Class IX
Periodic Test-II
(2022-2023)
Mathematics (Standard)

RIMT WORLD SCHOOL

Date : 21.11.2022 **Roll. No. : ....**

Time : 1 hr 30 mins **M.M. : 40**

General Instructions:

a) **This Question paper contains - five sections A, B, C, D and E. Each section is compulsory.**

b) **Section A has 9 MCQ's and 1 Assertion-Reason based questions of 1 mark each.**

c) **Section B has 3 Very Short Answer (VSA)-type questions of 2 marks each.**

d) **Section C has 2 Short Answer (SA)-type questions of 3 marks each.**

e) **Section D has 2 Long Answer (LA)-type questions of 5 marks each.**

f) **Section E has 2 case study questions (4 marks each) with sub parts of the values of 1, 1 and 2 marks respectively.**

Section-A

1. The quadrilateral formed by joining the mid-points of the side of quadrilateral PQRS, taken in order, is a rhombus, if
   a) PQRS is a rhombus
   b) PQRS is a parallelogram
   c) diagonals of PQRS are perpendicular
   d) diagonals of PQRS are equal

2. The figure obtained by joining the mid-points of the sides of a rhombus, taken in order, is

a) a rhombus
b) a rectangle
c) a square
d) any parallelogram

3. Degree of the polynomial $4x^4 + 0x^3 + 0x^5 + 5x + 7$ is

a) 4
b) 5
c) 3
d) 7

4. If $p(x) = x^2 - 2\sqrt{2}x + 1$, then $p(2\sqrt{2})$ is equal to

a) 0
b) 1
c) $4\sqrt{2}$
d) $8\sqrt{2} + 1$

5. In a sample study of 642 people, it was found that 514 people have a high school certificate. If a person is selected at random, the probability that the person has a high school certificate, is

a) 0.5
b) 0.6
c) 0.7
d) 0.8

6. In a survey of 364 children aged 19-36 months, it was found that 91 liked to eat potato chips. If a child is selected at random, the probability that he/she does not like to eat potato chips, is

a) 0.25
b) 0.50
c) 0.75
d) 0.80

7. Which of the following is not true for a parallelogram?

a) Opposite sides are equal
b) Opposite angles are equal
c) Opposite angles are bisected by the diagonals
d) Diagonals bisect each other

8. One of the zeroes of the polynomial $2x^2 + 7x - 4$ is

a) 2
b) ½
c) -1
d) -2

9. If $x^{51} + 51$ is divided by $x + 1$, then the remainder is

a) 0 b) 1

c) 49 d) 50

10. **Directions:**

a) If both Assertion and Reason are correct and Reason is the correct explanation of Assertion.

b) If both Assertion and Reason are correct, but Reason is not the correct explanation of Assertion.

c) If Assertion is correct but Reason is incorrect.

d) If Assertion is incorrect but Reason is correct.

Assertion : $3x^2 + x - 1 = (x + 1)(3x - 2) + 1$.

Reason: To factorise $ax^2 + bx + c$, write b as sum of two numbers whose product is ac.

Section-B

11. Check whether p(x) is a multiple of g(x) or not

$p(x) = 2x^3 - 11x^2 - 4x + 5$, $g(x) = 2x + 1$

12. A company selected 4000 households at random and surveyed them to find out a relationship between income level and the number of television sets in a home. The information, so obtained is listed in the following table

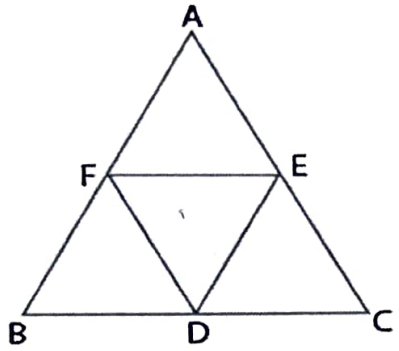
Monthly income (in Rs)	Number of Televisions/household			
	0	1	2	Above 2
< 10000	20	80	10	0
10000 - 14999	10	240	60	0
15000 - 19999	0	380	120	30
20000 - 24999	0	520	370	80
25000 and above	0	1100	760	220

Find the probability

i) of a household earning Rs. 10000 – Rs. 14999 per year and having exactly one television.

ii) of a household earning Rs. 25000 and more per year owning 2 televisions.

