ALL INDIA SAINIK SCHOOL ENTRANCE EXAMINATION: 2015
PAPER I – MATHEMATICS AND SCIENCE
CLASS IX

Time: 2 ½ hrs **Max Marks: 275**
(Maths: 200 & Science: 75)

Name in full ---------- Roll No ----------

Signature of invigilator---------- Code No ----------
(To be filled by the Office)

PAPER I – MATHEMATICS AND SCIENCE : CLASS IX

Note:– Candidates are **NOT TO WRITE** name, roll number or any identification mark/text on any page of this answer book.

FOR OFFICE PURPOSE ONLY

Code No ----------

MARKS OBTAINED

PART A		PART B	

Signature of Examiner ---------- Checked by ----------

Note:-

(a) This paper contains two parts – Part 'A' is Mathematics and Part 'B' is Science. You are required to attempt **ALL** questions in each part.

(b) Part 'A' (Mathematics) contains **50** questions. Marks are indicated against each question.

(c) Part 'B' (Science) contains **37** questions. Marks are indicated against each question.

(d) Write your answers in the space provided in the question paper.

(e) Rough work is to be done at space provided only.

(f) Write all your answers in **Blue/Black** ink only. **Do not use pencil**.

(g) This booklet contains 32 pages.

17 /SSS/14-P-I / M&S—F1—FRONT

Part – A: MATHEMATICS

Max. Marks : 200

SECTION – i

(Each question carries two marks)

Q1. Solve $(^3/_7) + (-\,^6/_{11}) + (-\,^8/_{11}) + (^5/_{11})$

Q2. Find any three rational numbers between 3 and 4.

Q3. Two numbers are in the ratio 5 : 3. If they differ by 18, what are the numbers.

Q4. Convert the following ratios to percentages.

(i) 2 : 3

(ii) 3 : 4

Q5. Find the number of sides of a regular polygon whose each exterior angle has a measure of 45°

Q6. State whether True or False.

(i) All rhombuses are parallelograms.

(ii) All parallelograms are trapeziums.

(iii) All squares are not parallelograms.

(iv) All squares are trapeziums.

Q7. The list price of a frock is Rs. 220. A discount of 20% is announced on sales. What is the amount of discount on it and its sale price.

Q8. How many numbers lie between the squares of the following numbers ?

(i) 25 and 26

(ii) 99 and 100

Q9. Find the square root of 6400 through prime factorisation method.

Q.10. A dice is thrown then, find the probability of getting prime number.

Q.11. Shyam bought an air cooler for Rs.3300 including a tax of 10%. Find the price of the air cooler before VAT was added.

Q.12. How many diagonals does each of the following have:

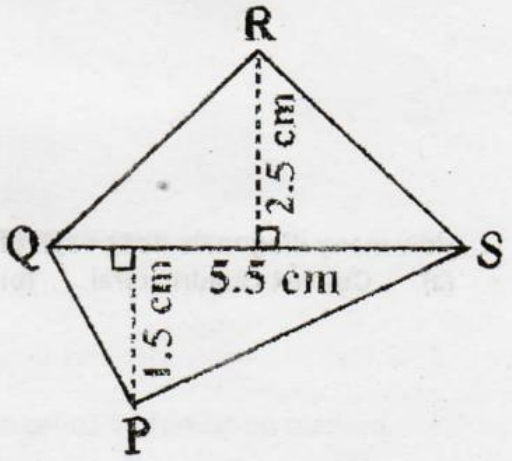
(a) Convex Quadrilateral (b) A regular Hexagon

Q.13. Factorise: $x^2 - 7x + 12$

Q14. Simplify the expression 3y (2y-7) - 3 (y-4) - 63 for y= - 2

Q15. Using the Identity (I), find $(2x + 3y)^2$

Q16. Find the area of the quadrilateral PQRS shown in the figure.



Q17. Find the height of a cylinder whose radius is 7 cm and the total surface area is 968 cm^2.

Q18. Evaluate $\frac{8^{-1}X5^3}{2^{-4}}$ using law of exponents and powers.

Q19. Six pipes are required to fill a tank in 1 hour 20 minutes. How long will it take if only five pipes of the same type are used ?

