

ARMY PUBLIC SCHOOL

SUB: Maths - Question Bank (Half Yearly)

Class: VIII (2017-18)

CHAPTER 1: Rational Numbers

1 Mark questions

Q1. Fill in the blanks: $\left(\frac{-4}{9}\right) + \left(\frac{2}{7}\right) = \left(\frac{2}{7}\right) +$ _____

Q2. Write the multiplicative inverse of $\left(\frac{-3}{7}\right)$?

Q3. If sum of two rational numbers is zero, and one of them is $\left(\frac{-9}{11}\right)$ then find the other?

Q4. Zero divided by any (non zero) rational number is always _____.

Q5. Subtract $-4\left(\frac{2}{3}\right)$ from $2\left(\frac{5}{7}\right)$

2 Mark questions

Q1. Verify the commutative property of addition for $\left(\frac{4}{5}\right)$ and $\left(\frac{-7}{8}\right)$

Q2. The product of two rational numbers is $\left(\frac{-5}{7}\right)$. If one number is $\left(\frac{-7}{15}\right)$, find the other?

Q3. Find the perimeter of a rectangular plot with sides $4\left(\frac{3}{4}\right)$ m and $2\left(\frac{5}{8}\right)$ m.

Q4. What number should be added to $\left(\frac{-4}{11}\right)$ to get $\left(\frac{-3}{8}\right)$?

Q5. Simplify: $-8\left(\frac{2}{3}\right) \times 7\left(\frac{1}{2}\right)$

3 Mark questions

Q1. If $p = \frac{2}{3}$, $q = \left(\frac{-4}{5}\right)$, $r = \left(\frac{7}{9}\right)$ then verify that $(p \div q) \div r \neq p \div (q \div r)$

Q2. Using appropriate properties of operations of rational numbers, evaluate:

$$\left(\frac{2}{5}\right) \times \left(\frac{-3}{7}\right) - \left(\frac{1}{14}\right) - \left(\frac{3}{7}\right) \times \left(\frac{3}{5}\right)$$

Q3. In a class of 40 students, $\left(\frac{2}{5}\right)$ of the students like Maths and $\frac{1}{4}$ of the students like science and the rest like English. Find how many students like Maths, Science and English.

Q4. Find the additive inverse of $\left(\frac{4}{5} - \frac{2}{3} - \frac{7}{10}\right)$

Q5. Divide the sum of $\left(\frac{-9}{7}\right)$ and $\left(\frac{3}{5}\right)$ by their difference.

4 Marks Question

Q1. Find four rational numbers between $\left(\frac{-2}{3}\right)$ and $\left(\frac{-3}{4}\right)$

Q2. Area of a square is 8 sq. m more than $\left(\frac{2}{3}\right)$ the area of a rectangle. If the area of the square is 64sq. m, then find the dimensions of the rectangle, given that breadth is $\left(\frac{3}{7}\right)$ of length.

Q3. If $p = \left(\frac{-4}{9}\right)$, $q = \left(\frac{2}{3}\right)$ and $r = \left(\frac{8}{11}\right)$ then verify:

a) $p \times q = q \times p$

b) $(p + q) \div r = p \div r + q \div r$

Q4. Ram donated $\frac{1}{10}$ of his salary to an orphanage, $\frac{1}{4}$ was spent on food, $\frac{1}{5}$ salary spent on rent and electricity and $\frac{1}{20}$ on telephone. He donated Rs 6000 to Prime Minister Relief fund. He was left with Rs 3000 with him. Find his monthly salary. Should we donate the money for needy? What values are being promoted?

Q5. If $3\frac{1}{2}$ litre of petrol costs Rs $270\frac{3}{8}$, then find the cost of 8 litre of petrol.

CHAPTER 2: Exponents and powers

1 Mark questions

Q1. Find the value of $(2^0 + 3^0 \times \left(\frac{1}{4}\right)^0)$

Q2. Express $9^{(-3)}$ as a power with base 3.

