these
323. A compound statement of the form p → q is called:	Conjunction	Disjunction	Negation	**Conditional ✓**
324. In p → q, "p" is called the:	**Hypothesis / Antecedent ✓**	Conclusion	Both	None of these
325. Conditional is false when antecedent is true & consequent is:	True	**False ✓**	Negation	None of these
326. Statement p ↔ q is called:	Conditional	**Biconditional ✓**	Conjunction	Disjunction
327. If p → q is conditional, its converse is:	**q → p ✓**	~p → ~q	~q → ~p	None of these
328. If p → q is given conditional, ~q → ~p is called:	Inverse	Converse	**Contrapositive ✓**	None of these
329. A statement true for all possible values is a:	**Tautology ✓**	Absurdity	Contingency	None of these
330. A statement false for all possible values is a:	Tautology	**Absurdity / Contradiction ✓**	Contingency	None of these
331. a/b + c/d = ?	ac/bd	(a+c)/(b+d)	**(ad + bc) / bd ✓**	(ab + cd)/bd
332. $(x - 1)^2 + (x + 1)^2$ = ?	$4(x^2 + 1)$	$3(x^2 + 1)$	**$2(x^2 + 1)$ ✓**	$(x^2 + 1)$
333. A closed figure with 3 or more sides is called:	Circle	Rectangle	Triangle	**Polygon ✓**
334. ... figures have same shape but may have different sizes:	Congruent	**Similar ✓**	Equal	None of these
335. Which type of triangles are always similar to each other?	Scalene	Acute angle	**Equilateral ✓**	Obtuse angle

Question	Option A	Option B	Option C	Option D
336. Symbol used for Similarity is:	=	**~ ✓**	≅	∝
337. "Triangle ABC is similar to triangle DEF" symbolically:	ΔABC ≅ ΔDEF	**ΔABC ~ ΔDEF ✓**	ΔABC > ΔDEF	ΔABC < ΔDEF
338. Area of a parallelogram is:	Base + altitude	**Base × altitude ✓**	(1/2)(Base × altitude)	Length × width
339. Condition for two polygons to be similar:	Angles equal, sides equal	**Angles equal, sides proportional ✓**	Angles proportional, sides equal	Both proportional

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Chapter 9 & 10: Similar Figures & Graphs

Question	Option A	Option B	Option C	Option D
340. Side ratio of 2 similar triangles is 3:4. Area ratio is:	3:4	9:8	**9:16 ✓**	12:16
341. In ΔABC ~ ΔDEF, AB = 6, DE = 9, AC = 8. DF = ?	10 cm	**12 cm ✓**	14 cm	16 cm
342. Smaller polygon area = 25 cm², side ratio 1:2. Larger area:	**100 cm² ✓**	75 cm²	50 cm²	125 cm²
343. Small circle area = 36π cm², radius ratio 2:3. Larger area:	54π cm²	**81π cm² ✓**	108π cm²	144π cm²
344. Base of parallelogram = 8cm, altitude = 4cm. Area is:	12 cm²	48 cm²	18 cm²	**32 cm² ✓**
345. What is the sum of interior angles of a hexagon?	**720° ✓**	540°	900°	1080°
346. Measure of each interior angle of a regular pentagon:	72°	**108° ✓**	120°	144°
347. Measure of each exterior angle of a regular octagon:	30°	90°	60°	**45° ✓**
348. How many diagonals does a heptagon (7 sides) have?	7	21	**14 ✓**	28
349. Sum of exterior angles of any convex polygon is:	180°	**360° ✓**	540°	720°
401. What is the y-intercept of the equation y = 4x - 6?	**-6 ✓**	6	4	-4
402. C(x) = 1500 + 10x, R(x) = 50x. Break-even point:	30 units	50 units	100 units	**37.5 units ✓**
403. Graph of y = x² - 2x + 1 represents a:	Line	**Parabola ✓**	Cubic curve	Exponential curve

