

# PRERNA EDUCATION

SAMPLE PAPER 2019

Mathematics

Class-IX

Time: 3 hours

Max Marks: 80

## SECTION A 3 MARKS EACH

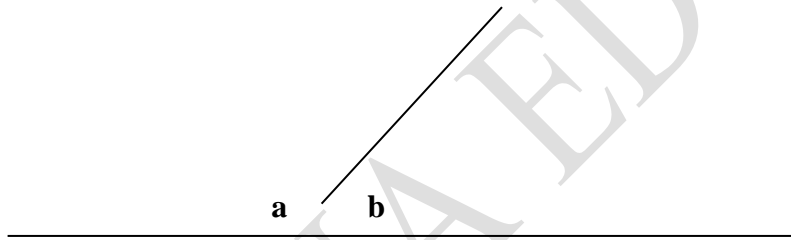
1. rationalize

1

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$$1 + \sqrt{2} - \sqrt{3}$$

- A sum of money amounts to 13230/- in one year and 13891.50 in one and a half year compounded annually. Find the sum and the rate?
- The reduction in 25% of the price of the apples enables a person to buy 2 kg more for 240/-. Find the original and the reduced price?
- In the figure below, if  $a - b = 80$ , find  $a$  and  $b$ ?



- If  $x ; y = 2:5$ , find  $10x + 3y : 5x + 2y$ ?
- Factorize  $x^3 + 3x^2 + 3x - 7$
- If  $\cos (40 + x) = \sin 30$ , find  $x$ ?
- Find the perimeter and the area of the triangle whose sides are 13 cm, 14 cm and 15 cm ?
- A dealer buys the table listed at 1500/-. He gets the discounts of 20% and 10%. He spends 20/- on the transport. He sells it at the profit of 20%, find the selling price?
- find at least three solutions for  $2x - 3[y - 2] = 1$

**SECTION B**  
**4 MARKS EACH**

11. The price of sugar goes up by 20%, how much percent must the consumption be reduced so that the expenses remain the same?

12. Read the page of the pass book below.

<u>MONTH</u>	<u>DEPOSIT</u>	<u>WITHDRAWAL</u>	<u>BALANCE</u>
Jan 1			1500
Jan 5	1000		2500
Jan 20		500	2000
Feb 15	1200		3200
Feb 27		700	2500
May 8		1000	1500
May 15	700		2200
June 3	1500		3700
June 14	700		4400
Jne 28		1200	3200
Agu 12	2000		5200
Ag 30		1300	3900
Nov 1	600		4500
Nov 20	1000		5500
Dec 8		1200	4300
Dec 20	2000		6300

Find the interest if the rate till March 31 was 4.5% and after it was 5%?

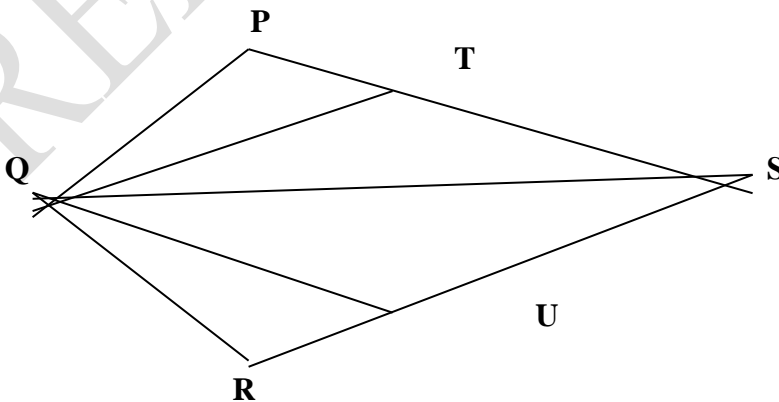
13. find  $\frac{x+a}{x-a} + \frac{x+b}{x-b}$  when  $x = \frac{2ab}{a+b}$

14. Show that  $2(a^2 + b^2) = (a + b)^2$  then  $a = b$ .

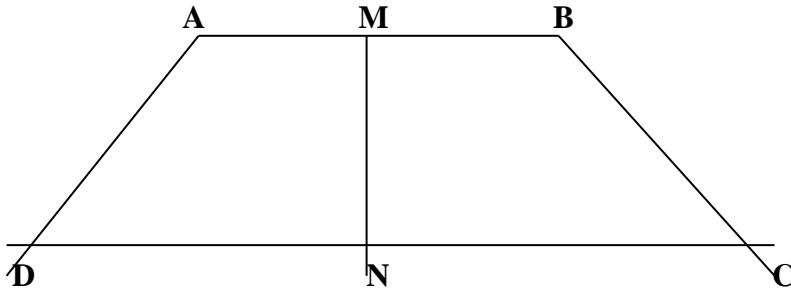
15. In the triangle ABC if  $\angle C = 90^\circ$  and  $\tan A = \frac{1}{3}$  then show that

$$\sin A \cos B + \cos A \sin B = 1$$

16. In the figure below,  $PQ = RQ$ ,  $\angle PQT = \angle RQU$ ,  $\angle TQS = \angle UQS$ , prove that  $QT = QU$ .

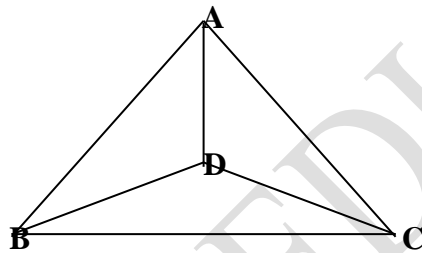


17. The minute hand of the clock is 10 cm. find the area swept by it from 9:00 am to 9 : 30 am?  
 18. In the figure below MN is perpendicular to DC and AB. Prove that AD = BC.



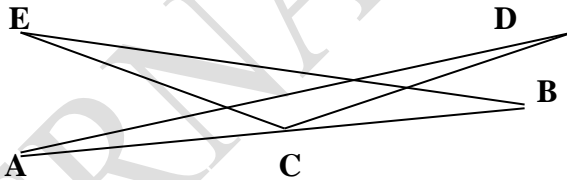
19. In a triangle the line segment joining the mid points of any two sides of a triangle is parallel to the third side and half of it.

20. In the figure AB = AC,  $\angle DBC = \angle DCB$ , prove that AD bisects  $\angle BAC$ .

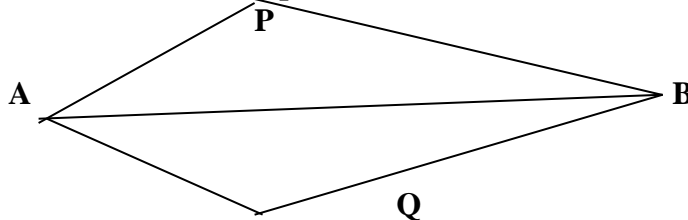


**SECTION C**  
**6 MARKS EACH -**

21. In the figure below, C is the mid point and  $\angle BAD = \angle CBE$  and  $\angle ECA = \angle DCB$ , prove that DA = EB.



22. In the figure below, AP = AQ, BP = BQ, prove that AB is the bisector of  $\angle PAQ$  and  $\angle PBQ$ .



23. Prove that the line joining the mid point of the hypotenuse to the opposite vertex of the right triangle is equal to the half of the hypotenuse.