Q3. Write 0.0000000456 in standard form.

Q4. Write 1.63×10^{10} in usual form.

Q5. Write 3045.023 in expanded form

2 Mark questions

Q1. Simplify: $\left(\frac{625}{16}\right)^{-\frac{3}{4}}$

Q2. Evaluate $\left(\frac{1}{3}\right)^{-2} + \left(\frac{1}{4}\right)^{-2} + \left(\frac{1}{5}\right)^{-2}$

Q3. Evaluate: $9.46 \times 10^{14} - 9.46 \times 10^{12}$

Q4. By what number should $\left(\frac{2}{-3}\right)^{-3}$ be divided to get $\left(\frac{3}{2}\right)^2$?

Q5. Find the value of x for which $\left(\frac{-4}{5}\right)^2 \times \left(\frac{-5}{4}\right)^{2x} = \frac{625}{256}$?

3 Mark questions

Q1. Simplify:

a) $\frac{2^8 \times b^5 \times a^8}{4^3 a^3 b^3}$

b) $\frac{12^4 \times 9^3 \times 4}{6^8 \times 8^4 \times 27}$

Q2. Aman is suffering from anemia. Anemia causes deficiency of Red Blood Cells. The size of a red blood cell is 0.00000007mm and Rohit is suffering from typhoid. Typhoid is caused by bacteria Salmonella typhi of size 0.000000005 mm. Express both the sizes in standard form. Both Aman and Rohit are advised to have healthy food and avoid junk food. Why should we eat healthy food? What values are being promoted?

Q3. Compare the thickness of a piece of paper to diameter of a wire on a computer chip. Given that thickness of paper = 0.0016cm and diameter of a wire on a computer chip is 0.000003 m.

Q4. Find the multiplicative inverse of $(5^0 + 3^0) + (5^0 - 3^0)$

Q5. Evaluate $\left(\frac{4}{5}\right)^2 \times 5^4 \times \left(\frac{2}{5}\right)^{-2} \div \left(\frac{5}{2}\right)^{-3}$

4 Mark questions

Q1. Evaluate: $\left(\frac{x^p}{x^q}\right)^{p+q} \times \left(\frac{x^q}{x^r}\right)^{q+r} \times \left(\frac{x^r}{x^p}\right)^{r+p}$

Q2. Evaluate: $\frac{x^p}{x^p + x^q} + \frac{1}{x^{p-q} + 1}$

Q3. If $\left(\frac{25}{4}\right)^{-3} \times \left(\frac{2}{5}\right)^4 = \left(\frac{p}{q}\right)^{10}$ find the value of $\left(\frac{p}{q}\right)^2$

Q4. Simplify and write in exponential form: $\frac{2^{-4} \times 6^5 \times 2^6}{3^3 \times 12^3}$

Q2. Find a Pythagorean triplet whose smallest number is 8?

Q3. Find the square root of 556.96 by division method.

Q4. Find the least number which must be subtracted to 520 to make it a perfect square?

Q5. The product of two numbers is 7260. If one number is 15 times the other number, find the numbers?

4 Mark Questions

Q1. Find the smallest number by which 56448 must be divided to make it a perfect square. Also find the square of the new number?

Q2. A person wants to plant 2916 medicinal plants with a board depicting the diseases in which that can be used. He planted these in the form of rows. If each row contains as many plants as the number of rows, then find the number of rows. Why should we plant medicinal plants? What values are being promoted?

Q3. A square field is to be ploughed. Ravi gets it ploughed in Rs 34560 at the rate of Rs 15 per sq.m. Find the length of side of square field.

Q4. A gardener has 1500 plants. He wants to plant these in such a way that the number of rows and the columns remain same. Find the minimum number of plants he needs more for this?

Q5. Is 2352 a perfect square? If not find the smallest multiple of 2352 which is a perfect square. Find the square root of the new number?