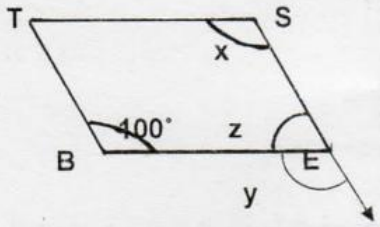
Q20. Solve $\frac{X}{4} + \frac{X}{6} = X - 7$

SECTION – II

(Each question carries three marks)

Q.21 The difference between two whole numbers is 66. The ratio of the two numbers is 2:5. What are the two numbers ?

Q. 22 In the figure, BEST is a parallelogram. Find the values of angles x, y and z.



Q23 A bag has 4 red balls and 2 yellow balls. The balls are identical in all respects other than colour. A ball is drawn from the bag without looking into the bag. What is the probability of getting a red ball? Is it more or less than getting a yellow ball?

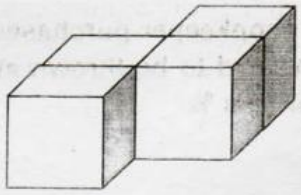
Q.24 Write a Pythagorean triplet whose smallest number is 8.

Q.25 A shopkeeper purchased 200 bulbs for Rs 10 each. However 5 bulbs were fused and had to be thrown away. The remaining were sold at Rs 12 each. Find gain % or loss %.

Q.26 Find Compound Interest on Rs 12,600/- for 2 years at 10% per annum compounded annually.

Q. 27 Simplify $(a+b)(2a-3b+c) - (2a-3b)c$

Q. 28 For the given solid, draw the top view, front view and side view.



Q. 29 (a) How are prisms and cylinders alike ?

(b) How are pyramids and Cones alike?

(c) Is a square prism same as a cube?

Q.30 A godown is in the form of a cuboid of measure 60m x 40m x 30m. How many cuboid boxes can be stored if the volume of one box is $0.8m^3$?

Q. 31 A rectangular piece of paper 11cm x 4cm is folded without overlapping to make a cylinder of height 4 cm. Find the volume of the cylinder.

Q.32 Simply $\left\{\left(\frac{1}{3}\right)^{-2} - \left(\frac{1}{2}\right)^{-3}\right\} \div \left(\frac{1}{4}\right)^{-2}$

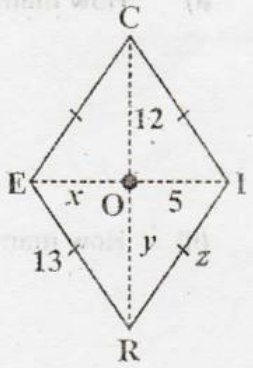
Q. 33 If the three digit number 24x is divisible by 9, what is the value of x ?

Q. 34 The four angles of a quadrilateral are in the ratio 2:3:5:8. Find the angles?

Q. 35 Sum of two numbers is 74. One of the numbers is 10 more than the other what are the numbers.

Q. 36 The perimeter of a rectangle is 13 cm and its width is $2\frac{3}{4}$ cm. Find its length.

Q. 37 CERI is a rombhus as shown in figure. Find x, y, z.



Q. 38. A sum of Rs 10000 is borrowed at a rate of interest of 15% per annum for 2 years. Find the simple interest on this sum and the amount to be paid at the end of two years.

Q. 39 The population of a city was 20,000 in the year 2007. It increased at the rate of 5% per annum. Find the population at the end of year 2010.

Q. 40 If each edge of a cube is doubled

(i) How many times will its surface area increase?

(ii) How many times will its volume increase?

SECTION – III

(Each question carries ten marks)

Q.41 Karan has a total of Rs 590 as currency notes in the denominations of Rs 50, Rs 20 and Rs 10. The ratio of number of Rs 50 notes and Rs 20 notes is 3 : 5. If he has a total of 25 notes, how many notes of each denomination does he have?

Q.42 On a particular day, the sales (in rupees) of different items of a baker's shop are given below. Draw a pie-chart for this data.

(a)	Ordinary Bread	:	320
(b)	Fruit Bread	:	80
(c)	Cakes and Pastries	:	160
(d)	Biscuits	:	120
(e)	Other	:	40

Q.43 A picnic is being planned in a school for class VIII. Girls are 60% of the total number of students and are 18 in number. The picnic site is 55 km from the school and the transport company is charging at the rate of Rs 12 per km. The total cost of refreshments will be Rs 4280. Find out the following :-

(a) The ratio of the number of girls to the number of boys in the class.

