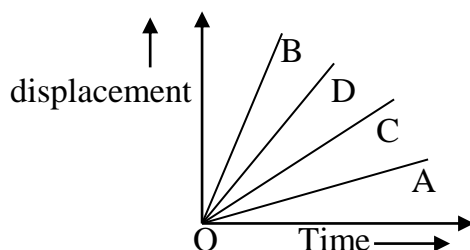


**Delhi International School**  
**Class –IX**  
**Subject – Physics**  
**Summer Vacation Homework (2018-19)**

1. Draw position time graphs when an object is at:  
(i) rest            (ii) uniform motion            (iii) non-uniform motion
2. Drive three equations of motion (i)  $v = u + at$  (ii)  $S = ut + \frac{1}{2} at^2$  (iii)  $v^2 - u^2 = 2as$  with help of velocity time graph in uniform motion.
3. Differentiate between the following:  
(a) uniform and non-uniform motion            (b) speed and velocity  
(c) vectors and scalars            (d) distance and displacement
4. Speedometer used in vehicle measure which type of speed?
5. A car starts from rest and accelerated with  $20\text{ms}^{-2}$  in 5 minutes? Find the acceleration of car in  $\text{ms}^{-2}$ .
6. Figure shows the displacement-time graph of 4 children A, B, C, D. Which child has the highest velocity?



7. What can you say about the motion of a body if its velocity-time graph is a straight line parallel to time axis?
8. Can a body exist in a state of absolute rest or of absolute motion? Explain with example.
9. Give one example each to differentiate between uniform acceleration and non uniform acceleration.
10. What is uniform circular motion? How is uniform circular motion regarded as an accelerated motion? Explain.
11. An object is moving with uniform speed in a circle of radius 'r'. Calculate the distance and displacement (a) when it completes half the circle (b) when it completes full circle (c) what type of motion does the object possess?
12. Under what conditions, the average speed is equal to the magnitude of the average velocity. Justify your answer.
13. A body can have zero average velocity but not zero average speed.
14. An object P is moving with a constant velocity for 5 minutes. Another object Q is moving with changing velocity for 5 minutes. Out of these 2 objects, which one has acceleration? Explain.
15. Can a body have constant speed and still be accelerating? Give an eg.

- Note: (i) Every student would prepare one chart related to physics.  
(ii) Student will prepare the project/activity related to science [theoretically + practically].

**Delhi International School**  
**Class –IX**  
**Subject – Chemistry**  
**Summer Vacation Homework (2018-19)**

1. Write characteristics of particles of matter.
2. What is the difference between three states of matter?
3. Write difference between boiling and evaporation.
4. Justify that evaporation is a surface phenomenon.
5. Why does steam produce more severe burns on the skin as compared to boiling water?
6. What are homogeneous and heterogeneous mixtures?
7. How will you justify that air is a mixture and not a compound?
8. Calculate the masses of cane sugar and water required to prepare 250g of 25% solution of cane sugar.
9. Calculate the strength of a solution containing 10g of sugar in 400ml of the solution.
10. What are suspension and their properties?
11. Why sky appears blue in colour?
12. How will you separate cream from milk?
13. How will you separate a mixture of ammonium chloride and sodium chloride?
14. Can physical and chemical change occur together? Illustrate your answer.
15. Calculate the mass of potassium sulphate required to prepare its 10 percent solution in 100g of water.
16. Explain how does soap help in cleaning dirty clothes.
17. Fog and clouds are both colloidal in nature. How do they differ?
18. Why liquids have lesser density as compared to the solids?

**Delhi International School**  
**Class –IX**  
**Subject – Biology**  
**Summer Vacation Homework (2018-19)**

1. What do you understand by differentiation?
2. Name the living component to both the complex permanent tissues found in plants. What is its function?
3. What are vascular bundles?
4. What do you mean by guard cells?
5. What is apical meristem? Where is it located? State its functions.
6. Name the tissue that makes husk of coconut. Write three characteristics of this tissue.
7. Name the four elements of phloem.
8. Write two points of difference between collenchyma and sclerenchyma tissue.
9. List two characteristics of cork. Mention its role in trees.
10. How is permanent tissue formed from meristematic tissue?
11. Write the location and function of collenchyma tissue.
12. Differentiate between plant and animal tissues.
13. Who discovered cell?
14. What is endoplasmic reticulum? Name the two types of endoplasmic reticulum. Write its main functions.
15. What is the energy currency of the cell? Write it in expanded form. Which cell organelle is related to the currency?

