

ESSENCE TEST-11

DATE : 01-09-19

9TH CLASS

MP BOARD

NUMBER SYSTEM, POLYNOMIAL,
CO-ORNATE GEOMETRY, LINEAR EQUATION,
EUCLID'S GEOMETRY, LINES & ANGLES

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1. State whether of the following statement are true or false. [1x5=5]
- (i) Every natural number is a whole number.
 - (ii) Every integer is a whole number.
 - (iii) Only one line can pass through a single point.
 - (iv) If two circles are equal, then their radii are equal.
 - (v) $\sqrt{23}$ is an irrational number.
2. Solve [1x5=5]
- (i) Write $\frac{1}{11}$ in decimal expansion.
 - (ii) $125^{\frac{1}{3}}$
 - (iii) Find the value of the polynomial $5x - 4x^2 + 3$ at $x = 2$.
 - (iv) Find the zero of the polynomial $p(x) = x - 5$.
 - (v) Is $\frac{1}{\sqrt{2}}$ rational or irrational.
3. Rationalise the denominators of the following: $\frac{1}{\sqrt{7} - \sqrt{6}}$ [2]
4. Find : $16^{\frac{3}{4}}$ [2]
5. Find the remainder when $x^2 + 3x^2 + 3x + 1$ is divided by $x + 1$ [2]
6. Use suitable identities to find the following products: $(3x-2x)(3+2x)$ [2]
7. Evaluate the following products without multiplying directly:

$$103 \times 107. \quad [2]$$

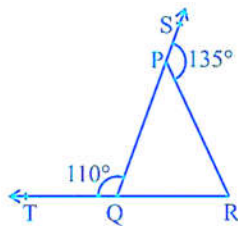
8. Factorize $2x^2 + 7x + 3$. [2]

9. Find five rational numbers between 3 and 4. [2]

10. Draw the graph of the following linear equation in two variables:

$$Y = 3x \quad [2]$$

11. In Fig. sides QP and RQ of $\triangle PQR$ are produced to points S and T respectively. If $\angle SPR = 135^\circ$ and $\angle PQT = 110^\circ$, find $\angle PRQ$ [2]



12. In Fig. if $AC = BD$, then prove that $AB = CD$. [2]



13. Express the following in the form $\frac{p}{q}$, where p and q are integers and

$$q \neq 0 \quad (i) \quad 0.4\bar{7} \quad [3]$$

14. Simplify: $2^{\frac{2}{3}} \cdot 2^{\frac{1}{5}}$ [3]

15. Factorise: $3x^2 - x - 4$ [3]

16. Evaluate the following using suitable identities: $(99)^3$ [3]

17. What is the name of horizontal and the vertical lines drawn to determine the position of any point in the Cartesian plane? [3]

18. Draw the graph of the following linear equation in two variables:

$$3 = 2x + y \quad [3]$$

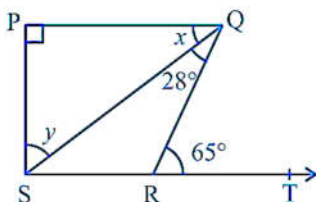
19. If a point C lies between two points A and B such that $AC = BC$, then

prove that $AC = \frac{1}{2} AB$. Explain by drawing the figure. [3]

20. Express the following in the form $\frac{p}{q}$, where p and q are integers and

$$q \neq 0 \quad (i) \overline{0.001} \quad [3]$$

21. In Fig. if $PQ \perp PS$, $PQ \parallel SR$, $\angle SQR = 28^\circ$ and $\angle QRT = 65^\circ$, then find the values of x and y. [3]



22. Write the answer of each of the following questions: [3]

(i) What is the name of horizontal and the vertical lines drawn to determine the position of any point in the Cartesian plane?

(ii) What is the name of each part of the plane formed by these two lines?

(iii) Write the name of the point where these two lines intersect.

23. In countries like USA and Canada, temperature is measured in

Fahrenheit, whereas in countries like India, it is measured in Celsius.

Here is a linear equation that converts Fahrenheit to Celsius:

$$F = \left(\frac{9}{5}\right)C + 32 \quad [5]$$

(i) Draw the graph of the linear equation above using Celsius for x-axis and Fahrenheit for y-axis.

(ii) If the temperature is 30° C, what is the temperature in Fahrenheit?

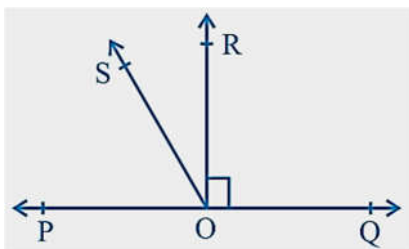
(iii) If the temperature is 95°F, what is the temperature in Celsius?

(iv) If the temperature is 0°C, what is the temperature in Fahrenheit and if the temperature is 0°F, what is the temperature in Celsius?

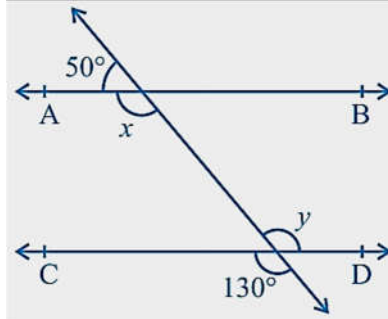
24. Expand each of the following, using suitable identities: $(-2x + 3y + 2z)^2$ [5]

25. In Fig. POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray

lying between rays OP and OR. Prove that $\angle ROS = \frac{1}{2}(\angle QOS - \angle POS)$. [5]



26. In Fig. find the values of x and y and then show that $AB \parallel CD$. [5]





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BestSM solution
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