THE SAGAR SCHOOL

HOLIDAY HOMEWORK 2019
Class: X

This year, your holiday homework is a fun mix of all the aspects of learning. It has been designed to ensure that you enjoy and learn at the same time. Special attention has been taken to ensure that you use your creativity, your innovative ideas and your imagination to shape your holiday homework into fantastic 'creations'. So enjoy your holidays spending quality times with your near and dear ones and devote sometimes to learn new things.

General Instructions:
- Holiday Homework of all subjects to be done in **separate Stick Files** (only).
- The areas to be covered are suggested below. You can of course use your creativity and innovation for new ideas too!
- Credit will be awarded to original photographs/ drawings, illustrations and creative use of materials.
- Holiday Homework needs to be submitted on 10th July 2019.
- Holiday Homework needs to be developed and presented in this order:
    - ➤ Cover page showing title, student information, school and academic year and parent's signature.
    - ➤ List of contents with page numbers.
    - ➤ The last page should have Bibliography/ Sources of information from where you have collected your information.

Subject: English

Read the novel **Lord of the Flies by William Golding or The Kite Runner by Khaled Hosseini** and write a book review (250-300 words) covering the following aspects: Plot and theme, main characters, setting, language and vocabulary and any other elements which make the story interesting.

Subject: Mathematics
TOPIC: **Polynomials**

1. Show that the quadratic polynomial $4x^2 + 4x - 3$ has the zeroes-3/2 and $\dfrac{1}{2}$

2. Verify whether the polynomial $2x^4 + 3x^3 - 2x^2 - 9x - 12$ is a factor of $x^2 - 3$ (Ans:yes)

3. Verify whether the polynomial $x^5 - 4x^3 + x^2 + 3x + 1$ is a factor of $x^3 - 3x + 1$ Ans:no)

4. Find the zeroes of the quadratic polynomial and verify that relation between the zeroes and coefficients of the polynomial   (i) $x^2 - 6x + 5$ (ii) $x^2 + 7x + 10$ (iii) $2x^2 + 5x + 3$

5. Find the value of k for which the polynomial $x^3 + 4x^2 - px + 8$ is exactly divisible by x-2 (Ans:16)

6. Find the value of b for which the polynomial $2x^3 + 9x^2 - x - b$ is exactly divisible by 2x+3   (Ans:15)

7. On dividing a polynomial $3x^3 + x^2 + 2x + 5$ by a polynomial g(x), the quotient and remainder were 3x-5 and 9x+10 respectively. Find g(x)   (Ans:g(x) $x^2 + 2x + 1$)

8. On dividing a polynomial $x^3 - 3x^2 + x + 2$ by a polynomial g(x), the quotient and remainder were x-2 and -2x+4 respectively. Find g(x)   (Ans: g(x) = $x^2 - x + 1$)

9. Obtain all the zeroes of P(x)=$3x^4 + 6x^3 - 2x^2 - 10x - 5$,if two of its zeroes are $\sqrt{\dfrac{5}{3}} and - \sqrt{\dfrac{5}{3}}$
    (Ans:-1,-1)

10. Obtain all the zeroes of P(x)= $x^4 - 6x^3 - 26x^2 + 138x - 35$,if two of its zeroes are $2 \pm \sqrt{3}$
    (Ans:-5,7)

11. Obtain all the zeroes of P(x) = $2x^4 - 3x^3 - 3x^2 + 6x - 2$, if two of its zeroes are $\sqrt{2} and - \sqrt{2}$
    (Ans:1/2,1)

12. If the zeroes of the polynomial $x^3 - 3x^2 + x + 1$ are a-b, a, a+b, find a and b.   (Ans: a=1, $b = \pm\sqrt{2}$)

13. Divide $21x - 12x^2 - 30 + 8x^4 + 8x^3$ by $3x + 2x^2 - 5$ and verify division algorithm

14. Divide $4x^4 + 9x^3 - 2x^2 - 9x - 2$ by $5x + 4x^2 + 1$ and verify division algorithm

15. What must be subtracted from $8x^4 + 14x^3 - 2x^2 + 8x - 12$ so that it may be exactly divisible by $4x^2 + 3x - 2$?   (Ans: 15x-14)

