

**SAINIK SCHOOL NALANDA**  
**HOLIDAY HOMEWORK, 2017-18**

**CLASS VI B**

**ASSIGNMENT - KNOWING OUR NUMBERS**

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Q1 In 789645 the digit which has the greatest place value is \_\_\_\_\_

- a) 9                      b) 8                      c) 6                      d) 7

Q2 The difference between the largest three digit number and the largest three digit number with distinct digits is

- a) 10                      b) 0                      c) 12                      d) 13

Q3 One million is equivalent to

- a) 100 thousands      b) 10 thousand      c) 1000 thousands      d) 1 crore

Q4 Write each of the following numbers in numeral form and place commas correctly.

(i) Seventy three lakh seventy thousand four hundred seven

(ii) Nine crore five lakh forty one

(iii) Fifty eight million four hundred twenty three thousand two hundred two.

Q5 Find the sum of greatest four digit number and the smallest three digit number, each number having three different digits.

Q6 Find the greatest and the smallest numbers in each of the following cases and arrange the numbers in ascending and descending order.

a) 177048, 999999, 10000000, 305006

b) 237045, 823765, 62113, 9999

Q7 Write all possible numbers using the digits 5, 0, 2. Repetition of digits is not allowed.

Q.8 Write the number names for each of the following in the Indian system of numeration as well as International system of numeration.

(i) 435002 (ii) 1047509 (iii) 25202805

Q9 In each case, use all the digits only once to make the smallest possible 6 digit number.

a) 4, 7, 1, 8, 9, 2

b) 5, 1, 2, 9, 6, 8

Q10 Write the smallest and the greatest 7 digit numbers by using the following digits (repetition allowed)

a) 6, 2, 7, 4, 3, 5

b) 3, 6, 9, 7, 0, 4

Q11 Ravi gets Rs 350 per day as daily wages. What would be his salary in the month of Feb2012, assuming he worked on all days of the month? What quality of labourer is judged here?

Q12 In a four digit number, the digit in thousand's place is 4 and the digit in the one's place is twice that in the thousand's place. The number has no hundreds. The ten's place digit is the difference between the digits in the thousand's place and the hundred's place. Find the number.

Q13 Write the digit whose place value is always equal to its face value irrespective of its position in any number.

Q14 The distance between Anu's home and her school is 4km 85m. Every day she cycles both ways. Find the distance covered by her in a week.(Sunday being a holiday). What are the advantages of cycling?

Q 15 Round off the given numbers as directed:

i) 534 to nearest hundreds

ii) 67 to nearest tens

iii) 45325 to nearest thousands

Q16 Estimate

i)  $13,805 + 3,977$  ( Rounding off to nearest thousands)

ii)  $673 \times 833$  ( Rounding off to nearest tens )

Q17 In a library, there are 23,180 books of English, 9,128 books of Hindi and 709 books of other languages. Find the total number of books in library by rounding off to nearest hundreds.

Q18 Anu's school is 3Km 520m away from her home. One day while returning from her school, just after covering 1 km 370m distance, she saw a woman who was bleeding. She took her to the hospital which was again 3 km 520m away from that place and got her admitted. She came back to her home which was 2km 630m from the hospital.

a) Find the total distance covered by Anu on that day( using property)

b) What value of life is depicted by Anu.

**SAINIK SCHOOL NALANDA**  
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**CLASS-VII A**

**ASSIGNMENT – FRACTIONS AND DECIMALS**

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Q.1 Fill in the blanks:

(i) A ..... is a fraction that represents a part of a whole.

(ii) In a proper fraction, the numerator is always.....than the denominator.

(iii) The value of a proper fraction is always .....than 1.

(iv)The numerator of a unit fraction is always.....

(v) The .....fractions have same denominator.

Q.2 Arrange in the ascending order:

$\frac{4}{6}$ ,  $\frac{3}{8}$ ,  $\frac{6}{112}$ ,  $\frac{5}{18}$

Q.3 Simplify:

(i)  $4\frac{1}{7} - 5\frac{1}{9} + 7\frac{2}{5}$

(ii)  $7\frac{5}{11} + 9\frac{7}{12} - 11\frac{13}{15}$

Q.4 What should be added to  $15\frac{4}{5}$  to get  $12\frac{3}{5}$ .

