



REVISION SHEET

SUBJECT: MATHEMATICS

CLASS-VIII

TERM 1

CHAPTER 1- A SQUARE AND A CUBE

Q1 What is the digit at units place of the number 67^2 :

- a. 1 b.3 c.7 d.9

Q2 Write (a) 49 and (b) 169 as a sum of odd natural number

Q3 Find the smallest number to multiply by 1800 to make it a perfect square.

Q4 Find cube root of the following numbers:

- a. 9261 b. 216000

Q5 By which should we multiply 675 to make it a perfect cube? Also, find the cube root of the perfect cube so obtained.

Q6 Give a reason to show that none of the numbers given below is a perfect square:

- (i) 1057
(ii) 23453
(iii) 7928
(iv) 22222

Q7 How many non-perfect square natural numbers lie between the squares of the following numbers?

- (i) 18 and 19
(ii) 78 and 79

Q8 Find the least square number which is divisible by 3,4,5,6 and 8

Q9 Case Study:

A farmer owns two square fields, Field A and Field B, and plans to grow different crops in them.

- The area of Field A is $1,296 \text{ m}^2$.
- The area of Field B is $2,025 \text{ m}^2$.

To plan fencing and irrigation, the farmer needs to determine the dimensions of the fields.

Answer the following questions:

- Find the length of one side of Field A.
- Find the length of one side of Field B.
- How much longer is the side of Field B than the side of Field A?

Q10 Evaluate $\sqrt[3]{1331} + \sqrt[3]{2744} + \sqrt[3]{1728}$

Q11 Case study: A toy company packs its products in two cubical gift boxes, Box A and Box B.

- The volume of Box A is $1,728 \text{ cm}^3$.
- The volume of Box B is $4,913 \text{ cm}^3$.

The company wants to know the dimensions of the boxes before printing the packaging labels.

Answer the following questions:

1. Find the length of one edge of Box A.
2. Find the length of one edge of Box B.
3. By how many centimetres is the edge of Box B longer than that of Box A?
4. Find the total length of all the edges of Box A. (*A cube has 12 equal edges.*)
5. How much greater is the volume of Box B than the volume of Box A?

Q12 Find different ways to express 4104 and 13832 as the sum of two perfect cubes.

Q13 Evaluate $\sqrt{298116}$

CHAPTER 2- POWER PLAY

Q14 Write the following in expanded form using exponents of 10.

(a) 425.2394

(b) 76.359898

Q15 If the mass of the Earth is $5.97 \times 10^{24} \text{ kg}$ and the mass of the Moon is $7.35 \times 10^{22} \text{ kg}$, which is heavier and by how much?

Q16 Express the following in exponential form:

a. $2 \times 2 \times 2 \times 5 \times 5 \times 5 \times 5 \times y \times y \times p \times p \times p \times p$

b. $g \times g \times h \times t \times t \times t \times h \times g \times t \times g \times g$

c. 400

d. 3969

Q17 Express 0.00000532 in scientific notation.

Q18 Express 5329800000 in standard form.

Q19 Find the actual value of these expressions:

(a) 5×10^2

(b) $6^2 \times 2^3$

(c) 4×3^4

(d) $(-4)^2 \times (-6)^2$

(e) $(-3)^3 \times (-2)^4$

Q20 For each statement below, say whether it is Always True, Only Sometimes True, or Never True. Give a reason for your answer:

(i) Every square number is also a cube number.

- (ii) The square of any even number is divisible by 4.
- (iii) The sixth power of a number is divisible by its square.
- (iv) The product of a cube and a square number is always a cube.
- (v) If m^{24} , then m must be a square and cube root of that number.

Q21 Use known squares to find values. If $11^2 = 121$, then find the value of:

- (a) $(1.1)^2$
- (b) $(0.11)^2$
- (c) $(0.011)^2$
- (d) 110^2
- (e) 0.0011^2

Q22 Case Study

A village installs solar panels to generate electricity. One solar panel produces 2^8 watts of power. To increase electricity production, 2^5 identical panels are installed.