CHAPTER 4: Cubes and Cube Roots

1 Mark Questions

Q1. Find the estimated cube of 234976

Q2. Evaluate $\sqrt[3]{125 \times 64}$

Q3. Find the cube root of (-343)

Q4. Write the cube of $\left(\frac{-2}{5}\right)$?

Q5. Is 243 a perfect cube? Check.

2 Mark Questions

Q1. Find the side of the cube if the volume is 5832m^3 ?

Q2. Calculate the cube root of: $1\frac{127}{216}$.

Q3. What is the cube root of 9.261?

Q4. Find the cube root of 13824?

Q5. Write the ones digit of the cube of each of the following:

a) 223

b) 77

3 Mark Questions

Q1. Three numbers are in the ratio 1:2:3. The sum of their cubes is 7776. Find the numbers?

Q2. Two numbers are in the ratio 2:3. If difference of their cubes is 152, find the numbers.

Q3. Divide the number 10935 by the smallest number so that the quotient is a perfect cube?

Q4. The difference between two cubes is 189. If the smaller number is 3, then find the other larger number?

Q5. Find the cube root of 0.000216.

4 Mark Questions

Q1. A school decided to award prizes to their students for three values honesty, punctuality and obedience. If the number of students getting prizes for honesty, punctuality and obedience are in the ratio 2: 3: 4 and their product is 1944, find the number of students getting prizes for each value. Which quality you prefer to be awarded most and why? What values are being promoted?

Q2. Multiply 1944 by the smallest number so that product is a perfect cube? Also find the cube root of the product.

Q3. Find the volume of a cubical box if the cost of painting its outer surface is Rs 1440 at the rate of Rs 15 per sq. m.

Q4. Rahul makes a cuboid of plasticine of sides 5cm, 2cm and 5cm. how many such cuboids will he need to form a cube.

Q5. Find the side of a cube whose volume is 4096m^3 .

CHAPTER 5: Playing with Numbers

1 Mark Questions

Q1. Find the digits **A** and **B** when: A 6

$$\begin{array}{r} +6 \ B \\ \hline \end{array}$$

$$\begin{array}{r} 1 \ 5 \ A \\ \hline \end{array}$$

Q2. Find the digits **A** and **B** if: A A B

$$\begin{array}{r} \times \ \ \ B \\ \hline \end{array}$$

$$\begin{array}{r} 8 \ 8 \ A \\ \hline \end{array}$$

Q3. Check the divisibility of 98765436 by 11.

Q4. Write the quotient when the difference of 2 digit number ab and the number obtained by reversing the digits is divided by

i) 9 ii) $(a-b)$

Q5. Check the divisibility of 124396 by 4.

2 Mark Questions

Q1. Check the divisibility of 2495684 by 4 and 8.

Q2. Check the divisibility of 4896852 by 3 and 9.

Q3. Complete the magic square given below using 1 to 9 only once so that numbers along each row, column and diagonal is 15

6	1	
	5	
		4

Q4. If $28x463$ is a multiple of 3, find the value of x .

Q5. Write the quotient when the sum of a 2-digit number 59 and the number obtained by reversing the digits is divided by

i) 11

ii) sum of digits

3 Mark Questions

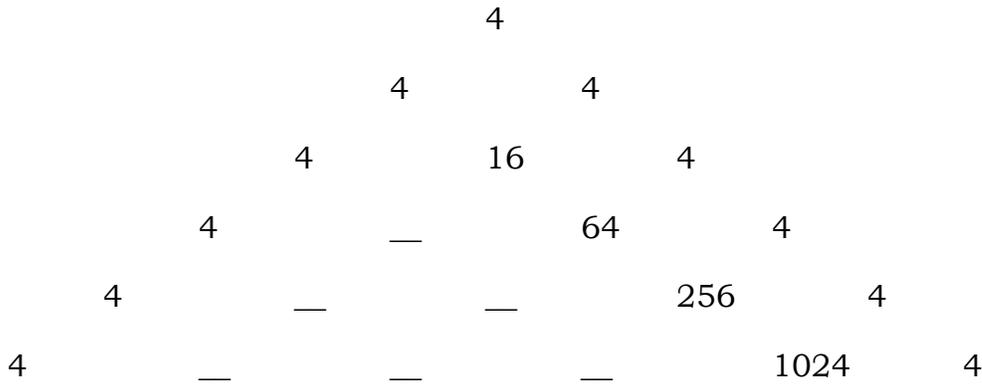
Q1. Check if 433497680 is a multiple of 7.

