CLASS 10ᵗʰ A,B,C,D 2023-2024 HOLIDAY HOMEWORK
Mathematics Holiday Home Work

REAL NUMBERS

1. Find the LCM and HCF of the following pairs of integers and verify that: LCM × HCF = Product of the integers.
   (i)   336 and 54   (ii) 404 and 96   [CBSE 2018]
2. Find the LCM and HCF of the following integers by applying the prime factorisation method:
   (i) 12, 15 and 21 [NCERT]   (ii) 17, 23 and 29   [NCERT]
   (iii) 8, 9 and 25 [NCERT]   (iv) 40, 36 and 126
3. (i) Given that HCF (306, 657) = 9, find LCM (306, 657).   [NCERT]
   (ii) Write the smallest number which is divisible by both 306 and 657.   [CBSE 2019]
4. Can two numbers have 16 as their HCF and 380 as their LCM? Give reason.
5. The HCF of two numbers is 145 and their LCM is 2175. If one number is 725, find the other.
6. The HCF of two numbers is 16 and their product is 3072. Find their LCM.
7. The LCM and HCF of two numbers are 180 and 6 respectively. If one of the numbers is 30, find the other number.

8. Find the smallest number which when increased by 17 is exactly divisible by both 520 and 468.
9. Find the smallest number which leaves remainders 8 and 12 when divided by 28 and 32 respectively.
10. What is the smallest number that, when divided by 35, 56 and 91 leaves remainders of 7 in each case?
11. A rectangular courtyard is 18 m 72 cm long and 13 m 20 cm broad. It is to be paved with square tiles of the same size. Find the least possible number of such tiles.
12. Find the largest number which on dividing 1251, 9377 and 15628 leaves remainders 1, 2 and 3 respectively.   [CBSE 2019]
13. Find the greatest number of 6 digits exactly divisible by 24, 15 and 36.
14. In a morning walk three persons step off together, their steps measure 80 cm, 85 cm and 90 cm respectively. What is the minimum distance each should walk so that he can cover the distance in complete steps?
15. On a morning walk, three persons step out together and their steps measure 30 cm, 36 cm and 40 cm respectively. What is the minimum distance each should walk so that each can cover the same distance in complete steps?   [CBSE 2019]

POLYNOMIALS

1. Find the zeros of each of the following quadratic polynomials and verify the relationship between the zeros and their coefficients:

    (i) $f(x) = x^2 - 2x - 8$ [NCERT]

    (ii) $g(s) = 4s^2 - 4s + 1$ [NCERT]

    (iii) $h(t) = t^2 - 15$ [NCERT]

    (iv) $f(x) = 6x^2 - 3 - 7x$ [NCERT]

    (v) $q(y) = 7y^2 - \dfrac{11}{3}y - \dfrac{2}{3}$ [NCERT EXEMPLAR, CBSE 2019]

    (vi) $\phi(x) = 2x^2 + \dfrac{7}{2}x + \dfrac{3}{4}$. [NCERT EXEMPLAR]

2. For each of the following, find a quadratic polynomial whose sum and product respectively of the zeroes are as given. Also, find the zeroes of these polynomials by factorization.

    (i) $-\dfrac{8}{3}, \dfrac{4}{3}$

    (ii) $\dfrac{21}{8}, \dfrac{5}{16}$

3. If α and β are the zeros of the quadratic polynomial $f(x) = x^2 - 5x + 4$, find the value of $\dfrac{1}{\alpha} + \dfrac{1}{\beta} - 2\alpha\beta$.

4. If α and β are the zeros of the quadratic polynomial $p(y) = 5y^2 - 7y + 1$, find the value of $\dfrac{1}{\alpha} + \dfrac{1}{\beta}$.

5. If one zero of the quadratic polynomial $f(x) = 4x^2 - 8kx - 9$ is negative of the other, find the value of k.

6. If the sum of the zeros of the quadratic polynomial $f(t) = kt^2 + 2t + 3k$ is equal to their product, find the value of k.