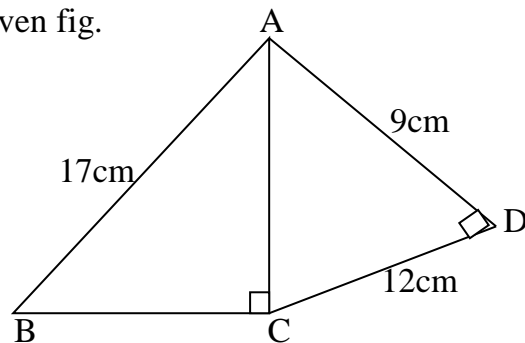
**Delhi International School**  
**Class –IX**  
**Subject – Mathematics**  
**Summer Vacation Homework (2018-19)**

1. Express  $0.6 + 0.\overline{7} + 0.\overline{47}$  in the form  $\frac{p}{q}$  where p and q are integers and  $q \neq 0$ .
2. When the polynomials  $x^3 + 4x^2 - 11x - 26$  and  $6x^3 + 17x^2 + ax - 8$  are divided by  $x + 2$ , then remainder are the same. Find the value of a.
3. If  $x = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$  and  $y = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ , then show that  $x^2 + xy + y^2 = 99$ .
4. If  $f(x) = x^2 - 5x + 7$ , evaluate  $f(2) - f(-1) + f\left(\frac{1}{3}\right)$ .
5. If  $a = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$  and  $b = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ , then find the value of  $a^2 + b^2$ .
6. The polynomials  $x^3 + 2x^2 - 5ax - 8$  and  $x^3 - ax^2 - 12x - 6$ , when divided by  $(x - 2)$  and  $(x - 3)$  respectively, leave the remainders p and q. If  $q - p = 10$ , find a.
7. If  $x = 2 - \sqrt{3}$ , find the value of  $\left(x + \frac{1}{x}\right)^3 + 2\left(x + \frac{1}{x}\right)^2 + \left(x + \frac{1}{x}\right) - 100$ .
8. If the polynomial  $p(x) = x^3 + 8x^2 + 17x + ax$  is divide by  $(x + 2)$  and  $(x + 1)$ , the remainders are the same. Find the value of 'a'.
9. If  $p = 5 - 2\sqrt{6}$ , find  $p^2 - \frac{1}{p^2}$
10. Expand  $(x + 2y - 3z)^2$ .
11. If  $x = 3 + \sqrt{8}$ , find the value of  $x^2 + \frac{1}{x^2}$ .
12. If  $f(x) = x^4 - 2x^3 + 3x^2 - ax + b$  is divided by  $(x - 1)$  and  $(x + 1)$ , it leaves the remainders 5 and 19 respectively. Find the remainder when  $f(x)$  is divided by  $(x - 2)$ .
13. Simplify:  $\frac{2}{\sqrt{5}+\sqrt{3}} + \frac{1}{\sqrt{3}+\sqrt{2}} - \frac{3}{\sqrt{5}+\sqrt{2}}$
14. If  $a = \frac{\sqrt{5}+\sqrt{10}}{\sqrt{10}-\sqrt{5}}$  and  $b = \frac{\sqrt{10}-\sqrt{5}}{\sqrt{10}+\sqrt{5}}$ , then show that  $\sqrt{a} - \sqrt{b} - 2\sqrt{ab} = 0$ .
15. Divide the polynomial  $3x^4 + 4x^3 - 4x + 3$  by  $x - 1$  and verify the remainder by using remainder theorem.
16. Rationalise the denominator of  $\frac{4\sqrt{3}+5\sqrt{2}}{4\sqrt{3}+3\sqrt{2}}$
17. If  $x + y = 4$  and  $xy = 5$ , find the value of  $x^3 + y^3$ .
18. Find the value of  $(216)^{\frac{1}{3}} + 2(243)^{\frac{1}{5}} - 3(256)^{\frac{1}{8}}$ .
19. Show that  $x - \sqrt{2}$  is a factor of the polynomial  $x^3 - 2\sqrt{2}x^2 - 10x + 12\sqrt{2}$ . Hence factorise the polynomial.
20. Simplify:  $\left(x - \frac{2}{5}y\right)^3 - \left(x + \frac{2}{5}y\right)^3$
21. If  $\frac{3+\sqrt{7}}{3-\sqrt{7}} = a + b\sqrt{7}$ , and find the values of 'a' and 'b'.
22. Evaluate:  $\left(\frac{x^a}{x^b}\right)^{a+b} \times \left(\frac{x^b}{x^c}\right)^{c+b} \times \left(\frac{x^c}{x^a}\right)^{a+c}$
23. Represent  $\sqrt{4.2}$  on the number line.

