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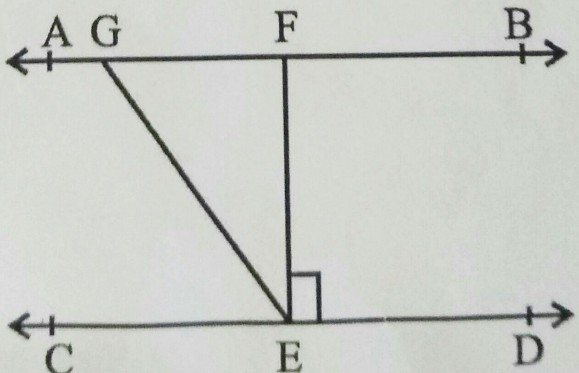
Class-ix **Sub- Mathematics**

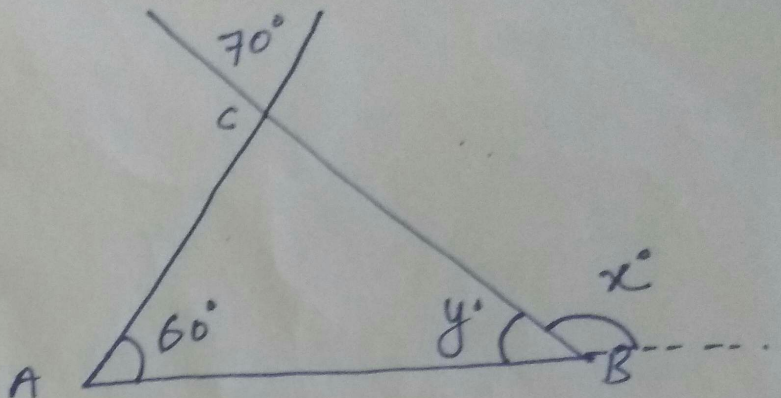
HOLIDAY HOMEWORK

1. If $x - 1$ is a factor of $4x^3 + 3x^2 - 4x + k$ then find the value of k.
2. Factorise $6x^2 + 5x - 6$
3. Factorise: $x^3 + 13x^2 + 32x + 20$
4. Name the quadrant on which the points lying: a. (4,-6) b. (-4,6)
5. Rationalize the denominator:- $\frac{1}{\sqrt{5}+\sqrt{2}}$
6. Prove that "*Angles opposite to equal sides of an isosceles triangle are equal*"
7. In a parallelogram ABCD , if $\angle A = 103^0$, Determine $\angle B$.
8. Angles of a quadrilateral are in the ratio 3 : 5 : 9 : 13 Find all the angles of the quadrilateral.
9. Show that 0.272727……. can be expressed in the form of p/q where p and q are integers and $q \neq 0$.
10. Find an irrational number between $\frac{1}{7}$ and $\frac{2}{7}$.
11. In which quadrant or on which axis do each of the points (-2,4), (3,-1), (-1,0), (1,2) and (-3,5) lie? Verify your answer by locating them on the Cartesion plane.
12. Diagonals AC and BD of a trapezium ABCD with AB ‖ DC intersect each other at O. Prove that ar(AOD) = ar(BOC) .
13. D,E and F are respectively the mid points of the sides BC,CA, and AB of a triangle ABC. Show that :- 1. BEDF is a parallelogram. 2. Ar(DEF) = 1/4ar(ABC)
14. Solve the equation $4x + 13 = 0$, and represent the solution(s) on (i) the number line,(ii) the Cartesian plane.
15. In below figure, if AB ‖ CD, EF ⊥ CD and $\angle GED = 135°$, find $\angle AGE$, $\angle GEF$ and $\angle FGE$.



16. In a triangle PQR, T is the mid-point of median AS. Show that ar (QTS) = $\frac{1}{4}$ar(PQR)

17. Find the value of x and y in the adjacent figure.



18. Find the points where the graph of the equation $5x + 7y = 15$ cuts the x-axis and the y-axis.

19. Explain the Euclid's fifth postulate.

20. The polynomial $P(x) = x^4 - 2x^3 + 3x^2 - px + q$ when divided by $(x - 1)$ and $(x + 1)$ leaves the remainders 5 and 9 respectively. Find the values of p and q.