7. Find the zeros of each of the following quadratic polynomials and verify the relationship between the zeros and their coefficients:

    (i) $p(x) = x^2 + 2\sqrt{2}x - 6$

    (ii) $q(x) = \sqrt{3}x^2 + 10x + 7\sqrt{3}$

    (iii) $f(x) = x^2 - (\sqrt{3} + 1)x + \sqrt{3}$

    (iv) $g(x) = a(x^2 + 1) - x(a^2 + 1)$

    (v) $h(s) = 2s^2 - (1 + 2\sqrt{2})s + \sqrt{2}$ [NCERT EXEMPLAR]

    (vi) $f(v) = v^2 + 4\sqrt{3}v - 15$ [NCERT EXEMPLAR]

LINEAR EQUATIONS IN TWO VARIABLES

SECTION A

1. Determine graphically the vertices of the triangle, the equations of whose sides are given below:
   (i) $2y - x = 8, 5y - x = 14$ and $y - 2x = 1$
   (ii) $y = x, y = 0$ and $3x + 3y = 10$ [CBSE 2000]

2. Determine, graphically whether the system of equations $x - 2y = 2,\ 4x - 2y = 5$ is consistent or in-consistent.

3. Determine, by drawing graphs, whether the following system of linear equations has a unique solution or not:
   (i) $2x - 3y = 6, x + y = 1$
   (ii) $2y = 4x - 6, 2x = y + 3$

4. Solve graphically each of the following systems of linear equations. Also, find the coordinates of the points where the lines meet axis of y.
   (i) $2x - 5y + 4 = 0,$
   $2x + y - 8 = 0$ [CBSE 2005]
   (ii) $3x + 2y = 12$
   $5x - 2y = 4$ [CBSE 2006C]

5. Solve the following system of linear equations graphically and shade the region between the two lines and x-axis:
   (i) $2x + 3y = 12,$ [CBSE 2001]
   $x - y = 1$
   (ii) $3x + 2y - 4 = 0,$
   $2x - 3y - 7 = 0$ [CBSE 2006C]

6. Draw the graphs of the following equations on the same graph paper:
   $2x + 3y = 12$
   $x - y = 1.$

7. Find the coordinates of the vertices of the triangle formed by the two straight lines and the y-axis.   [CBSE 2001]

8. Draw the graphs of $x - y + 1 = 0$ and $3x + 2y - 12 = 0$. Determine the coordinates of the vertices of the triangle formed by these lines and x-axis and shade the triangular area. Calculate the area bounded by these lines and x-axis.   [CBSE 2002]

SECTION B

Solve the following systems of equations

1. Find the values of x and y in the following rectangle. [NCERT EXEMPLAR]
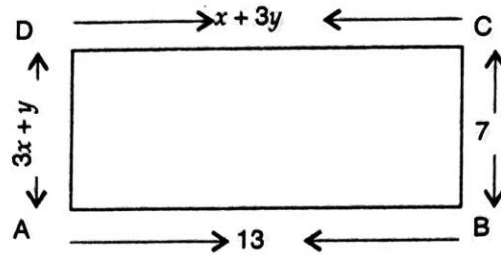

Fig. 3.19

2. $11x + 15y + 23 = 0$

$7x - 2y - 20 = 0$

3. $\dfrac{x}{2} + y = 0.8$

$\dfrac{7}{x + \dfrac{y}{2}} = 10$

4. $\dfrac{x}{3} + \dfrac{y}{4} = 11$

$\dfrac{5x}{6} - \dfrac{y}{3} = -7$

5. $\dfrac{4}{x} + 3y = 8$

$\dfrac{6}{x} - 4y = -5$ [CBSE 2010]

6. $3x - \dfrac{y+7}{11} + 2 = 10$

$2y + \dfrac{x+11}{7} = 10$

7. $\dfrac{4}{x} + 3y = 14$

$\dfrac{3}{x} - 4y = 23$ [NCERT]

8. $\dfrac{2}{x} + \dfrac{3}{y} = 13$

$\dfrac{5}{x} - \dfrac{4}{y} = -2$ [NCERT]

