THE SAGAR SCHOOL

HOLIDAY HOMEWORK 2019
Class: IX

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

Watch either of the following movies along with your parents and write a movie review in about 250- 300 words covering the following aspects: About the cast, the director, synopsis, your favourite character/ incident and the theme of the movie.

Cast Away (2000) **Or** A Beautiful Mind (2001)

Subject: Mathematics

Q.01. Name the quadrants in which following points (3,0) (-9,-3).

Q.02. Determine the graph of the equation y=2x-3

Q.03. Draw the graph of y=4x. From the graph find the value y when x=-2

Q.04. Draw the graph of x=10=0. what type of graph is it?

Q.05. Draw the graph of y=-x

Q.06. The points (-2,5) and (3,-5) are plotted in xy planes. Find the slope and y intercept of the line joining the points.

Q.07. Draw the graph of equation 3x+6y=12. Find the coordinates of the point where the graph cuts the y-axis.

Q.08. How does the graph of y=mx, depends on the value of m. Also draw graph when m=2,3

Q.09. In which quadrant will these points (3,-5), (-3,-1)

Q.10. Determine the slope and y-intercept of line 2x+3y+7=0

Q.11. The polynomials $P(t) = 4t^3 - st^2 + 7$ and $Q(t) = t^2 + st + 8$ leave the same remainder when divided by (t - 1). Find the value of s.

Q.12. If x = -2 is a root of the polynomial $P(x) = -2x^4 - 7x^3 - 3x^2 - tx - 10$, then find the value of t.

Q.13. Using the long division method, determine the remainder when the polynomial $4x^5 + 2x^4 - x^3 + 4x^2 - 7$ is divided by (x - 1).

Q.14. Factories:
A) $2y^3 - 4y^2 - 2y + 4$ B) $2x^2 + 7x + 3$ C) $x^3 + 13x^2 + 32x + 20$

Q.15. Prove that $3 + 2\sqrt{5}$ is irrational (Proceed with justifying $\sqrt{5}$ as irrational)

Q.16. State whether the following rational numbers will have a terminating decimal expansion or non-terminating repeating decimal expansion:

(a) $\dfrac{26}{2185}$ (b) $\dfrac{15632}{625}$ (c) $\dfrac{368}{512}$ (b) $\dfrac{15632}{625}$

Q.17. Which of the following is a rational number?

(a) $\sqrt{63}$ (b) $\sqrt{250}$ (c) $\sqrt{1681}$ (d) $\sqrt{123}$

Q.18. simplifying $\left(\sqrt{5} + \sqrt{7}\right)^2$,

Q.19. Plot the following points on a graph paper:
(i) (5,4)   (ii) (-2,-7)   (iii) (-5,-2)   (iv) (4,-3)   (v) (-4,0)

Q.20. Verify that:

$$x^3 + y^3 + z^3 - 3xyz = \tfrac{1}{2}(x + y + z)[(x - y)^2 + (y - z)^2 + (z - x)^2].$$

Q.21. Show $\sqrt{7}$ can be represented on the number line.

Q.22. Convert the following decimal number in the form $\frac{p}{q}$.

(i) $23.\overline{3}$ (ii) $4.3\overline{23}$

Q.23. Simplify the expression:

(i) $\left(\sqrt{5} + \sqrt{7}\right)^2$ (ii) $\left(5 + \sqrt{7}\right)\left(3 + \sqrt{7}\right)$

Q.24. Factorize: $8a^3 + b^3 + 12a^2b + 6ab^2$.

Q.25. If $x = \dfrac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}}$ and $y = \dfrac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$, find the value of $x^2 + y^2 + xy$.

Q.26. If $x = \dfrac{2 - \sqrt{5}}{2 + \sqrt{5}}$ and $y = \dfrac{2 + \sqrt{5}}{2 - \sqrt{5}}$, find the value of $x^2 - y^2$.