(b) The cost per head if two teachers are also going with the class.

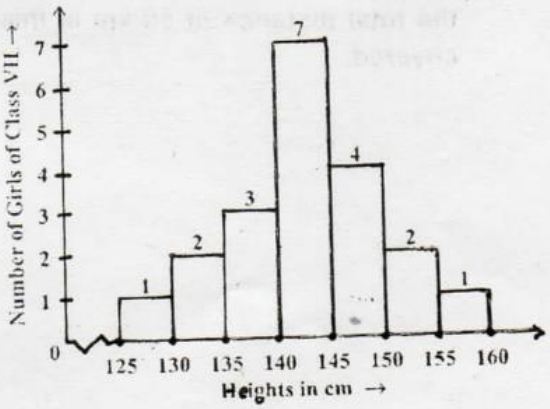
(c) If their first stop is at a place 22 km from the school, what percent of the total distance of 55 km is this ? What percent of distance is left to be covered.

Q. 44 Total cost of 5 metres of a particular quality of cloth is Rs 210. Tabulate the cost of 2, 4, 10 and 13 metres of cloth of same type using proportions.

Q. 45 Observe the histogram on figure and answer the questions given below:

(i) What information is being given by the histogram ?
(ii) What group contains maximum girls.
(iii) How many girls have a length of more than 145 cm ?
(iv) If we divide the girls into the following categories, how many would there be in each ?

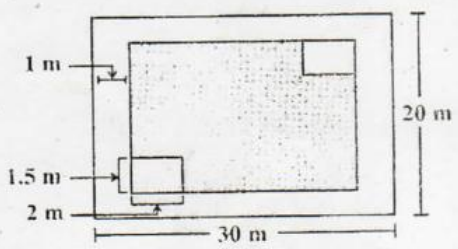
150 cm and more - Group A
140 to less than 150 cm - Group B
Less than 140 cm - Group C



Q. 46 (a) Is 2352 a perfect square? If not, find the smallest multiple of 2352 which is a perfect square. Find the square root of the new number.

(b) Find smallest number by which 9408 must be divided so that the quotient is a perfect square. Find the square root of the quotient.

Q. 47 The rectangular park in figure is of length 30 m and width 20 m. Having understood the figure answers the following questions.



(a) What is the total length of the fence surrounding it ?

(b) How much land is occupied by the park?

(c) There is a path of one metre width running inside along the perimeter of the park that has to be cemented. If 1 bag cement is required to cement $4m^2$ area, how many bags of cement will be required to construct the cemented path?

(d) There are two rectangular flower beds of size 1.5 m x 2m each in the park as shown in the diagram and the rest has grass in it. Find the area covered by grass.

Q. 48 The internal measures of a cuboidal room are 12m x 8m x 4m. Find the total cost of white washing all the four walls of the room, if the cost of white washing is Rs 5 per m^2. What will be the cost of white washing if the ceiling of the room is also white washed.

Q. 49 (a) Mass of earth is 5.97×10^{24} kg and mass of moon is 7.35×10^{22} kg. What is the total mass?

(b) The distance between sun and earth is 1.496×10^{11} m and the distance between earth and moon is 3.84×10^{8} m. During solar eclipse moon comes between earth and sun. At that time what is the distance between moon and sun?

Q. 50 Define the following :

(a) A Bar Graph :

(b) A pie-chart :

(c) A Histogram :

(d) Frequency :

(e) A pictograph :

PART –B: SCIENCE

Max Marks: 75

Note: Part B Bearing 75 marks, contains 37 questions. Question No. 1 to 15 carry 1 mark each. Question No. 16 to 25 carry 2 marks each. Question No. 26 to 35 carry 3 marks each. Question No. 36 & 37 carry 5 marks each.

Select the correct answer (15X1 = 15)

Mark your answer by putting a Tick Mark (✓) on the correct option. Overwriting is NOT permitted.