Q2. If $6130x782$ is divisible by 11, where x is a digit, what is the value of x .

Q3. The sum of digits of a 2-digit number is 15. If the number obtained by reversing the digits is 27 less than the original number, find the number.

Q4. Check the divisibility of 234567 numbers by 2,3 and 9

Q5. Fill in the blanks to complete the following number triangle:



4 Mark Questions

Q1. Which of the numbers are divisible by 7:

- i) 4618894875 ii) 3982377

Q2. Which of the following numbers are divisible by 2,4,8

- i) 6533142 ii) 55859248

Q3. Without actual calculation, write the quotient when sum of 3-digit numbers 567, 675 and 756 is divided by

- i) 111 ii) 18 iii) 37 iv) 3

Q4. In a 3-digit number, units digit, tens digit and hundred digits are in the ratio 2:3:4. If the difference of original number and the number obtained by reversing the digits is 396, find the numbers.

Q5. In a 3-digit number, units digit is one more than the hundred's digit and the ten's digit is one less than the hundred's digit. If the sum of the original 3-digit number and the number obtained by changing the order of digits cyclically is 2664, find the number.

CHAPTER 6: Percentage and its applications

1 Mark Questions

Q1. Express the following in percentage:

i) 11:20

ii) $1\frac{1}{4}$

Q2. Find the loss or profit percentage when C.P.=Rs.12400 and S.P.= Rs.11780

Q3. Calculate the discount when Marked Price = Rs 680 and discount percentage = 15%

Q4. Find the buying price of a carpet of Rs520 when 5% VAT is added to it.

Q5. What percentage of 400 is 30.

2 Mark Questions

Q1. Ravi bought an A.C. for Rs 48500 including 10% VAT. Find the price of A.C. before VAT was added.

Q2. An article is marked Rs 12000 is available for Rs.11280. Find the discount given and the discount percentage.

Q3. A dealer is selling an article at a discount of 10% which is marked at Rs.800, and still makes 25% profit. Find:

a) Selling price

b) Cost Price

Q4. By selling a chair for Rs. 391, Ali suffers a loss of 15%. Find its cost price.

Q5. Praveen bought a cycle for Rs.2500, then spent Rs 500 on its repairs and sold it for Rs 3300. Find his loss or gain percentage.

3 Mark Questions

Q1. A dealer buys a bicycle for Rs. 1250 and mark 40% above its cost price. If he allows 8% discount, find:

i) Marked Price

ii) Selling Price

iii) Profit Percentage

Q2. The printed price of a refrigerator is Rs 30,000. A dealer allows two successive discounts of 10% and 6%. Find the price which a customer has to pay for the refrigerator.

Q3. A shopkeeper was involved in tax evasion. To save tax he never gave receipts to his customer. He sold an article for Rs 660 including 10% VAT. Find the amount of VAT not paid by him to the government. Is tax evasion correct? Why should we pay tax?

Q4. In an exam atleast 40% marks are required to pass the exam. Ramesh uses unfair means and tries to pass the exam but fails by 20 marks. If he scored 160 marks, find the max marks? Is using unfair means in exam good? Why should we not use unfair means?

Q5. Ramu purchased 20 parrots at Rs35 each. Six parrots flew away and Ramu sold the rest of the parrots at Rs 44 each. Calculate the profit or loss percentage of Ramu.

4 Mark Questions

Q1. Marked price of an article is 2800 and rate of VAT is 8%. Shopkeeper allows a discount of 20% and still makes a profit of 10%, if he spent 4% as overheads then find the original cost price of the article and final selling price including VAT.