9. $\dfrac{2}{\sqrt{x}} + \dfrac{3}{\sqrt{y}} = 2$

$\dfrac{4}{\sqrt{x}} - \dfrac{9}{\sqrt{y}} = -1$ [NCERT]

10. $0.5x + 0.7y = 0.74$

$0.3x + 0.5y = 0.5$

11. $\sqrt{2}x - \sqrt{3}y = 0$

$\sqrt{3}x - \sqrt{8}y = 0$ [NCERT]

12. $\dfrac{xy}{x+y} = \dfrac{6}{5}$

$\dfrac{xy}{y-x} = 6$

13. $x + y = 2xy$

$\dfrac{x-y}{xy} = 6$

14. $\dfrac{44}{x+y} + \dfrac{30}{x-y} = 10$

$\dfrac{55}{x+y} + \dfrac{40}{x-y} = 13$ [CBSE 2002C]

15. $\dfrac{5}{x-1} + \dfrac{1}{y-2} = 2$

$\dfrac{6}{x-1} - \dfrac{3}{y-2} = 1$ [NCERT, CBSE 09]

SECTION C

In each of the following systems of equations determine whether the system has a unique solution, no solution or ininitely many solutions. In case there is a unique solution, find it: (1-2)

1. $x - 3y = 3$
   $3x - 9y = 2$

2. $2x + y = 5$
   $4x + 2y = 10$

Find the value of k for which each of the following systems of equations has a unique solution: (3

3. $kx + 2y = 5$
   $3x + y = 1$

4. $4x + ky + 8 = 0$
   $2x + 2y + 2 = 0$ [NCERT]

Find the value of k for which each of the following systems of equations have infinitely many solution: (5-8)

5. $2x + 3y = 2$
   $(k + 2) x + (2k + 1) y = 2 (k - 1)$
   [CBSE 2000, 2003]

6. $x + (k + 1) y = 4$
   $(k + 1) x + 9y = 5k + 2$
   [CBSE 2000C]

7. $2x + (k - 2) y = k$
   $6x + (2k - 1) y = 2k + 5$
   [CBSE 2000C]

8. $2x + 3y = 7$
   $(k + 1) x + (2k - 1) y = 4k + 1$
   [CBSE 2001]

Find the value of k for which the following system of equations has no solution: (9-11):

9. $2x + ky = 11$
   $5x - 7y = 5$

10. $kx + 3y = k - 3$
    $12x + ky = 6$ [NCERT EXEMPLAR]

1. In a rectangle, if the length is increased by 3 metres and breadth is decreased by 4 metres, the area of the rectangle is reduced by 67 square metres. If length is reduced by 1 metre and breadth is increased by 4 metres, the area is increased by 89 sq. metres. Find the dimensions of the rectangle.

2. ABCD is a cyclic quadrilateral such that $\angle A = (4y + 20)°$, $\angle B = (3y - 5)°$, $\angle C = (4x)°$ and $\angle D = (7x + 5)°$. Find the four angles.   [NCERT]

3. Yash scored 40 marks in a test, getting 3 marks for each right answer and losing 1 mark for each wrong answer. Had 4 marks been awanded for each correct answer and 2 marks been deducted for each incorrect answer, then Yash would have scored 50 marks. How many questions were there in the test?   [NCERT]

4. The car hire charges in a city comprise of a fixed charges together with the charge for the distance covered. For a journey of 12 km, the charge paid is ₹ 89 and for a journey of 20 km, the charge paid is ₹ 145. What will a person have to pay for travelling a distance of 30 km?   [CBSE 2000]

5. A part of monthly hostel charges in a college are fixed and the remaining depend on the number of days one has taken food in the mess. When a student A takes food for 20 days, he has to pay ₹ 1000 as hostel charges whereas a student B, who takes food for 26 days, pays ₹ 1180 as hostel charges. Find the fixed charge and the cost of food per day.   [NCERT, CBSE 2000]