Q.5 The cost of Mathematics book is Rs.  $25\frac{3}{4}$  and that of Science book is Rs. $20\frac{1}{2}$ . Which book costs more and by how much?

Q.6 Find (i)  $\frac{2}{3}$  of a day (ii)  $\frac{7}{25}$  of a litre

Q.7 Priya spends  $\frac{3}{5}$  of her income on household expenses and  $\frac{1}{7}$  of her income on personal expenses. If her monthly income is Rs. 35,000, find her monthly savings.

Q.8 By what number should  $6\frac{2}{9}$  be multiplied to get  $4\frac{4}{9}$  ?

Q.9 The length of a rectangular plot of area  $65\frac{1}{3} \text{ m}^2$  is  $12\frac{1}{4} \text{ m}$ . What is the width of the plot?

Q.10 The product of two numbers is  $18\frac{5}{6}$  . If one of the numbers is  $3\frac{2}{3}$  find the other.

Q.11 Arrange in ascending order: 5.6, 0.93, 1.87, 1.9

Q.12 Simplify;

(i)  $108.032 - 86.8$  (ii)  $100 - 26.32$  (iii)  $36.54 - 15.79 + 85.2 - 57.615$

Q.13 What is to be subtracted from 17.1 to get 2.051?

Q.14 Find the product:

(i)  $0.054 \times 10$  (ii)  $1000 \times 0.1$  (iii)  $316.85 \times 2.4$  (iv)  $3.25 \times 47$  (v)  $1.01 \times 0.1 \times 0.01$

Q.15 A car covers a distance of 14.75 km in one litre of petrol. How much distance will it cover in 15.5 litres of a petrol?

Q.16 Find:

(i)  $57.44 / 8$  (ii)  $0.1875 / 25$  (iii)  $0.89 / 10$  (iv)  $2.86 / 100$   
(v)  $8.91 / 1000$  (vi)  $2.05 / 5000$  (vii)  $0.48 / 0.8$  (viii)  $2.142 / 0.09$   
(ix)  $103.96 / 2.3$  (x)  $144 / 0.12$

Q.17 Shikha cuts 50m of cloth into pieces of 1.25m each. How many pieces does she get?

Q.18 The total weight of some bags of wheat is 1743kg. If each bag weighs 49.8kg, how many bags are there?

**SANIK SCHOOL NALNADA  
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**ASSIGNMENT-INTEGERS**

**CLASS- VIII B**

Q1. Simplify (i)  $-24 - (-46)$  (ii)  $48 + (-29) - 90$  (iii)  $-48 + (-35) - (-106) - 100$

Q2. Write the additive inverse of the following: -5, 0, 27

Q3. Subtract the sum of -98 and 46 from -110.

Q4. From the sum of 109 and (-207), subtract 49.

Q5. Simplify: (i)  $-|11-15|$  (ii)  $-|16| + |-26|$  (iii)  $-|-25| - |36|$

Q6. The temperature on Monday in Shimla was  $-5^{\circ}\text{C}$  while the temperature in Delhi was  $5^{\circ}\text{C}$  on the same day. What was the difference in temperatures of the two places?

Q7. Arrange in ascending order: -31, 139, -203, -97, 0, 406.

Q8. The sum of two integers is -58. If one of them is -98, find the other.

Q9. Fill in the blanks:

i) Largest positive integer = \_\_\_\_\_

ii) Smallest negative integer = \_\_\_\_\_

iii) Largest negative integer = \_\_\_\_\_

iv) Subtracting an integer from an integer is the same as adding its \_\_\_\_\_ to the given integer.

Q10. Subtract: i) -56 from -100 ii) -956 from -697

Q11. (i) For any two integers 'a' and 'b',  $a + b$  is an integer. It shows that integers are \_\_\_\_\_ under addition

(ii) Are integers closed under subtraction? Give reasons to support your answer.