Q2. Find a single discount equivalent to two successive discounts 40% and 10%.

Q3. Suraj wants to purchase a laptop whose marked price is Rs.35100 excluding 8% VAT. But he has Rs.35100 only, so he requests the shopkeeper to reduce the price of laptop in such a way that he has to pay Rs.35100 including VAT. Find the amount reduced by the shopkeeper.

Q4. The monthly salary of a school teacher in 2015 was Rs.16000. it increased by 10% in 2016 and again 10% in 2017. What is the salary in 2017.

Q5. Ajit bought an old car for Rs.78000. he spent Rs.2000 on repairs and repainting the car. He sold the car to Anuj at a gain of 15%. Anuj also sold it to Anthony at a loss of 5%. What did the car cost to Anthony?

Q3. Pawan purchased a scooter for Rs.16000. After how many years would the cost of the scooter depreciate to Rs.14440 if the rate of depreciation is 5%.

Q4. At what rate will Rs.40000 amount to Rs.60835 in 3 years at compound interest compounded annually?

Q5. The value of a machine worth Rs.500000 is depreciating at the rate of 10% every year. In how many years will its value be reduced to Rs.364500?

4 Mark Questions

Q1. The value of machine, purchased two years ago, depreciates at the annual rate of 10%. If its present value is Rs.97200. Find:

- i) its value after 3 years
- ii) its value when it was purchased

Q2. Kapil invests Rs.12000 for 3 years at 10% per annum compound interest in the bank. Calculate:

- i) the compound interest for 2nd year
- ii) the compound interest for 3rd year

Q3. The population of a city increases each year by 5% of what it has been at the beginning of the year. If its present population is 67600. Find:

- i) its population 2 years hence
- ii) its population 2 years ago

Q4. Find the amount and compound interest on Rs.5000 in 2 years if the rates are 5% and 6% for the successive years.

Q5. A person wants to invest Rs100000 in fixed deposit scheme for 2 years. His friend explained him two types of schemes first is yielding 10% p.a. compounded annually, second is yielding 10% p.a. compounded semi-annually. Which scheme is better and why? Why investment is important for future life.

CHAPTER 8: Direct and Inverse Variation

1 Mark Questions

Q1. If X and Y are in direct variation. Complete the following table:

X	5	10	
Y	8		40

Q2. Observe the following tables and find which pair of variables are in inverse proportion

X	10	20	16	32
Y	80	40	50	25

X	25	45	30	15
Y	40	60	30	50

Q3. If 12m of wire costs Rs.24 then what is the cost of 8m wire?

Q4. A tree 12m high casts a shadow of length 8m. What would be the height of tree whose length of shadow is 6m?

Q5. If X and Y are inversely proportional then complete the table:

X	10			80
Y	4	2	1	

2 Mark Questions

Q1. If 8 kg sugar costs Rs252, what is the cost of 12kg of sugar?

Q2. If one dozen pencils cost Rs.21, then find the cost of two score pencils?

Q3. If 20 labourers can dig a pond in 12 days, then how many days will it take 16 labourers to dig the pond?

Q4. An electric pole 14m high casts a shadow of 10m. Find the height of a tree that casts a shadow of 15m under similar conditions?

Q5. It takes 10 days for 15 men to construct a wall. How many men should be put on the job if it is required to be constructed in 6 days?

3 Mark Questions

Q1. A farmer can reap a field in 12 days while his wife can do it in 9 days. If they work together, in how many days can they reap the field?

Q2. A car takes 2 hours to reach a destination by travelling at the speed of 60km/h. How long will it take when the car travels at the speed of 80km/hr?

Q3. If 3 men or 7 women can earn 525 per day, how much would 10 men and 13 women earn per day?

Q4. A and B together can dig a pond in 20 days. They work together for 8 days and then B leaves the work. How long will A take to finish the work if A alone can dig the pond in 30 days.