TOPIC: **Quadratic Equations**

1. For what value of k, x=2/3 is a solution of the equation $kx^2 - x - 2 = 0$ (Ans: k=6)

2. If x=2 and x=3 are roots of equation $3x^2 - 2mx + 2n = 0$, find the values of m and n
                                        (Ans: m=15/2 and n=9)

3. Solve the following quadratic equation by factorization:

    (a) $2x^2 - 9x + 10 = 0$ Ans: x=2 or 2.5

    (b) $100x^2 - 20x + 1 = 0$ Ans: 1/10

    (c) $x^2 + \dfrac{25}{4} = 0$ Ans: no solution

    (d) $abx^2 + (b^2 - ac)x - bc = 0$ Ans: x=-b/a or c/b

    (e) $\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$ Ans: $x = \dfrac{-5}{\sqrt{2}} and - \sqrt{2}$

    (f) $y^2 - (p + q)y + pq = 0$ Ans: p,q

    (g) $a^2x^2 + (a^2 + b^2)x + b^2 = 0, a \neq 0$ Ans: $-1, \dfrac{-b^2}{a^2}$

4. Solve the following quadratic equation by completing square:

    (a) $2x^2 + x - 4 = 0$ Ans: $\dfrac{-1+\sqrt{33}}{4}, \dfrac{-1-\sqrt{33}}{4}$

    (b) $x^2 - 9x + 18 = 0$ Ans: 6,3

    (c) $4x^2 - 2x + \dfrac{1}{4} = 0$ Ans:1/4

    (d) $2x^2 + 14x + 9 = 0$ Ans: $\dfrac{-7+\sqrt{31}}{2}, \dfrac{-7-\sqrt{31}}{2}$

    (e) $\sqrt{5}x^2 + 9x + 4\sqrt{5} = 0$ Ans: $-\sqrt{5}, \dfrac{-4}{\sqrt{5}}$

    (f) $x^2 - 6x + 4 = 0$ Ans: $3 \pm \sqrt{5}$

5. Solve the following quadratic equation by Quadratic formula:

    (a) $x^2 - 9x + 18 = 0$ Ans: 6,3

    (b) $2x^2 - 7x + 3 = 0$ Ans: 3,1/2

    (c) $4x^2 + 4\sqrt{3}x + 3 = 0$ Ans: -1/2

    (d) $25x^2 + 50x + 12 = 0$ Ans: $\dfrac{-5+\sqrt{13}}{5}, \dfrac{-5-\sqrt{13}}{5}$

    (e) $x^2 + 6x - 10 = 0$ Ans: $-3 \pm \sqrt{19}$

    (f) $10ax^2 - 6x + 15ax - 9 = 0$ Ans: 3/5a,-3/2

    (g) $\dfrac{x}{x+1} + \dfrac{x+1}{x} = \dfrac{34}{15}$ Ans: 3/2,-5/2

(h) $\dfrac{1}{x+4} - \dfrac{1}{x-7} = \dfrac{11}{30}$ Ans: 2,1

(i) $3a^2x^2 + 8abx + 4b^2 = 0$ Ans: -2b/a,-2b/3a

6. Comment upon the nature of roots of the equation:
   (a) $4x^2 + 7x + 2 = 0$ Ans: real and unequal
   (b) $x^2 + 10x - 39 = 0$ Ans: rational and unequal
   (c) $2x^2 - 3x + 5 = 0$ Ans: no real roots
   (d) $3x^2 - 4\sqrt{3}x + 4 = 0$ Ans: real and equal

7. Find the value of p for which the equation $4x^2 - 5x + p = 0$ gives two real equal roots Ans: p = 25/16

8. Find the value of k for which the equation $2x^2 + kx + 3 = 0$ gives two real equal roots Ans: k = $\pm 2\sqrt{6}$

9. Determine k so that the equation $x^2 - 4x + k = 0$ has two distinct real roots   Ans: k<4

10. Determine k so that the equation $x^2 - 4x + k = 0$ has two distinct real roots

11. For what value of p will the following quadratic equation have real equal roots?
   (i) $px^2 - (2p+1)x + p = 0$ Ans: 1/4
   (ii) $x^2 + p(2x+4) + 12 = 0$ Ans: 6,-2
   (iii) $x^2 - 2x(1+3p) + 7(3+2p) = 0$ Ans: 2,-11/9
   (iv) $(p+1)x^2 - 3(p-1)x - (p-1) = 0$ Ans: 1,5/13