Q12 a) Write a pair of integers whose difference is -15.

b) Write a pair of negative integers whose difference gives 18.

c) Write a negative integer and a positive integer whose sum is 7.

Q13 (i) Additive identity for integers - \_\_\_\_\_

(ii) Multiplicative identity for integers - \_\_\_\_\_

Q14 Find the products:

(i)  $-9 \times -4$  (ii)  $(-36) \times 12$  (iii)  $(-7) \times 35$  (iv)  $(-18) \times (-13)$  (v)  $(-10) \times 0 \times (-18)$

Q15 Find the product using suitable properties.

i)  $36 \times (-73) + 36 \times (-27)$

ii)  $(-85) \times 102$

iii)  $571 \times 35 + (-571) \times 65$

iv)  $-63 \times (-39) + 63$

v)  $-57 \times (-49)$

Q16 The product of two integers is -153. If one of the integers is (-17), find the other.

Q17. Evaluate:

i)  $(-60) \div 4$

ii)  $95 \div (-19)$

iii)  $(-49) \div (-7)$

iv)  $0 \div 32$

v)  $0 \div (-64)$

Q18. A boy threw a stone 12m high in the air, which fell and settled down at the bottom of a pond 12m deep. What is the total distance that the stone fell to reach the bottom of the pond?

**SAINIK SCHOOL NALANDA  
HOLIDAY HOMEWORK**

**CLASS:-IXB**

**Assignment - Number System**

1. Explain each of the following in  $p/q$  form:

(i) 0.675      (ii) 0.32222....      (iii) 0.123333....      (iv) 0.003525252.....

2. Find two irrational numbers and two rational numbers between 0.5 and 0.55.

Simplify each of the following by rationalizing the denominator.

3.  $7 + 3\sqrt{5} / 7 - 3\sqrt{5}$

4.  $2\sqrt{3} - \sqrt{5} / 2\sqrt{2} + 3\sqrt{3}$

5.  $7\sqrt{3} - 5\sqrt{2} / \sqrt{48} + \sqrt{18}$

6. Simplify:  $-3\sqrt{5} + \sqrt{5} + \sqrt{180}$

7. Simplify:  $-\sqrt{54} + \sqrt{150}$

8. Give an example each of two irrational numbers, whose

(i) difference is a rational number

(v) product is a rational number

(ii) difference is an irrational number

(vi) product is an irrational number

(iii) sum is a rational number

(vii) quotient is a rational number

(iv) sum is an irrational number

(viii) quotient is an irrational number

9. Without actual division decide which of following rational numbers have terminating decimal representation:-

(i)  $33 / 375$

(ii)  $15 / 28$

(iii)  $16/45$

(iv)  $12/35$

(v)  $80 / 27$

(vi)  $123 / 1250$

10. Examine whether the following numbers are rational or irrational

(i)  $3\sqrt{8} / \sqrt{2}$

(ii)  $(\sqrt{2} + 1/\sqrt{2})^2$

(iii)  $(3 + \sqrt{2})(2 - \sqrt{3})(3 - \sqrt{2})(2 + \sqrt{3})$

11. Represent  $\frac{8}{5}$  and  $\sqrt{20}$  on a number line.
12. Represent  $\sqrt{5.2}$  on a number line.
13. Visualize 0.436 on the number line.
14. Insert 6 rational numbers between  $-\frac{2}{3}$  and  $\frac{3}{4}$ .
15. Find two irrational numbers between  $\sqrt{3}$  and 2.
16. Rationalise the denominator of  $\frac{1}{1 - \sqrt{7}}$ .
17. Given  $\sqrt{3} = 1.732$  app., find to three places of decimal the value of  $1 + \frac{2\sqrt{3}}{2 - \sqrt{3}}$
18. Find the values of a and b if  $(5 + 2\sqrt{3}) / (7 + 4\sqrt{3}) = a + b\sqrt{3}$