Q5. A can do $\left(\frac{1}{5}\right)^{th}$ of a certain work in 2 days and B can do $\left(\frac{2}{3}\right)^{rd}$ of it in 8 days. In how much time can they together complete the work.

4 Mark Questions

Q1. The cost of fuel for running a train is proportional to the speed generated in km/h. It costs Rs.40 per hour when train is moving with 20km/h. what would be the cost of fuel per hour, if the train is moving with 60km/h? Keeping the safety and fuel prices in mind, state the values promoted in the question.

Q2. A pipe can fill tank in 9 hours. There is a leakage in the bottom of the tank due to which tank is filled in 12 hours. If the tank is full, how much time will leakage take to empty the tank? Should we repair the leakage of the tank immediately? What values are being promoted?

Q3. If 8 labourers can earn Rs9000 in 15 days, how many labourers can earn Rs6300 in 7 days?

Q4. Three typists working 8 hours a day type a document in 10 days. If only 2 typists are working, how many hours a day should they work to finish the job in 12 days?

Q5. 1200 soldiers in a fort had enough food for 28 days. After 4 days, some soldiers were sent to another fort and thus, the food lasted for 32 more days. How many soldiers left the fort?

CHAPTER 9: Algebraic Expressions and Identities

1 Mark Questions

- Q1. Write the co-efficient of x^2 in $9x^3yz$?
- Q2. Identify the polynomials and write their degrees
- a) $\frac{4}{5}x^3 - 2x^2y^4 + 3xy$
- b) $2x^2y - 4\frac{x}{y} + 7y^5$
- Q3. Find the product of $4\frac{4}{5}xy$ and $3\frac{1}{8}xz$
- Q4. Add $2a(a-2b)$ and $4b^2 - 6a^2$
- Q5. Using identity evaluate $(98)^2$

2 Mark Questions

- Q1. Using identity evaluate $(206)^2 - (194)^2$
- Q2. Add $3x^2 - 5xy + 4y^2 - 1, 7y^2 - 9xy + 5$ and $7xy - 4x^2 + y^2 - 4$
- Q3. Subtract $4a - 7ab + 3b + 12$ from $14a - 7ab + 5b + 9$
- Q4. Find the area of a rectangle whose length is $(2x + 3)$ and breadth is $(2x - 1)$
- Q5. Divide: $2x^3 - 3x^2 + 4x$ by $2x$

3 Mark Questions

- Q1. If $a + b = 5$ and $ab = 7$, then find the value of $a^2 + b^2$
- Q2. Multiply $(2x + 3y - 1)$ and $(x - 2y + 1)$
- Q3. Show that $\left[\frac{4}{5}a - \frac{5}{4}b\right]^2 + 2ab = \frac{16}{25}a^2 + \frac{25}{16}b^2$
- Q4. Divide $3y^3 + 10xy^2 - 17x^2y + 6x^3$ by $2x - 3y$
- Q5. Add $4x^2 + 2y^2 + 8xy$ to the product of $(9x + 5y)$ and $(3y - 7x + 2)$

4 Mark Questions

Q1. Divide $(3 - 4x - 32x^2 - 19x^3 + 10x^4)$ by $(3x - 1 + 5x^2)$ and verify your answer.

Q2. If $x - \frac{1}{x} = 9$ then evaluate $x^2 + \frac{1}{x^2}$ and $x^4 + \frac{1}{x^4}$

Q3. If $a^2 + b^2 = 48$ and $ab = 5$ then find the values of
i) $(a + b)$ ii) $(a - b)$

Q4. Simplify the following expression and evaluate them as directed:

$$(3ab - 2a^2 + 5b^2) \times (2b^2 - 5ab + 3a^2) + 8a^3b - 7b^4 \text{ for } a = 1 \text{ and } b = -1$$

Q5. Using the identity $(a + b)^2 = a^2 + 2ab + b^2$, derive the formula for $(a + b + c)^2$. Hence find the value for $(2x + 3y - 4z)^2$.