Answer the following questions:

- i. Express the total power generated in the form of a single exponent.
 - (a) 2^{13}
 - (b) 2^{40}
 - (c) 2^3
 - (d) 2^{10}
- ii. Which law of exponents is used?
 - (a) Product of powers
 - (b) Quotient of powers
 - (c) Power of a power
 - (d) Zero exponent
- iii. If half of the panels stop working, the remaining power is
 - (a) $2^{12}W$
 - (b) $2^{13}W$
 - (c) $2^{11}W$
 - (d) $2^{10}W$
- iv. If each panel produces 2^7W instead, what will be the total power?

Q23 Case study: A virus sample doubles every hour. Initially, there are 2^5 virus cells.

Answer the following questions:

- i. Express the number of cells after 6 hours as a power of 2.
- ii. Find the actual number of cells.
- iii. If half of the cells are destroyed, express the remaining number as a power of 2.

Q24 Solve and compare the following expressions:

$$\frac{3^6 \times 4^4 \times 7^5}{49^2 \times 2^8 \times 7 \times 3^4} \quad \text{and} \quad \frac{6^2 \times 2^8 \times 7^5}{9 \times 1024 \times 7^3}$$

Q25 Express the number as a product of powers in three different ways.

(You can use positive or negative exponents.)

- (a) 81^3

(b) 256^4

(c) 16^{-6}

Q26 Evaluate: $(7(125^{1/3} + 8^{1/3}))^{1/2}$

CHAPTER 4 – QUADRILATERALS

Q27. If two adjacent angles of a parallelogram are in the ratio 2:3 Find all the angles of the parallelogram.

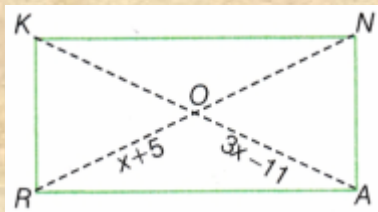
Q28. If the angles of a quadrilateral are in the ratio 3: 6: 8: 13. Find the largest angle.

Q29. Diagonals of a quadrilateral ABCD bisect each other. If $\angle A = 45^\circ$. Then find $\angle B$.

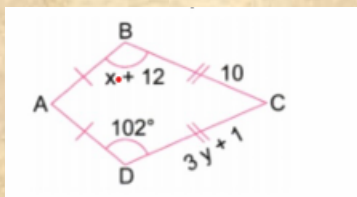
Q30. The angles of a quadrilateral are x° , $x+5^\circ$, $x+10^\circ$, $x+25^\circ$. Then find the value of x

Q31 Construct a kite whose diagonals are of lengths 5 cm and 10 cm

Q32 RANK is a rectangle. Its diagonals meet at O. Find ON

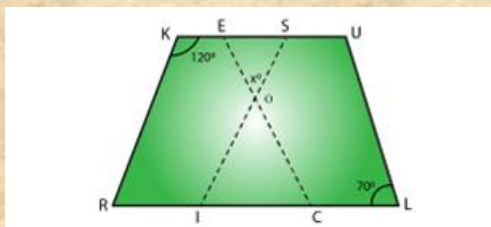


Q33 If ABCD is a kite, find the values of x and y .



Q34 Construct a rhombus whose diagonals are of length 9cm and 6cm.

Q35 .In the following figure RISK and CLUE are parallelograms. Find the measure of x .



Q36 A floor designer uses four different tiles.

- Tile P has diagonals that are equal and bisect each other.
- Tile Q has diagonals that are perpendicular bisectors of each other.

- Tile R has diagonals that bisect each other but are not equal.
- Tile S has diagonals that are perpendicular, but only one diagonal bisects the other.

Answer the following questions:

- Identify Tile P.
- Identify Tile Q.
- Identify Tile R.
- Identify Tile S.

Q37 A bridge is supported by a steel frame in the shape of a quadrilateral.

The engineer notes:

- Opposite sides are parallel.
- The diagonals bisect each other.
- One angle measures 58° .

Answer the following questions:

- Name the quadrilateral.
- Find the angle adjacent to 58° .
- Find the angle opposite to 58° .
- If one side is 18 m and the adjacent side is 12 m, can the frame be a square? Give a reason.

CHAPTER 5 – NUMBER PLAY

Q38 If $24 \times a \times 6$ is a multiple of 3 where 'a' is a digit, what could be the value of a?

Q39 A number when divided by 7 leaves a remainder 3. Write 4 such numbers.

Q40 Find the greatest values of a and b so that the odd number '8ab4b' is divisible by both 3 and 5.