6. The larger of two supplementary angles exceeds the smaller by 18 degrees. Find them.   [NCERT, CBSE 2019]

7. Meena went to a bank to withdraw ₹ 2000. She asked the cashier to give her ₹ 50 and ₹ 100 notes only. Meena got 25 notes in all. Find how many notes ₹ 50 and ₹ 100 she received.   [NCERT]

8. A shopkeeper gives books on rent for reading. She takes a fixed charge for the first two days, and an additional charge for each day thereafter. Latika paid ₹ 22 for a book kept for 6 days, while Anand paid ₹ 16 for the book kept for four days. Find the fixed charges and charge for each extraday.   [NCERT EXEMPLAR]

QUADRATIC EQUATIONS   **SECTION A**

Solve the following quadratic equations by factorization:

1. $25x(x+1) = -4$

2. $16x - \dfrac{10}{x} = 27$ [CBSE 2014]

3. $6x^2 + 11x + 3 = 0$ [CBSE 2010]

4. $2x^2 + ax - a^2 = 0$ [CBSE 2014]

5. $\dfrac{1}{x-1} - \dfrac{1}{x+5} = \dfrac{6}{7}, x \neq 1, -5$ [CBSE 2010]

6. $\dfrac{1}{x+4} - \dfrac{1}{x-7} = \dfrac{11}{30}, x \neq 4, 7$ [NCERT]

7. $\dfrac{1}{x-3} + \dfrac{2}{x-2} = \dfrac{8}{x}, x \neq 0, 2, 3$ [CBSE 2013]

8. $\dfrac{16}{x} - 1 = \dfrac{15}{x+1}, x \neq 0, -1$ [CBSE 2014]

9. $\dfrac{x+3}{x+2} = \dfrac{3x-7}{2x-3}; x \neq -2, \dfrac{3}{2}$ [CBSE 2017]

10. $\dfrac{x+3}{x-2} - \dfrac{1-x}{x} = \dfrac{17}{4}; x \neq 0, 2$ [CBSE 2017]

11. $\dfrac{x-3}{x+3} - \dfrac{x+3}{x-3} = \dfrac{48}{7}; x \neq 3, -3$ [CBSE 2015]

12. $\dfrac{4}{x} - 3 = \dfrac{5}{2x+3}, x \neq 0, -\dfrac{3}{2}$ [CBSE 2013]

13. $\dfrac{3}{x+1} - \dfrac{1}{2} = \dfrac{2}{3x-1}, x \neq -1, \dfrac{1}{3}$ [CBSE 2014]

14. $\dfrac{3}{x+1} + \dfrac{4}{x-1} = \dfrac{29}{4x-1}; x \neq 1, -1, \dfrac{1}{4}$ [CBSE 2015]

15. $\dfrac{2}{x+1} + \dfrac{3}{2(x-2)} = \dfrac{23}{5x}; x \neq 0, -1, 2$ [CBSE 2015]

SECTION B

1. Determine the nature of the roots of the following quadratic equations:
   (i) $2x^2 - 3x + 5 = 0$
   (ii) $2x^2 - 6x + 3 = 0$
   (iii) $3x^2 - 4\sqrt{3}x + 4 = 0$
   (iv) $4x^2 + 4\sqrt{3}x + 3 = 0$

2. Find the values of k for which the roots are real and equal in each of the following quadratic equations:
   (i) $4x^2 - 2(k+1)x + (k+4) = 0$
   (ii) $4x^2 - 2(k+1)x + (k+1) = 0$
   (iii) $x^2 - 2(k+1)x + k^2 = 0$
   (iv) $k^2x^2 - 2(2k-1)x + 4 = 0$
   (v) $(k+1)x^2 - 2(k-1)x + 1 = 0$
   (vi) $x^2 + k(2x+k-1) + 2 = 0$

3. In each of the following, determine the values of k for which the given quadratic equation has real roots:
   (i) $2x^2 + kx + 3 = 0$
   (ii) $kx(x-2) + 6 = 0$
   (iii) $x^2 - 4kx + k = 0$
   (iv) $kx(x - 2\sqrt{5}) + 10 = 0$

SECTION C

1. The sum of the squares of two consecutive odd positive integers is 394. Find them.

   [CBSE 2009, 2017]

2. The sum of two numbers is 8 and 15 times the sum of their reciprocals is also 8. Find the numbers.

3. Two numbers differ by 3 and their product is 504. Find the numbers.   [CBSE 2002 C]

4. The sum of two numbers a and b is 15, and the sum of their reciprocals $\frac{1}{a}$ and $\frac{1}{b}$ is 3/10. Find the numbers a and b.