Question	Option A	Option B	Option C	Option D
404. For $y = 2x^2 + 3x + 5$, value of y when x = -1:	**4 ✓**	2	1	3
405. Graph of $y = x^2 - 4$ intersects x-axis at:	**(2,0) and (-2,0) ✓**	(4,0) and (-4,0)	(1,0) and (-1,0)	(3,0) and (-3,0)
406. The function $y = x^4$ is a:	Linear function	Quadratic function	Cubic function	**Quartic function ✓**
407. Graph of $y = x^2 + x - 2$ represents a:	Straight line	Hyperbola	**Parabola ✓**	Exponential function
408. Graph of $y = e^x$ represents:	Linear growth	**Exponential growth ✓**	Parabolic growth	Cubic growth
409. Which function represents exponential growth?	$y = x^2$	$y = 3x$	**$y = 2^x$ ✓**	$y = x^3$
410. Gradient of tangent to curve $y = x^2$ at x = 1:	4	**2 ✓**	0	8
411. Which function represents exponential decay?	$y = 2^x$	$y = e^x$	**$y = 2^{-x}$ ✓**	$y = x^2$

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Chapter 10 & 11: Graphs & Loci / Constructions

Question	Option A	Option B	Option C	Option D
412. In $y = x^2 - 3x - 2$, value of y when x = 0 is:	**-2 ✓**	0	2	-3
413. Graph of $y = x^2 - 2$ represents a:	**Parabola opening upwards ✓**	Parabola opening downwards	Hyperbola	Circle
414. Break-even point: C(x)=90000+600x, R(x)=1800x:	50 footballs	**75 footballs ✓**	100 footballs	150 footballs
415. Which represents exponential decay function?	$y = 2^x$	**$y = e^{-x}$ ✓**	$y = x^2$	$y = 3x$
416. Function $y = 2^x$ represents what kind of growth?	Linear growth	**Exponential growth ✓**	Exponential decay	Quadratic growth
417. x = 5 represents a line parallel to:	x-axis	**y-axis ✓**	Both	None of these
418. Slope of line $y = 5x + 3$ is:	3	-3	**5 ✓**	-5
419. y-intercept of $y = -2x - 1$ is:	-2	2	**-1 ✓**	1
420. Graph of $y = x^3$ cuts x-axis at:	**x = 0 ✓**	x = 1	x = -1	x = 2
421. Graph of $y = 3^x$ represents:	**Growth ✓**	Decay	Both	A line

Question	Option A	Option B	Option C	Option D
422. Graph of $y = -x^2 + 5$ opens:	Upward	**Downward ✓**	Left side	Right side
423. Graph of $y = x^2 - 9$ opens:	**Upward ✓**	Downward	Left side	Right side
424. $y = 5^x$ is a(n) ... function:	Linear	Quadratic	Cubic	**Exponential ✓**
425. Which is a reciprocal function?	$y = 7^x$	**$y = 2/x$ ✓**	$y = 2x^2$	$y = 5x^3$
426. $y = -3x^3 + 7$ is a ... function:	Exponential	**Cubic ✓**	Linear	Reciprocal
427. Intersection of 3 angle bisectors of a triangle:	Orthocenter	Centroid	Circumcenter	**Incenter ✓**
428. An equilateral triangle is always a(n) triangle:	Obtuse	Right	**Acute ✓**	None of these
429. Center of circle passing through vertices of triangle:	Incenter	**Circumcenter ✓**	Centroid	Orthocenter
430. Point of intersection of perpendicular bisectors:	Incenter	Centroid	**Circumcenter ✓**	Orthocenter
431. Triangle with one angle > 90° is a(n):	Acute triangle	Right triangle	**Obtuse triangle ✓**	Isosceles triangle
432. Point where all medians of a triangle meet is:	Circumcenter	Incenter	**Centroid ✓**	Orthocenter

Chapter 11: Loci and Construction (Continued)

Question	Option A	Option B	Option C	Option D
433. Locus of points at fixed distance from given point:	Perpendicular bisector	**Circle ✓**	Angle bisector	Line segment
434. What is the angle bisector of a triangle?	**Divides angle into two equal parts ✓**	Passes through vertex	Joins midpoints	Perpendicular to side
435. The orthocenter of a triangle is where ... meet:	Circumcenter	**Altitudes ✓**	Perpendicular bisectors	Medians
436. How many types of triangles w.r.t. angles?	2	**3 ✓**	4	5
437. A triangle with all sides and angles equal is:	Right triangle	Isosceles triangle	**Equilateral triangle ✓**	Scalene triangle
438. Centroid of a triangle is point of concurrency of:	Angle bisectors	Altitudes	Perpendicular bisectors	**Medians ✓**
439. Side opposite to the right angle in right triangle is:	**Hypotenuse ✓**	Median	Altitude	Base
440. Which is true for an equilateral triangle?	Has one angle of 90°	**All angles are 60° ✓**	Has two equal sides	Sides are all different