Q.1 Penicillin is a drug that can:
- (a) Interfere in the biological pathway of bacteria.
- (b) An antibiotic that can kill bacteria
- (c) Both (a) & (b)
- (d) None of the above

Q. 2 To hear a distinct echo the time interval between the original sound and the reflected sound must be :
- (a) 0.2 S (b) 1 S
- (c) 2 S (d) 0.1 S

Q. 3 The Non-metal which is highly reactive and stored under water is :
- (a) Bromine (b) Sulphur
- (c) Phosphorus (d) Iodine

Q. 4 Nitrogen fixation can be done by :
- (a) Industries (b) Rhizobium
- (c) Lightning (d) All of the above

Q. 5 The device used to measure the Purity of milk is :
- (a) Hydrometer (b) Lactometer
- (c) Hygometer (d) Maltometer

Q. 6 The Crops which are grown in the rainy season are called :
- (a) Rabi Crops (b) Kharif Crops
- (c) Rainy Crops (d) None of these

Q. 7 The number of nuclei Present in a Zygote is :
- (a) one (b) two
- (c) four (d) None

Q. 8 Rayon is different from synthetic fibres because :
(a) It has a silk like appearance
(b) It is obtained from wood Pulp
(c) Its fibres can also be woven like of natural fibres
(d) None of these

Q. 9 Choose the correct arrangement of the forces due to rolling, static and sliding friction in a decreasing order:
(a) rolling, static, sliding
(b) rolling, sliding, static
(c) static, sliding, rolling
(d) sliding, static rolling

Q. 10 The process of transferring of charge from a charged body to earth is called :
(a) Discharging (b) Charging
(c) Earthing (d) None of these

Q. 11 That part of the eye which gives a distinct colour to the eye is :
(a) Iris (b) Pupil
(c) Cornea (d) Lens

Q. 12 Green house gases are :
(a) CO_2 (b) CH_4
(c) CFC (d) All of the above

Q. 13 Hottest part of the candle flame is :
(a) Innermost (b) Outermost
(c) Middle Zone (d) Luminous

Q. 14 Those species of plants which are found in a particular area are called :
(a) Species (b) Endemic species
(c) Endangered species (d) None of these

Q. 15 A tadpole develops into an adult by the process of :
(a) Fertilization (b) Metamorphosis
(c) Embedding (d) Budding

Write answers within the space provided under the questions: (10X2=20)

Q. 16 What is a constellation? Name any two constellations.

Q. 17 What is lateral inversion? Name the mirror in which image formed undergoes lateral Inversion.

Q. 18 What are chemical effects of electric current, give one use of such effect ?

Q. 19 Write the difference between audible and inaudible sound ?

Q. 20 Why objects moving in fluids must have special shapes ?

Q. 21 Name of the type of force acting :

(i) A straw rubbed with paper attracts another straw

(ii) A ball rolling along the ground

Q. 22 What is insulin, where is it produced in the body ?

Q. 23 Petroleum is called black gold, Why ?

Q. 24 What do you mean by polymer, give one example of natural polymer?

Q. 25 What is the relation between loudness and amplitude. In which unit is loudness expressed. If the amplitude of the wave becomes thrice, what change will you observe in loudness?

Write answers within the space provided under the questions: (10x3=30)

Q. 26 What are antibiotics ? Give two examples.

Q. 27 What are weeds, how do they affect the growth of plants ?

Q. 28 What is potable water and how is water purified ?

Q. 29 What is cloning ? Who performed it for the first time. Write the name of first mammal that was cloned ?

Q. 30 What is deforestation? Write its causes.

Q. 31 LPG is better domestic fuel than wood, why?

Q. 32 What is refining. Write the fractions of petroleum refining?

Q. 33 Explain the difference between thermosetting plastics and thermoplastics ? Give two examples of each.

Q. 34 Write three commercial uses of micro-organisms?

Q. 35 Differentiate between prokaryotes and eukaryotes with one example each?

Write answers within the space provided under the questions. (2x5=10)

Q. 36 Draw a diagram for animal cell and Label the following :-
(a) Cell membrane (b) Vacuole (c) Nucleus (d) Cytoplasm

Q. 37 (a) Define force, give two examples of situations in which applied force causes a change in the shape of an object ?

(b) In an experiment 4.5 kg of fuel was completely burnt, the heat produced was measured to be 90000 KJ, calculate the calorific value of fuel?