   [CBSE 2005]

5. The sum of two numbers is 9. The sum of their reciprocals is 1/2. Find the numbers.

   [CBSE 2012]

6. Three consecutive positive integers are such that the sum of the square of the first and the product of other two is 46, find the integers.   [CBSE 2010]

7. The difference of squares of two numbers is 88. If the larger number is 5 less than twice the smaller number, then find the two numbers.   [CBSE 2010]

8. The sum of the squares of two consecutive odd numbers is 394. Find the numbers. [CBSE 2014]

9. The sum of the squares of two consecutive multiples of 7 is 637. Find the multiples. [CBSE 2014]

10. The sum of the squares of two consecutive even numbers is 340. Find the numbers.

    [CBSE 2014]

11. The sum of a number and its positive square root is 6/25. Find the number.

12. The difference of two numbers is 4. If the difference of their reciprocals is $\frac{4}{21}$, find the numbers.

    [CBSE 2008]

13. A two digit number is 4 times the sum of its digits and twice the product of its digits. Find the number.

14. The difference of the squares of two positive integers is 180. The square of the smaller number is 8 times the larger, find the numbers.   [NCERT, CBSE 2014]

15. The difference of two natural numbers is 3 and the difference of their reciprocals is $\frac{3}{28}$. Find the numbers.   [CBSE 2014]

16. The numerator of a fraction is 3 less than the denominator. If 2 is added to both the numerator and the denominator, then the sum of the new fraction and the original fraction is $\frac{29}{20}$. Find the original fraction.   [CBSE 2015]

17. Find a natural number whose square diminished by 84 is equal to thrice of 8 more than the given number.   [NCERT EXEMPLAR]

18. A natural number when increased by 12 equals 160 times its reciprocal. Find the number.

    [NCERT EXEMPLAR]

- **DO THE WORK IN SEPARATE NOTEBOOK.**

Hindi:-

1 कला समेकित परियोजना -

विषय-अरुणाचल प्रदेश और उत्तर प्रदेश का

     तुलनात्मक प्रस्तुतीकरण।

उपविषय-भौगोलिक स्थिति

    संस्कृति

    कला और हस्तशिल्प

    लोक नृत्य

(उपर्युक्त रचनात्मक क्रियाकलाप की अभिव्यक्ति चित्रात्मक रूप में करें, प्रत्येक उप विषय के लिए लगभग 100 शब्द अपेक्षित है।)

2. रामचरितमानस किसके द्वारा रचित है। इस महाकाव्य का उल्लेख करते हुए,इसके सातों कांडों (बालकाण्ड, अयोध्याकाण्ड, अरण्यकाण्ड, किष्किन्धाकाण्ड, सुन्दरकाण्ड, लंकाकाण्ड और उत्तरकांड।) प्रत्येक का उल्लेख 70 से 80 शब्दों में चित्र सहित करें।

3 .अनुच्छेद लेखन

   विषय-1आजादी का अमृत महोत्सव

      (राष्ट्रीय महत्व से संबंधित)

     2 इंटरनेट: एक संचार क्रांति

       (संचार से संबंधित)

4. आवधिक परीक्षा (P.T.1) के लिए दिए गए पाठ्यक्रम को परीक्षा हेतु तैयार करें।

Science

A.I.P :- Compare the fauna of Uttar pradesh with Arunachal pradesh under following headings

Habitat and Adaptation

Wild life sanctuary

National park

Note:- The project will be assessed on the basis of creativity, pictorial presentation & neatness

Revise PA-1 Syllabus

Chapter 1. Chemical reactions and equations

Chapter 5. Life Processes

Chapter 9. Light

English

1 Fill in the blank by choosing the correct option:

The electricity department will _____the power for two hours this evening.

a.   Shut out   b. shut off   c. shut down   d. shut in

2.Read the conversation between the coach and the student

Complete the sentence by reporting the reply correctly:

Coach : You must attend morning practice regularly.