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**CLASS: IXB**

**ASSIGNMENT -POLYNOMIALS.**

1. Find the remainder in each case if p(x) is divided by g(x):
  - (i)  $p(x) = x^3 - 6x^2 + 2x - 4$ ,  $g(x) = 1 - 2x$ ;
  - (ii)  $p(x) = 2x^3 - 5x^2 + 4x - 3$ ,  $g(x) = 3x + 1$ .
2. In each of the following, find the value of k such that g(x) a factor of p(x):
  - (i)  $p(x) = 2x^3 + kx^2 + 11x + k + 3$ ,  $g(x) = 2x - 1$ ;
  - (ii)  $p(x) = 25x^4 + 10x^3 - 5kx^2 + 15kx - 1$ ,  $g(x) = 2 + 5x$ .
3. Find the value of k if  $p(x) = 3x^3 - 2kx^2 + 5x - 4$  and  $q(x) = 2x^3 - kx^2 - 5k$  leave the same remainder when divided by  $x + 1$
4. Factorize each of the following polynomials:
  - (i)  $45a^3b - 30a^2b^2 + 5ab^3$ ;
  - (ii)  $16(2x - 1)^2 - 25(x - 2)^2$ ;
  - (iii)  $4a^3 - 9b^2 - 2a + 3b$ ;
  - (iv)  $a^2 - 19a - 216$ ; (v)  $1 - 2a - 35a^2$ ;
  - (vi)  $5x^2 - 8x - 21$ ; (vii)  $x^2 + 17xy - 84y^2$ ;
  - (viii)  $9x^2 + 49y^2 + 4z^2 + 42xy - 28yz - 12zx$ ;
  - (ix)  $9a^3 - 243b^3$ ;
  - (x)  $512x^3 + 729y^3$ ;
  - (xi)  $216 - 8x^3 - 27y^3 - 108xy$ ;
  - (xii)  $x^6 - 64$ ; (xiv)  $(3a - 2b)^3 + (2b - 5c)^3 + (5c - 3a)^3$ ;
5. Factorize each of the following cubic polynomials using Factor Theorem:
  - (i)  $p(x) = x^3 - 10x^2 - 53x - 42$ ; (ii)  $p(x) = x^3 + 7x^2 - 21x - 27$ ; (iii)  $p(x) = x^3 + x^2 - 17x + 15$ .
6. Evaluate each of the following using a suitable identity:
  - (i)  $97 \times 103$ ;
  - (ii)  $83 \times 105$ ;
  - (iii)  $99^3$ ;
  - (iv)  $77^2 - 23^2$ ;
  - (v)  $505^3$ ;
  - (vi)  $39^3 - 23^3 - 16^3$ ;

(vii)  $95 \times 93$ ;

(viii)  $37^2 - 2 \times 37 \times 33 + 33^2$ .

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**CLASS-XB**

**ASSIGNMENT -POLYNOMIALS**

Q1 Find the zeroes of the following quadratic polynomials and verify the relationship between the zeroes and the coefficients of the polynomials: -

(a)  $p(x) = 8x^2 - 19x - 15$ ;

(b)  $f(x) = 5x - 4\sqrt{3} + 2\sqrt{3}x^2$ .

Q2 Find the zeroes of the quadratic polynomial  $f(x) = ax^2 + (b^2 - ac)x - bc$  and verify the relationships between the zeroes and its coefficients.

Q3 Find a quadratic polynomial each with the given numbers as the sum and product of its zeroes respectively: -

(i)  $-1/\sqrt{2}, 1/\sqrt{2}$

(ii)  $\sqrt{5}, -2$

(iii)  $-1/\sqrt{2}, 2/3$

Q4 Find the quotient and remainder when  $p(x)$  is divided by  $g(x)$ .

(i)  $p(x) = 6x^3 + 11x^2 - 39x - 65, g(x) = x^2 - 1 + x$ .

(ii)  $p(x) = 4 + 9x^4 - 4x^2, g(x) = x + 3x^2 - 1$

(iv)  $p(x) = 30x^4 - 82x^2 + 11x^3 + 48 - 12x, g(x) = 3x^2 + 2x - 4$ .