APPLICATION ON QUADRATIC EQUATIONS:

12. The sum of two numbers is 27 and their product is 182.Find the numbers   Ans:13 and 14

13. Find two consecutive natural numbers whose product is 20   Ans:4 and 5
   (Hint: let the two numbers be x and x+1)

14. Find two consecutive positive integers, whose sum of the squares is 365.   Ans: 13 and 14

15. The sum of the reciprocals of Ramya's ages, 3 years ago and 5 years from now is 1/3.
   Find her present age.   Ans:7 years

16. The difference of squares of two numbers is 180.Thesquare of the smaller number is 8 times the larger number .Find the two numbers.   Ans:18,12 or 18,-12

17. Sum of the areas of two squares is 468 sq.m. If the difference of their perimeter is 24 m. Find the sides of the two squares.   Ans: 18m,12m

18. The area of triangle 30 sq.cm. Find the base if its altitude exceeds the base by 7cm. Ans: 5cm

19. A passenger train takes 3 hours less for a journey of 360 km if its speed is increased by 10 km/hr from its usual speed. What is its usual speed?   Ans: 30km/hr

20. A journey of 192 km/hr from Mumbai to Pune takes 2 hours less by a fast train than by a slow train .If the average speed of the slow train is 16km/hr less than that of the fast train ,find the average speed of each train.

   Ans: speed of fast train=48km/hr
   speed of slow train=32km/hr

TOPIC: **Statistics**

1. Find the mean of the following frequency distribution [by assumed mean method]

Class :	$0-6$	$6-12$	$12-18$	$18-24$	$24-30$
Frequency :	7	5	10	12	6

2. Find the mode of the following frequency distribution

Class :	0 – 6	6 – 12	12 – 18	18 – 24	24 – 30
Frequency :	7	5	10	12	6

3. If the mean of the following distribution is 27, find the value of p

Class :	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
Frequency :	8	p	12	13	10

4. Find mean, and median for the following data :

Class :	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
Frequency :	8	16	36	34	6

5. Draw 'less than' and 'more than' ogives for the following distribution:

Scores :	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80
Frequency :	8	10	14	12	4	2

6. Find the value of $f1$ from the following data if its mode is 65:

Class	0 – 20	20 – 40	40 – 60	60 – 80	80 – 100	100 – 120
Frequency	6	8	f_1	12	6	5

7. Convert the following data into more than type distribution

Class :	50 – 55	55 – 60	60 – 65	65 – 70	70 – 75	75 – 80
Frequency :	2	8	12	24	38	16

8. Draw the less than type ogive for the following data and hence find the median from it.

Classes :	50 – 60	60 – 70	70 – 80	80 – 90	90 – 100
Frequency :	6	5	9	12	6

9. The median of the following frequency distribution is 28.5 and the sum of all the frequencies is 60. Find the values of p and q:

Classes :	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60
Frequency :	5	p	20	15	q	5

10. Calculate the average daily income (in Rs) of the following data about men working in a company :

Daily income (in Rs)	< 100	< 200	< 300	< 400	< 500
Number of men	12	28	34	41	50

11. The distribution below shows the number of wickets taken by bowlers in one-day cricket matches. Find the mean number of wickets by choosing a suitable method. What does the mean signify? [Hint: Here, the class size varies, and the x ˙ s are large. Let us still apply the step deviation method with

a = 200 and h = 20.

Number of wickets	20 - 60	60 - 100	100 - 150	150 – 250	250 – 350	350 - 450
Number of bowlers	7	5	16	12	2	3

12. Draw a more than ogive for the following distribution and hence find its median.

Class	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80	80 – 90
Frequency	25	15	10	6	24	12	8

13. Find the missing frequencies $f1$ and $f2$ in the following frequency distribution table, if N =100 and median is 32.