Q.27. Determine rational numbers p and q if $\dfrac{7 + \sqrt{5}}{7 - \sqrt{5}} - \dfrac{7 - \sqrt{5}}{7 + \sqrt{5}} = p - 7\sqrt{5}\,q$.

Q.28. Simplify: $\dfrac{6}{2\sqrt{3} - \sqrt{6}} + \dfrac{\sqrt{6}}{\sqrt{3} + \sqrt{2}} - \dfrac{4\sqrt{3}}{\sqrt{6} - \sqrt{2}}$.

Q.29. Simplify: $\dfrac{3\sqrt{2}}{\sqrt{6}-\sqrt{3}} + \dfrac{2\sqrt{3}}{\sqrt{6}+2} - \dfrac{4\sqrt{3}}{\sqrt{6}-\sqrt{2}}$.

Q.30. If $2^a = 3^b = 6^c$ then show that $c = \dfrac{ab}{a+b}$.

Subject: Science

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

TASK-1

Verification of Newton's Second Law

Theory

Can you define Newton's Second Law of Motion?

Newton's Second Law of motion states that the rate of change of momentum of an object is proportional to the applied unbalanced force in the direction of the force. ie., F=ma

Where F is the force applied, m is the mass of the body, and a, the acceleration produced.
Therefore, Newton's Second Law also states that the net force acting on a body is equal to the rate of change of momentum of the body.

How does momentum affect the net force?

The First Law of Motion indicates that when an unbalanced external force acts on an object, its velocity changes, ie, the object is accelerated. Now, let's study how the acceleration of an object depends on the force applied. The impact produced by the objects depends on their mass and velocity. When we combine the mass and velocity of an object, we get another quantity called momentum, which was introduced by Newton.

Let's define Momentum:

Momentum has both direction and magnitude. Its direction is the same as that of velocity. When an unbalanced force is applied on an object, it changes the velocity of an object, which in turn changes its momentum. So, it is concluded that the force necessary to change the momentum of an object depends on the time rate at which the momentum is changed.

The acceleration of a moving object can be calculated by:

$$s = ut + \frac{1}{2}at^2$$

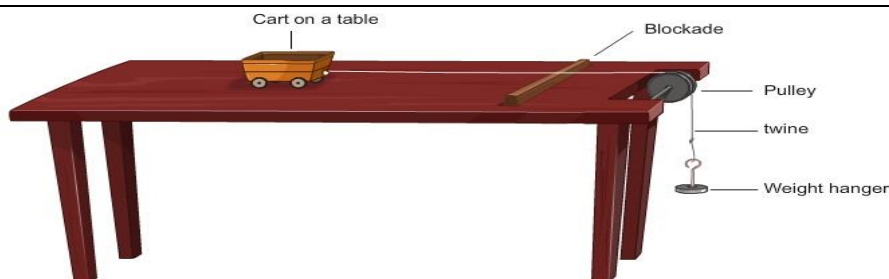When the object starts moving, its initial velocity, u =0

$$\therefore s = \frac{1}{2}at^2,$$ From this equation we can find out the acceleration of the object

$$a = \frac{2s}{t^2}$$

Where, s = Displacement
         a = Acceleration
         t = Time

Materials Required:

   (i) Cart   (ii) Wooden blockade   (iii) Pulley   (iv) Twine   (v) Weight hanger

Cart on a table — Blockade — Pulley — twine — Weight hanger

Procedure:
1. Arrange the apparatus as shown in figure.
2. A suitable mass is hung on the weight hanger.
3. Release the weight on the weight hanger.
4. Start the timer to record the time of travel of the cart as it starts moving.
5. Note the distance moved and the time taken by the cart.
6. Calculate the acceleration of the object by equation $a = 2S/t^2$.
7. Calculate M_2g and $(M_1+M_2)a$.
8. Hence Newton's Second Law is verified.