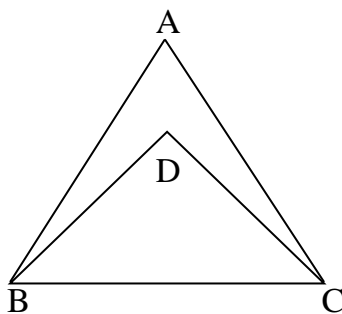
24. If  $a^2 + b^2 + c^2 = 80$  and  $a + b + c = 20$ , then find the value of  $ab + bc + ca$ .
25. If  $\frac{9^n \times 3^2 \times (3^{-n/2})^{-2} - 27^n}{3^{3m} \times 2^3} = \frac{1}{27}$ , prove that  $m - n = 1$ .
26. If  $x - 2$  and  $x + \frac{1}{2}$  are the factors of the polynomial  $px^2 + 4x + r$ , show that  $3p + 16 = 3r$ .
27. If  $x^a = y$ ,  $y^b = z$  and  $z^c = x$ , then prove that  $abc = 1$ .
28. Factorise:  $(a^2 - b^2)^3 + (b^2 - c^2)^3 + (c^2 - a^2)^3$ .
29. Factorise:  $(a^2 - 2a)^2 - 23(a^2 - 2a) + 120$
30. Prove that:  $\frac{a^{-1}}{a^{-1}+b^{-2}} + \frac{a^{-1}}{a^{-1}-b^{-1}} = \frac{2b^2}{b^2-a^2}$
31. Factorise:  $a^3 - \frac{1}{a^3} - 2a + \frac{2}{a}$
32. Assuming that  $x, y, z$  are positive real numbers and the exponents are all rational numbers, show that:  $\left(\frac{x^a}{x^b}\right)^{a^2+ab+b^2} \times \left(\frac{x^b}{x^c}\right)^{b^2+bc+c^2} \times \left(\frac{x^c}{x^a}\right)^{c^2+ac+a^2} = 1$ .
33. If  $x^4 + \frac{1}{x} = 623$ , find the value of  $x + \frac{1}{x}$ , by taking only the positive values of  $x + \frac{1}{x}$ ,  $x^2 + \frac{1}{x^2}$ , etc.
34. Factorise:  $(a + 2b)^3 + (2a - c)^3 - (a + 2c)^3 + 3(a + 2b)(2a - c)(a + 2c)$ .
35. Show that  $\frac{x^{a(b-c)}}{x^{b(a-c)}} \div \left(\frac{x^b}{x^a}\right)^c = 1$
36. If  $x = 7 + \sqrt{40}$ , find the value of  $\sqrt{x} + \frac{1}{\sqrt{x}}$
37. Simplify:  $\frac{1}{\sqrt{6} + \sqrt{5} - \sqrt{11}}$
38. Simplify:  $\frac{4}{3\sqrt{3} - 2\sqrt{2}} + \frac{3}{3\sqrt{3} + 2\sqrt{2}}$
39. Find the value of  $\frac{1}{\sqrt{3} - \sqrt{2} - 1}$  correct to three places of decimal if  $\sqrt{2} = 1.414$  and  $\sqrt{6} = 2.415$ .
40. Find the values of  $a$  and  $b$  if  $\frac{\sqrt{7}-1}{\sqrt{7}+1} - \frac{\sqrt{7}+1}{\sqrt{7}-1} = a + b\sqrt{7}$
41. Find the value of  $a$  and  $b$  if  $\frac{7+\sqrt{5}}{7-\sqrt{5}} - \frac{7-\sqrt{5}}{7+\sqrt{5}} = a + b\sqrt{5}$
42. If  $a = 8 + 3\sqrt{7}$  and  $b = \frac{1}{a}$ , then what will be the value of  $a^2 + b^2$ ?
43. If  $a = 5 - 2\sqrt{6}$ , find the value of: (i)  $\sqrt{a} - \frac{1}{\sqrt{a}}$  (ii)  $a^2 + \frac{1}{a^2}$
44. If  $a = 9 + 4\sqrt{5}$  and  $b = \frac{1}{a}$ , then find the value of: (i)  $a^2 + b^2$  (ii)  $a^3 + b^3$
45. If  $x = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$  and  $y = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ , then find the value of  $x^2 + y^2 + xy$ .
46. If  $a = \frac{\sqrt{3}+1}{\sqrt{3}-1}$  and  $b = \frac{1}{a}$ , find the value of  $a^2 - b^2 + ab$ .
47. If  $x = \frac{\sqrt{a+2b}-\sqrt{a-2b}}{\sqrt{a+2b}+\sqrt{a-2b}}$ , prove that  $bx^2 - ax + b = 0$ .
48. Factorise:  $8x^3 + 27y^3 + 36x^2y + 54xy^2$
49. Factorise:  $2\sqrt{2} a^3 + 3\sqrt{3} b^3 + 6\sqrt{3} a^2 b + 9\sqrt{2} ab^2$
50. Factorise:  $3\sqrt{3} a^3 + 27b^3 - c^3 + 9\sqrt{3}abc$
51. Factorise:  $4x^2 + 81y^2 + z^2 - 36xy + 18yz - 4zx$
52. Factorise:  $a^3 - 3\sqrt{3} b^3$