Class :	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	Total
Frequency	10	$f1$	25	30	$f2$	10	100

14. Find the median for the following table which shows the daily wages drawn by 200 workers in a factory.

Daily wages (in Rs.)	Less than 100	Less than 200	Less than 300	Less than 400	Less than 500
No. of workers	40	82	154	184	200

15. The mean of the data in the following table is 50. Find the missing frequencies f_1 and f_2.

Class :	10 – 30	30 – 50	50 – 70	70 – 90	90 – 110	Total
Frequency :	90	f_1	30	f_2	40	200

Subject: Science
NOTE: Out of the 3 tasks given below, attempt any two of your choice.

TASK-1
a. Visit nearby Electricity office and understand calculation of electricity bill. Write the observations and present it in a file.
b. Study the main circuit board of your home. Observe the colours of the connecting wires used for different purposes. Enlist uses of- fuses, MCB's, red wire, black wire and green wire and stabilizers.

TASK-2
a. You are required to add a spoon full of powdered baking soda to a flask containing vinegar. List two main observations that you must note in your notebook about the reaction that takes place. Also, write chemical equation for the reaction.
b. Mention the essential material (chemicals) to prepare soap at home. Describe in brief the test of determining the nature (acidic/alkaline) of the reaction mixture of saponification reaction.
c. Silver Bromide solution is used to develop photographs. Why photographs are being developed in dark rooms? Support your answer with an equation.

TASK-3

Incorporating our knowledge in our day to day life to minimize degradation of our environment and also promoting awareness for environmental issues like carbon foot print, conserving water and non-renewable energy source is the duty of responsible citizens.

a. Spread you knowledge about Carbon footprint. Calculate carbon footprint of your family members and friends. Pen down your observations.
b. Explain some simple ways to reduce carbon foot print in your family.
c. What are the measures taken in your family and locality to conserve water?

Subject: Social Science

NOTE: Out of the 4 tasks given below, attempt any two of your choice.

TASK-1

Collect photographs/diagrams of traditional rainwater harvesting techniques practiced in different parts of India.
Note: You need to collect at least 5 photographs /diagrams and also need to describe them.

TASK-2

By using informal method of communication talk to your family members as well as people of your neighborhood and list the factory that help in the development of the feeling of patriotism/Nationalism.

TASK-3

List down the ranking of 5 countries in the best performing and least performing category on the basis of the following parameters:
- health index
- education index
- happiness index
- corruption
- poverty index

TASK-4

Examine all the tiers of "PANCHAYATI RAJ SYSTEM" by making a visit in any of the Village, Block, Municipality and District HQ.
Note: Collect all the infrastructure details and write along with photographs.

Subject: Information Technology

➢ Prepare a PowerPoint presentation on Communication Skills.
➢ Slide should Reflect all types of Communication Skills like Verbal, Non-Verbal and written.
➢ PowerPoint presentation should contain minimum 25 slides.
➢ Hard copy should be brought in stick file.
Note: Refer chapter 1.

Subject: Hindi (II Language)

" स्वस्थ जीवन के लिए समय पर सोना , संतुलित आहार , योग, व्यायाम व खेल कूद के प्रति आपके परिवार के वरिष्ठ सदस्य की जागरूकता और आज की पीढ़ी की जीवन शैली कैसे उनके स्वास्थ्य को प्रभावित कर रही है ? " इस विषय पर बातचीत को संवाद शैली में लिखिए I

अथवा

वृक्षारोपण

अथवा

जलसंरक्षण पर एक विज्ञापन तैयार कीजिए

Subject: French (II Language)

Ecrivez une recette de votre plat préféré que vous avez préparé et gouté pendant les vacances. (80 mots)
Write the recipe of your favourite dish that you have prepared and experienced during the vacation.(80 Words)

Subject: German (II Language)

Seht den Film "Pelle der Eroberer 1986" auf Deutsch und schreib eine Zusammenfassung über den Film (150-200 Wörtern).
Watch a movie "Pelle der Eroberer 1986" in German and write a review about the movie in (150-200 words).

Subject: Painting

Prepare an attractive Poster on 'Literacy' by using poster color.