Question	Option A	Option B	Option C	Option D
441. What is the sum of interior angles of any triangle?	**180° ✓**	360°	90°	120°
442. A triangle with two equal sides is called a(n):	Equilateral triangle	Scalene triangle	**Isosceles triangle ✓**	Right triangle
443. How many types of triangles w.r.t. sides?	2	**3 ✓**	4	5
444. Centroid divides each median in a ratio of:	1:2	**2:1 ✓**	1:3	3:1
445. Which is NOT a type of triangle based on sides?	Scalene	Isosceles	Equilateral	**Acute ✓**
446. Perpendicular from a vertex to opposite side is:	**Altitude ✓**	Median	Bisector	Angle
447. A triangle with one angle equal to 90° is a:	Scalene triangle	Equilateral triangle	**Right-angled triangle ✓**	Isosceles triangle
448. A triangle is a closed figure having ... sides:	Two	**Three ✓**	Four	Five
449. Which criterion requires 2 sides and included angle?	**SAS criterion ✓**	ASA criterion	SSS criterion	AAS criterion
450. Angle formed by two sides at vertex of triangle is:	Complementary angle	Opposite angle	**Interior angle ✓**	Exterior angle
451. Triangle constructed if sum of 2 sides is ... 3rd side:	Less than	**Greater than ✓**	Equal to	Greater/Equal
452. An equilateral triangle ...	**Can be isosceles ✓**	Can be right-angled	Can be obtuse-angled	Each angle 50°
454. Line segment joining vertex to midpoint of opposite side:	**Median ✓**	Perpendicular bisector	Angle bisector	Altitude

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Chapter 11 & 12: Loci & Information Handling

Question	Option A	Option B	Option C	Option D
455. The angle bisectors of a triangle intersect at:	**One point ✓**	Two points	Three points	Four points
456. Locus of points equidistant from a fixed point is a:	**Circle ✓**	Perpendicular bisector	Angle bisector	Parallel lines
457. Locus of points equidistant from two fixed points:	Circle	**Perpendicular bisector ✓**	Angle bisector	Parallel lines
458. Locus of points equidistant from a fixed line is/are:	Circle	Perpendicular bisector	Angle bisector	**Parallel lines ✓**
459. Locus of points equidistant from 2 intersecting lines:	Circle	Perpendicular bisector	**Angle bisector ✓**	Parallel lines
460. Set of points farther than 2 km from point B is outside circle of radius:	1 km	1.9 km	**2 km ✓**	2.1 km
461. The tally mark for a frequency of 10 is:	𝍸 𝍸 ✓	𝍸 III	𝍸 IIII	IIII IIII
481. The formula for the weighted mean is:	**Weighted Mean = Σ(wx) / Σw ✓**	Weighted Mean = Σ(wx) × Σw	Weighted Mean = Σ(wx) - Σw	Weighted Mean = Σ(wx) + Σw
482. Weighted mean of 74,78,74,90 with weights 4,3,5,6:	**80 ✓**	85	90	95
483. Average where different observations have different weights:	Arithmetic mean	**Weighted mean ✓**	Median	Mode
484. Average of 114 packets distributed to 7 areas (approx.):	**16 ✓**	17	18	19
485. Average budget for years with 5, 7, 8, 6, 7 million:	**6.6 ✓**	7.0	7.5	8.0
486. Arithmetic mean is denoted by:	**$\bar{X}$ ✓**	$\tilde{X}$	$\hat{X}$	SD
487. Average of marks: 84, 91, 72, 68, 87, 78 is:	**80 ✓**	82	84	86
488. The symbol used for summation is:	=	**Σ ✓**	%	Δ
489. Median of: 55, 53, 54, 58, 60, 61, 62, 56, 57, 51, 63:	56	**57 ✓**	58	59
490. Formula for arithmetic mean of ungrouped data:	**ΣX / n ✓**	((n+1)/2)th term	Both a and b	None of these
491. Median of: 110, 125, 122, 130, 124, 127, 120:	**124 ✓**	125	126	127
492. Mode of: 88, 70, 72, 125, 95, 81, 90, 95, 90:	90	95	**90 and 95 ✓**	No mode