Q41 Find the numbers if the sum of three consecutive numbers is 2

Decide if these statements are always true, sometimes true, or never true(Q42 to Q44)

Q42 The sum of two multiples of 6 is a multiple of 12.

Q43 The product of three consecutive integers is divisible by 6.

Q44 If abcdef is a multiple of 9, then fedcba is also a multiple of 9.

Q45 Check whether 314576 is divisible by 11 or not?

Q46 What is the digital root of 34679?

Find A and B (Q47 to 50)

Q47. $2B + AB = 8A$

Q48. $2AB + AB = B$

Q49. $12A + 6AB = A$

Q50. $AB + 7AB = 98A$

Q51. Check whether the following numbers are divisible by 9 or not?

- a. 45637 b. 9999 c. 17590 d. 645718

Q52. Check whether the following numbers are divisible by 4 or not?

- a. 45654 b. 9959 c. 12890 d. 645716

Q53. Check whether the following numbers are divisible by 5 or not?

- a. 45115 b. 99990 c. 45379 d. 645342

Q54. Check whether the following numbers are divisible by 3 or not?

- a. 45432 b. 5688 c. 17876 d. 642318

Q55. Check whether the following numbers are divisible by 6 or not?

- a. 421737 b. 99876 c. 452190 d. 938562

Q56. Check whether the following numbers are divisible by 8 or not?

- a. 4562 b. 999 c. 17590 d. 649718

Q57. Check whether the following numbers are divisible by 11 or not?

- a. 23876 b. 6799 c. 36278 d. 648653

Q58. A number is divisible by 3. If we reverse its digits, it will still be divisible by 3. Examine whether the statement is always true, sometimes true or never true.

Q59. The middle term in the sequence of 7 consecutive odd numbers is $9g$. Express the other numbers in the sequence in terms of g .

Q60. If $614ab$ is divisible by 20. List all possible pairs of values for a and b .

CHAPTER 6- WE DISTRIBUTE, YET THINGS MULTIPLY

Evaluate using identities: (Q61 to Q67)

Q61 $(6x - 2y)^2$

Q62 (103×97)

Q63 $(\frac{4x}{5} + \frac{5y}{4})^2$

Q64 $(a+2b)(c+3d)$

Q65 $(xy+10z)(xy-10z)$

Q66 $(302)^2$

Q67 $(0.96)^2$

Multiply using distributive property (Q68 to Q70)

Q68. 378×101

Q69. 732×1001

Q70. 8932×11

Q71. The number of students going on a trip is $(x + 2)$ and the cost of one ticket is ₹ $(2x - 1)$. If 3 students cancel their trip, find the difference in the total cost before and after the cancellation.

Q72. Let $a = 24$ and $b = 28$. If both the numbers are increased by 1 then how much will the product increase?

Q73. Let $a = 24$ and $b = 28$. If 24 is increased by 4 and 28 is increased by 6 then how much will the product increase?

Q74. Using the identity $(a + b)(a - b)$, find the area of a rectangle with length 52 m and breadth 48 m.

Q75. Which is larger? Find out without fully computing the product.

(a) 14×25 or 16×23

(b) 25×75 or 28×72

Q76. A school purchases 48 packets of notebooks. Each packet contains 25 ruled notebooks and 15 plain notebooks.

The principal wants to find the total number of notebooks without first finding the total notebooks in one packet.

Answer the following questions:

I. Which expression represents the total number of notebooks?

(a) $48 \times (25 + 15)$

(b) $(48 \times 25) + 15$

(c) $48 + 25 + 15$

(d) $25 \times 15 \times 48$

II. Use the distributive property to find the total number of notebooks.

III. Which property of numbers is used in this calculation?

IV. If each notebook costs ₹20, what is the total cost of all the notebooks?

CHAPTER 7- PROPORTIONAL REASONING-1

Q77. Sabia's father earns ₹ 48000 per month. He spent ₹ 42000. Find the ratio of:

- (a) His expenditure on salary.
- (b) His savings to salary.
- (c) His expenditure on savings.

Q78. Divide ₹ 6288 between A, B, and C in the ratio 3 : 4 : 5.

Q79. A map is given with a scale of 1 cm = 500 km. What is the actual distance between the two places in km, if the distance on the map is 2.5 cm?

Q80. Find the ratio of 50 min to 2 h.

Q81. Write 3 ratios that are proportional to 3 : 2.