53. Factorise:  $343a^3 - b^3 - 147a^2b - 21ab^2$
54. Factorise:  $8a^3 - b^3 - 64c^3 - 24abc$
55. (i) If  $a + b + c = 9$  and  $ab + bc + ca = 26$ , find  $a^2 + b^2 + c^2$ .  
(ii) If  $ab + bc + ca = 36$  and  $a^2 + b^2 + c^2 = 85$ , find  $a + b + c$ .
56. Factorise: (i)  $2y^3 + y^2 - 2y - 1$   
(ii)  $125x^2y - 405y^3$
57. Verify that:  $x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x + y + z)[(x - y)^2 + (y - z)^2 + (z - x)^2]$
58. The polynomial  $p(x) = x^4 - 2x^3 + 3x^2 - 9x + 3a - 7$  when divided by  $x + 1$  leaves the remainder 19. Find the values of  $a$ . Also find the remainder when  $p(x)$  is divided by  $x + 2$ .
59. If  $(x + a)$  is a factor of the polynomials  $x^2 + px + q$  and  $x^2 + mx + n$ , prove that  $a = \frac{n-q}{m-p}$ .
60. If  $a + b + c = 5$  and  $ab + bc + ca = 10$ , then prove that  $a^3 + b^3 + c^3 - 3abc = -25$ .
61. Prove that  $(a + b + c)^3 - a^3 - b^3 - c^3 = 3(a + b)(b + c)(c + a)$ .
62. Factorise:  $x^3 + 13x^2 + 32x + 20$
63. Simplify:  $\frac{(x^3 - y^3)^3 + (y^3 - z^3)^3 + (z^3 - x^3)^3}{(x - y)^3 + (y - z)^3 + (z - x)^3}$
64. The sides of a triangle are in the ratio 25:17:12 and its perimeter is 540m. Find the area of the triangle.
65. The sides of a triangular field are 51m, 37m and 20m. Find the number of rose beds that can be prepared in the field, if each rose bed, on an average occupies 6sq.m of space.
66. The perimeter of an isosceles triangle is 42cm and its base is  $(3/2)$  times each of the equal sides. Find the length of each side of the triangle, area of the triangle and the height of the triangle.
67. An isosceles triangle has perimeter 30cm and each of the equal sides is 12cm. Find the area of triangle.
68. Find the area of a rhombus one side of which measures 20cm and one of whose diagonals is 24cm.
69. Two adjacent sides of a parallelogram are 5cm and 3.5cm. One of its diagonals is 6.5cm. Find the area of the parallelogram.
70. The unequal side of an isosceles triangle measures 24cm and its area is  $60\text{cm}^2$ . Find the perimeter of the given isosceles triangle.
71. In a rectangular field of dimensions  $50\text{m} \times 30\text{m}$ , a triangular park is constructed. If the dimensions of the park are 14m, 15m and 13m, find the area of the remaining field.
72. A field is in the shape of a trapezium with parallel sides of length 25m and 10m and non-parallel sides 14m and 13m long. Find the area of the field.
73. Find the area of quadrilateral ABCD, in which  $AD = 24\text{cm}$ ,  $\angle A = 90^\circ$  and BCD for an equilateral triangle, whose each side is equal to 26cm. Also find perimeter of the quadrilateral ( $\sqrt{3} = 1.73$ ).
74. Find the area of a quadrilateral whose sides measure 9cm, 40cm, 28cm and 15cm. The angle between the first two sides of the quadrilateral is a right angle.