*Observations***:**

Vertical Mass, M_2 (g) Cart Mass, M_1 (g) Distance travelled by the cart, S (cm) Time, t (s) Acceleration of the object, $a = 2S/t^2$ (m/s2)

Calculation:
F= M_2g
M_2=……………………..g
M_2= ……………………….Kg
=…………………kg m/s2
F= (M_1+M_2)a
(M_1+M_2) =………………….g
(M_1+M_2) =………………….kg

*Result***:**

Calculate M_2g and (M_1+M_2)a. It is found to be same. Hence Newton's Second Law of Motion is verified.

TASK-2

As we all are facing strong heat waves; it's time to have some learning and fun while making cool lemonade.

Steps:
1. Grind sugar and add water. Stir it till it completely dissolves.
2. Take out lemon juice and add.
3. Take a pinch of salt and add water.
4. Add Ice cubes and crushed mint leaves to serve it.

Observation:

S.No	Activity	Observation	Type of solution
1.	Sugar and water		
2.	Lemon juice and water		
3.	Salt and water		

| 4. | Crushed mint and water | | |

*Observation: clear/translucent/opaque solution
*type of Solution: True/colloid/suspension

ACTIVITY:

1. Define True solution and write the characteristics of a true solution.
2. Define Colloid and write the characteristics of a colloid.
3. Define Suspension and write the characteristics of suspension.

Do you observe ice is melting at room temperature? What is the melting point of ice?

TASK-3

Observe any 05 animals and 05 plants nearby your home/locality and collect the following details about them:
1. General name
2. Biological name
3. Biological nomenclature
4. General details like: Places where it is found, suitable weather, eating habits for animal etc..

After collecting the required details do the following:
   (a) Write details that on the R.H.S. page
   (b) Paste the pics of that animal on the L.H.S. page
   (c) Paste one leaf of that plant on the L.H.S. page

Subject: Social Science

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

TASK-1

Collect photographs/diagrams of typical rural houses and clothing styles of people. Examine whether they reflect any relationship with the climatic condition and relief of the area.

Note: You need to collect at least 5 photographs /diagrams and also need to describe them.

TASK-2

Write the name of the country having best education system in the world. Explain the measures taken by its government for being the top country in the education system.

TASK-3

Find out how the recent Lok Sabha Election concluded in your respective States and write the detail of the following:

   a. Which party won the election
   b. Symbol of the parties participated in the election
   c. Name of the alliance parties
   d. How many seats are in the election
   e. Name of the constituencies
   f. Party's agendas and portfolios etc.

Note: Collect all the details and write along with Photographs.

TASK-4

Read the book or watch the movie 'A Tale of Two Cities'. Analyze the plot in reference to the Reign of Terror in France and describe how the life of the protagonist got affected by the Revolution.

Subject: Hindi (II Language)

" पोशाक भी समाज में हमारा एक महत्वपूर्ण दर्जा निर्धारित करती है और हमारे मान-सम्मान को घटा या बढ़ा सकता है।"

उपरोक्त विषय में अपने परिवार के किसी वरिष्ठ सदस्य से चर्चा करके 120-130 शब्दों में एक संवाद लिखिए।

Subject: French (II Language)

Décrivez les cinq amis de votre quartier. (5 phrases pour chaque ami)

Describe any five friends of your locality. (5 sentences for each friend)

Subject: German (II Language)

Seht den Film "Tees Mees komoedie" auf Deutsch und schreib eine Zusammenfassung über den Film (150-200 Wörtern).

Watch a movie "Tees Mees komoedie' in German and write a review about the movie in (150-200 words). Tees Mees komoedie https://www.youtube.com/watch?v=t8NWyiWhulI

Subject: Information Technology

➢ Prepare a PowerPoint presentation on develop Self-Management skills.
➢ Slide should reflect all the important characteristics indicating stress and all the measures to avoid stress.
➢ Hard copy should be brought in stick file.
➢ PowerPoint presentation should contain minimum 25 slides.

Refer chapter 2.