Student : Yes, I will as I am feeling stronger now.

The coach reminded the student that he must attend morning practice regularly, to which the student replied _____

3. Select the correct option to fill in the blank for the given line, from a newspaper report. The report read, "there ¬¬____ traffic diversion due to the student parade on the main street."

a.   Cannot be   b. should be   c. must be   d. will be

4. Select the option that identifies the error and supplies the correction for the following line from the health report:

The incidence of malaria have reduced in the city

Option no.	Error	Correction
A	incidence	incident
B	Have	Has
C	reduced	Reduction
D	In	on

5. Complete the given narrative by filling in the blank with the correct option:

The attendant _____ several guests at the same time to ensure prompt service.

a.   waited on b. waited in   c. waited up   d. waited

6. Fill in the blank by using the correct form of the word in the bracket for the given portion of the letter:

Subject - Request for Leave.

 Dear Sir

I request you to grant me two days leave as I _____ (have) visit my ailing grandmother.

7. Report the dialogue between two friends by completing the sentence.

Rahul: Saheb, what did you like most about your visit to the village?

Saheb : The sense of joy in the simple things of life.

In response to the question about what he liked about his visit to the village, Saheb says ....

 8. Identify the error in the given sentence and supply the correction :

 The introduction of traditional sports in school has led to exciting among the students.

Use the given format for your response :

Error   Correction

9. Maria shared some information with Mathew about her flight to Kanpur. Report Mathew's question.

Were you nervous on your first flight?

10. Fill in the blank by choosing the correct option, to complete th hoarding on a shop.

NEED A GIFT? YOU_____ FIND ONE FOR EVERY OCCASION

(a) OUGHT TO   (b) NEED   (c) WOULD(d) WILL

11. Select the correct option to complete the narration of the dialogue between Anil and Sanjeev :

Anil: Where are you going?

Sanjeev :   To the airport.

Anil: May I drop you there as I'm going in that direction?

 Anil asked Sanjeev where he was going and offered to drop him as _____

(a) he could be going in that direction

(b) he would be going in the direction

(c) he is going in the direction

(d) he was going in that direction

12.Identify the error in the newspaper headline. Attractive packages for different Tourist destination- Mizoram, Kashmir, Kerala, Goa.

Use the given format for your response:

Error Correction

Writing Skills

(a)   You are pained to see that in your city, there is no proper arrangement for cleaning of drains. There are heaps of accumulated garbage and stagnant water. Write a letter to the Municipal Commissioner of your city complaining about the same as there is a fear of outbreak of disease. You are Alka/Ashish. (Word limit 100-120 words)

(b)   The authorities have been claiming that the roads in your town have been relaid and repaired. But no such work done is seen. Write a letter to the editor of a local newspaper expressing your concern at the present situation and giving suggestions to resolve the problem, in 100-120 words. You are Prabhu/Parvati of Vivek Vihar, Delhi.

(c)   Rehanna is to write an analytical paragraph on 'Hazards of Smoking. Using your own ideas and the information given below, write the paragraph in 100-120 words.

Smoking - drains out income of an average earner - affect health badly - vital organs are affected - harmful for passive smokers -need to educate people - Role of media in creating awareness.

SOCIAL SCIENCE

Art Intigrated Project

Choose anyone of the following activity to represent landscape/ history/festivals/ Costume/ Cuisine/art & craft/ music and dance of Arunachal Pradesh

 # Painting

 # Collage

 # Mask making & Jewellery making

 # Poster designing

Note: It's individual activity Use A4 sheets