13. In the figure, it is given that BDEF and FDCE are parallelogram. Prove that BD = CD.



Section-C

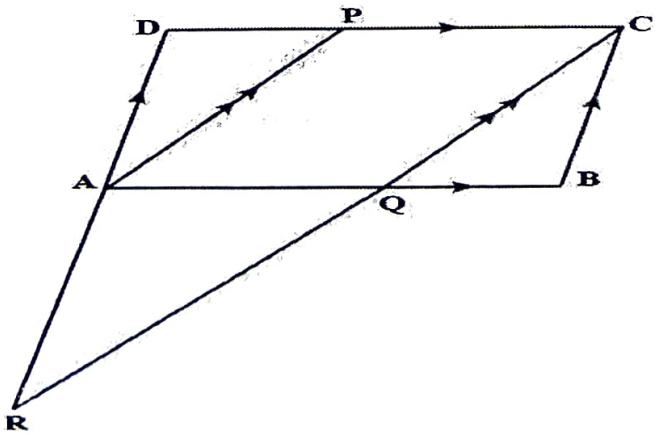
14. If diagonals of a quadrilateral are equal and bisect each other at right angles, Show that it is a Square.

15. If the polynomials $(az^3 + 4z^2 + 3z - 4)$ and $(z^3 - 4z + a)$ leave the same remainder when divided by $z - 3$, find the value of "a".

Section-D

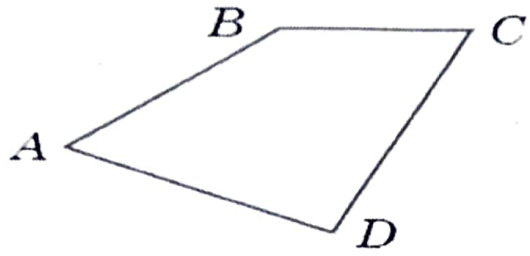
16. Factorise $2x^3 - 3x^2 - 17x + 30$ using factor theorem.

17. P is the mid-point of the side CD of a parallelogram ABCD. A line through C parallel to PA intersects AB at Q and DA produced at R. Prove that DA = AR and CQ = QR.



18. Case study I:

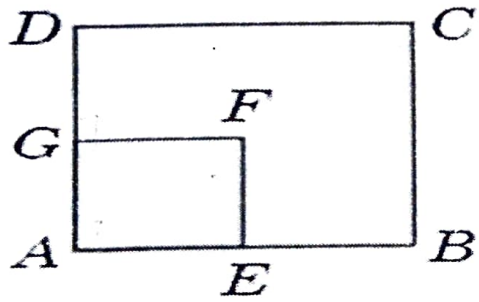
After summer vacation, Manit's class teacher organised a small MCQ quiz, based on the properties of quadrilaterals. During quiz, she asks different questions to students. Some of the questions are listed below.



a) If angles of a quadrilateral are in ratio 3 : 5 : 5 : 7, then find all the angles.

b) Write all the properties of a Rhombus.

c) ABCD and AEFG are two parallelograms. If $\angle C = 63°$, then determine $\angle G$.



19. Case study II:

Beti Bachao, Beti Padhao (BBBP) is a personal campaign of the Government of India that aims to generate awareness and improve the efficiency of welfare services intended for girls. In a school, a group of $(x + y)$ teachers, $(x^2 + y^2)$ girls and $(x^3 + y^3)$ boys organised a campaign on Beti Bachao, Beti Padhao.

a) Write the formula to $(x^3 + y^3)$,
b) If in the group, there are 15 teachers and 117 girls, then what is the value of xy?
c) If in the group, there are 15 teachers and 117 girls, then what is the number of boys?