Q5 What must be added to  $4x^4 + 2x^3 - 2x^2 + x - 1$ , so that the resulting polynomial is divisible by  $x^2 + 2x - 3$ ?

Q6 Find the values of  $p$  and  $q$  so that  $1, -2$  are zeroes of the polynomial  $f(x) = x^3 + 10x^2 + px + q$ .

Q7 If  $p(x) = 2x^4 + 3x^3 - 3x^2 - 2x + 5$  is divided by  $2x^2 + 3x - 1$ , then the remainder is  $x - a$ . Find  $a$ .

Q8 On dividing  $f(x) = 2x^3 - 5x^2 + 4x - 8$  by a polynomial  $g(x)$ , the quotient  $q(x) = 2x - 9$  and remainder  $r(x) = 24x - 17$ . Find  $g(x)$ .

Q9 If  $-2 \pm \sqrt{3}$  are two zeroes of the polynomial  $p(x) = x^4 + 8x^3 + 20x^2 + 16x + 3$ , find the remaining zeroes of  $p(x)$ .

Q10 Find the zeroes of the polynomial  $p(x) = x^3 - 5x^2 - 2x + 24$ , if it is given that the product of its two zeroes is 12.

**SAINIK SCHOOL NALANDA**  
**HOLIDAY HOMEWORK, 2017-18**

**CLASS:-XB**

**ASSIGNMENT- TRIGONOMETRY**

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1. If  $\sin \theta = \frac{a^2 - b^2}{a^2 + b^2}$ , find the values of other 5 t - ratios.
  2. If  $\tan A = \sqrt{2} - 1$ , show that  $\sin A \cdot \cos A = \frac{\sqrt{2}}{4}$ .
  3. If  $\tan A = 1$  and  $\tan B = \sqrt{3}$ , evaluate  $\cos A \cdot \cos B - \sin A \cdot \sin B$
  4. If  $\cot B = \frac{12}{5}$ , prove that  $\tan^2 B - \sin^2 B = \sin^4 B \cdot \sec^2 B$ .
  5. If  $\sec a = \frac{5}{4}$ , show that  $\frac{\tan a}{1 + \tan^2 a} = \frac{\sin a}{\sec a}$ .
  6. If  $\sin \theta = \frac{4}{5}$ , evaluate  $4 \tan \theta - 5 \frac{\tan \theta}{\sec \theta} + 4 \cot \theta$
  7. Given that  $4 \cot A = 3$ , evaluate  $\frac{2 \sin A + 3 \cos A}{4 \sin A - 5 \cos A}$
  8. If  $\tan \theta = \frac{12}{13}$  evaluate  $\frac{2 \sin \theta \cos \theta}{\cos^2 \theta - \sin^2 \theta}$
  9. If  $\cot \theta = \frac{3}{4}$  prove  $\frac{\sqrt{\sec \theta} - \operatorname{cosec} \theta}{\sqrt{\sec \theta} + \operatorname{cosec} \theta} = \frac{\sqrt{7}}{7}$
  10. If  $\tan \theta = \frac{20}{21}$  show that  $\frac{1 - \sin \theta + \cos \theta}{1 + \sin \theta + \cos \theta} = \frac{3}{7}$   
Evaluate the following:
    11.  $2 \sin^2 30^\circ \tan 60^\circ - 3 \cos^2 60^\circ \sec^2 30^\circ$
    12.  $3 \cos^2 30^\circ + \sec^2 30^\circ + 2 \cos^2 45^\circ - 3 \sin^2 30^\circ - \tan^2 60^\circ$
    13.  $2 (\cos^4 60^\circ + \sin^4 60^\circ) - (\tan^2 60^\circ + \cot^2 60^\circ) + 3 \sec^2 30^\circ$
    14.  $\operatorname{cosec}^2 45^\circ \cdot \sec^2 30^\circ (\sin^2 30^\circ + 4 \cot^2 45^\circ - \sec^2 60^\circ)$Solve for  $\theta$  (given that  $0^\circ < \theta < 90^\circ$ )
    15.  $2 \cos 3\theta = 1$ ;
    16.  $2 \sin (12\theta) = \sqrt{3}$ ;
    17.  $3 \tan 5\theta = \sqrt{3}$ ;
    18.  $2 \sin 2\theta = \sqrt{2}$
    19.  $2 \sin \theta / 2 = \sqrt{2}$
  20. If  $\sin (A + B) = 1$  and  $\cos (A - B) = \frac{\sqrt{3}}{2}$ , find A, B.
  21. If  $\theta$  is an acute angle and  $\sin \theta = \cos \theta$ , find the value of  $2 \tan^2 \theta + \sin^2 \theta - 1$
  22. If  $\sin (A + B) = \sin A \cos B + \cos A \sin B$ , find  $\sin 75^\circ$
  23. If  $\cos (A - B) = \cos A \cos B + \sin A \sin B$ , find  $\cos 15^\circ$ .
  24. If  $\sin (A + 2B) = \frac{\sqrt{3}}{2}$  and  $\cos(A + 4B) = 0$ ; ( $A > B$ ) find A, B.
- Prove the following identities:-
25.  $(\sin \theta - \sec \theta)^2 + (\cos \theta - \operatorname{cosec} \theta)^2 = (1 - \sec \theta \operatorname{cosec} \theta)^2$
  26.  $2 \sec^2 \theta - \sec^4 \theta - 2 \operatorname{cosec}^2 \theta + \operatorname{cosec}^4 \theta = \cot^4 \theta - \tan^4 \theta$
  27.  $2(\sin^6 \theta + \cos^6 \theta) - 3(\sin^4 \theta + \cos^4 \theta) + 1 = 0$
  28.  $(1 + \tan A \tan B)^2 + (\tan A - \tan B)^2 = \sec^2 A \sec^2 B$
30. If  $\tan \theta + \sin \theta = m$  and  $\tan \theta - \sin \theta = n$ , show that  $m^2 - n^2 = 4\sqrt{mn}$  or  $m^2 - n^2 = 16mn$ .