75. Two parallel sides of a trapezium are 60cm and 77cm and other sides are 25cm and 26cm. Find the area of the trapezium.
76. A triangle and a parallelogram have the same base and same area. If the sides of the triangle are 9cm, 12cm and 15cm and the parallelogram stands on the base 9cm, find the height of the parallelogram.
77. A rhombus sheet whose perimeter is 40m and one diagonal is 12m long is painted on both sides at the rate of Rs. 5m<sup>2</sup>. Find the cost of painting.
78. Find the area of quadrilateral ABCD in the given fig.



79. In the given fig,  $\triangle ABC$  is equilateral triangle with side 10cm and  $\triangle DBC$  is right angled at D. If  $BD = 6$ cm, find the area of the shaded region ( $\sqrt{3} = 1.732$ ).







**Delhi International School**  
**Class –IX**  
**Subject – Social Science**  
**Summer Vacation Homework (2018-19)**

***General Instructions:***

- (i) Question no. 1 to 10 should be answered in one word or one sentence.***
- (ii) Question no. 11 to 22 should be answered in not more than 80 words each.***
- (iii) Question no. 23 to 30 should be answered in not more than 100 words each.***

1. In which battle was Napoleon defeated?
2. What was proposed by Montesquieu in his book 'The Spirit of Laws'?
3. Name the pamphlet written by Abba Sieyes.
4. Name the states through which the Tropic of Cancer passes.
5. What are dunes?
6. Which hill ranges form the Deccan Plateau?
7. Which party has been winning elections in Zimbabwe since 1980?
8. What was PRI?
9. What is Constitution?
10. Name some non-form activities of Palampur.
11. What was the immediate cause of French Revolution?
12. How did women suffer in France?
13. What were the causes for the empty treasury of France under Louis XVI, Assess any three causes?
14. Why has 80°30'E longitude been selected as the standard Meridian of India?
15. Give a brief description of the Himalayan Mountains.
16. Write some important characteristics of the Northern Plains?
17. What is the difference between Democratic and Non-democratic countries? What values does a citizen expect from a Democratic Rule?
18. What is the importance of a constitution in a Democratic Country?
19. What preamble is called the preface of the Indian Constitution?
20. What is the aim of production? State any four requirements for the production of goods and services?
21. Write a short note on 'Green Revolution'.
22. What are the different ways to increase production on the same piece of land? Explain.
23. How was the system of estates in the French Society organized? Who constituted the middle class? What were their ideas about privileges in society?
24. Write a short note on slavery in France.
25. What is the significance of India's central location?
26. What are coastal plains? Compare the features of eastern and western coastal plains?
27. What is democracy? Why is it considered the best form of Government?

28. Explain these terms of the preamble of the Indian constitution: Sovereign, Socialist, Secular, Democratic and Republic.
29. How is multiple cropping practiced in Palampur?
30. Distinguish between the condition of a former who is working in his own farm and a landless labourer?

**Map Work:**

- \* Locate and label all the states and their capitals on the political map of India.
- \* Mark the following rivers and lakes on the Physical map of India.

**Rivers:**

The Indus, The Ganga, The Satluj, The Narmada and The Tapi.

**Lakes:**

Wular, Pulicat, Sambhar, Chilika, Vembanad, Kolleru

**Locate and Label:**

Major Countries of IInd World War,

Aocis Powers – Germany, Italy, Japan

Allied Powers – U.K, France, USA, USSR, Poland and Denmark on World Map

**Prepare a model of Physical distribution of India?**