Question	Option A	Option B	Option C	Option D
493. The symbol $\bar{X}$ is used for:	Mode	**Median ✓**	Range	Arithmetic mean

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Chapter 12 & 13: Information Handling & Probability

Question	Option A	Option B	Option C	Option D
494. Mean of: 4, 6, 10, 12, 15, 20, 25, 28, 30 is:	**16.67 ✓**	18.00	20.00	22.00
495. Mean of: 12, 18, 19, 0, -19, -18, -12 is:	**0 ✓**	1	2	3
496. Formula $l + [(f_m - f_1)/((f_m - f_1) + (f_m - f_2))] \times h$ is used for:	**Mode ✓**	Median	Range	Arithmetic mean
497. Which data type takes only specific values?	Continuous data	**Discrete data ✓**	Grouped data	Ungrouped data
498. Number of times a value occurs in data is called:	**Frequency ✓**	Relative frequency	Class limit	Class boundaries
499. Midpoint is also known as:	Mean	Median	Class limit	**Class mark ✓**
500. A frequency polygon is constructed by using a:	**Histogram ✓**	Bar graph	Class boundaries	Class limit
501. Difference between greatest and smallest values:	Class limit	Midpoint	Relative frequency	**Range ✓**
502. Measure of central tendency is used to find:	Class boundaries	Cumulative frequency	**Middle or center value ✓**	Frequency
503. If mean of 5, 7, 8, 9, and x is 7.5, what is x?	10	8	**8.5 ✓**	5.8
504. Find mode of data: 2, 5, 8, 9, 0, 1, 3, 7, and 10:	5	7	0	**No mode ✓**
505. Value that appears most often in a data set:	Mean	**Mode ✓**	Median	Weighted mean
506. Find median of: 110, 125, 122, 130, 124, 120:	**123 ✓**	120	125	127
507. Mode of data: 80, 80, 82, 82, 82, 85 is:	80	**82 ✓**	85	0
508. What is the formula to calculate probability?	**P(A) = n(A) / n(S) ✓**	P(A) = n(S) / n(A)	P(A) = n(A) × n(S)	P(A) = n(S) - n(A)
509. Which is NOT a statistical experiment?	Tossing a coin	Rolling a die	**Guessing a number ✓**	Drawing a card

Question	Option A	Option B	Option C	Option D
510. Probability of getting head when tossing a fair coin:	**1/2 ✓**	1/3	1/4	1/6
511. Probability of number divisible by 3 on a fair die:	1/6	**1/3 ✓**	1/4	1/2
512. Sample space when a single coin is tossed:	{A, B}	{1, 2, 3}	{1, 2, 3, 4}	**{H, T} ✓**
513. If a die is rolled twice, total possible outcomes:	6	**36 ✓**	12	24

Chapter 13: Probability (Continued)

Question	Option A	Option B	Option C	Option D
514. 3 favorable outcomes and sample space is 6, probability is:	1/6	1/4	1/3	**1/2 ✓**
515. The complement of event A is denoted by:	P(S)	P(A)	**P(A') ✓**	P(A and B)
516. Probability of NOT getting a 6 on a fair die:	1/6	**5/6 ✓**	1/3	2/3
517. Probability of getting an even number on a fair die:	**1/2 ✓**	1/3	1/4	1/6
518. Rolling two dice, probability of getting a sum of 8:	1/9	**5/36 ✓**	1/36	1/12
519. Probability of getting a double six when rolling two dice:	**1/36 ✓**	1/18	1/12	1/6
540. The chance of occurrence of a particular event is called:	Sample space	Estimated probability	**Probability ✓**	Expected frequency
541. An event that has a greater chance to occur is called a:	Equally likely event	**Likely event ✓**	Unlikely event	Certain event
542. Total number of outcomes when 4 dice are rolled is:	6^2	6^3	**6^4 ✓**	6^6
543. Rolling pair of dice, probability of double 2:	1/6	1/3	5/6	**1/36 ✓**
544. Probability of drawing card not a jack and not a king:	2/13	**11/13 ✓**	2/52	11/52