Q82. Find the value of z, if $7 : z :: 5 : 20$.

Q83. For the mid-day meal in a school with 120 students, the cook usually makes 15 kg of rice. On a rainy day, only 80 students came to school. How many kilograms of rice should the cook make so that the food is not wasted?

Q84. If the temperature of a city is 35°C then what is the temperature in Fahrenheit?

Q85. In a mixture of 180 L, milk and water are in the ratio 5 : 4. How much water required to be added to the mixture to make this ratio 2 : 3?

Q86. A mixture has 24 kg rice and 16 kg wheat. In what ratio are rice and wheat mixed? If 20 kg wheat is added, then find new ratio of rice to wheat.

Q87 A painter can paint 45 m^2 of wall using 9 litres of paint.

The same amount of paint is required for every square metre.

Answer the following questions:

- I. How much area can be painted with 1 litre of paint?
- II. How many litres of paint are needed for 80 m^2 ?
- III. If 15 litres of paint are available, what area can be painted?
- IV. Explain why this is a direct proportion.

Q88. A baker uses the following recipe:

- 500 g flour
- 300 g sugar
- 200 g butter

This recipe makes 50 cookies.

The baker wants to prepare 120 cookies using the same recipe.

Answer the following questions:

- a. How much flour is required?
- b. How much sugar is required?
- c. How much butter is required?
- d. By what factor has the recipe been scaled?

ASSERTION REASON QUESTIONS

In questions 89 to 105, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.

- 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.

Q89. Assertion (A) : All the parallelograms are rectangles.

Reason (R) : All the rhombuses are parallelograms.

Q90. Assertion (A): The ratio 2 m: 50 cm is 2: 50.

Reason (R): Quantities must first be converted to the same unit before forming a ratio.

Q91. Assertion (A): If the sum of the digits of a number is divisible by 3, then the number is divisible by 9.

Reason (R): A number is divisible by 9 only if the sum of its digits is divisible by 9

Q92. Assertion (A): If three angles of a quadrilateral are 95° , 85° , and 110° , then the fourth angle is 70° .

Reason (R): The sum of the interior angles of a quadrilateral is twice the sum of the angles of a triangle.

Q93. Assertion (A): The ratios 3: 5 and 12: 20 are equivalent.

Reason (R): Multiplying both terms of a ratio by the same non-zero number gives an equivalent ratio.

Q94. Assertion (A): A number divisible by 12 must also be divisible by 4.

Reason (R): Since $12 = 3 \times 4$, every multiple of 12 is also a multiple of 4.

Q95. Assertion (A): The diagonals of every rhombus are equal.

Reason (R): The diagonals of a rhombus bisect each other at right angles.

Q96. Assertion (A): If one diagonal of a kite bisects the other at right angles, the quadrilateral must be a square.

Reason (R): The diagonals of a kite are perpendicular, but only one diagonal bisects the other.

Q97. Assertion (A): The sum of the first 15 odd natural numbers is 225.

Reason (R): The sum of the first n odd natural numbers is n^2 .

Q98. Assertion (A): A perfect square can never end with the digit 8.

Reason (R): The square of any integer can end only in 0, 1, 4, 5, 6, or 9.

Q99. Assertion (A): The product of two even numbers is always even.

Reason (R): Every even number has 2 as a factor.

Q100. Assertion (A): If a number has an odd number of prime factors, then it is not a perfect square.

Reason (R): In the prime factorisation of a perfect square, each prime factor occurs an even number of times.

Q101. Assertion (A): The sum of the first 20 odd natural numbers is 400.

Reason (R): The sum of the first n odd natural numbers is n^2 .

Q102. Assertion (A): Between the squares of two consecutive natural numbers, there are consecutive odd numbers.

Reason (R): $(n + 1)^2 - n^2 = 2n + 1$, which is odd.

Q103. Assertion (A): If a number is a perfect cube, then it is also a perfect square.

Reason (R): Every perfect cube has an integer cube root.

Q104. A student says, "Since $64 = 8^2$, 64 is not a perfect cube."

Assertion (A): The student's conclusion is incorrect.

Reason (R): A number can be both a perfect square and a perfect cube.

Q105. Assertion (A): Every perfect sixth power is both a perfect square and a perfect cube.

Reason (R): $a^6 = (a^2)^3 = (a^3)^2$.