**SAINIK SCHOOL NALANDA, NANAND**  
**SUMMER VACATION HOME ASSIGNMENT – 2017**  
**MATHEMATICS**

CLASS	SECTION	ASSIGNMENT
XI	A & B	# Solve all the problems of the following chapters from NCERT MATHS BOOK of your standard in a separate long exercise book: (i) Sets (ii) Relations and Functions (iii) Trigonometric Functions
		# Draw the graph of the different types of functions in a separate graph copy.
IX	A	# Solve all the problems of the following chapters from NCERT MATHS BOOK of your standard in a separate long exercise book: (i) Number Systems (ii) Polynomials
		# Do the following in MATHS ACTIVITY COPY: (i) To construct a square root spiral. (ii) To verify the following algebraic identities by paper cutting and pasting method: (a) $(a + b)^2 = a^2 + 2ab + b^2$ (b) $(a - b)^2 = a^2 - 2ab + b^2$ (c) $a^2 - b^2 = (a + b)(a - b)$ (d) $(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$
VIII	A	# Solve all the problems of the following chapters from NCERT MATHS BOOK of your standard in a separate long exercise book: (i) Rational Numbers (ii) Linear Equation in One Variable
		# Activity work: (i) Representation of Rational Numbers on the Number line. (ii) Solve any six Sudoku from the newspaper "THE HINDU" (iii) Estimation of Area of triangles from circles.

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**MATHEMATICS**

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		<b>copy.</b>
<b>IX</b>	<b>A</b>	# Solve all the problems of the following chapters from NCERT MATHS BOOK of your standard in a separate long exercise book: (iii) Number Systems (iv) Polynomials
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<b>VIII</b>	<b>A</b>	# Solve all the problems of the following chapters from NCERT MATHS BOOK of your standard in a separate long exercise book: (iii) Rational Numbers (iv) Linear Equation in One Variable
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