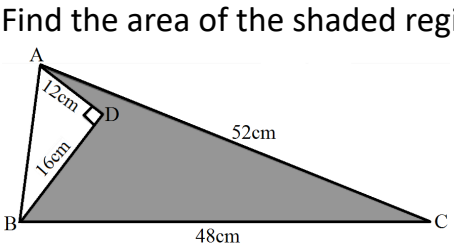
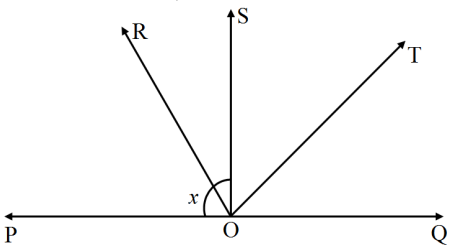
Q1. The perimeter of a triangular field is 540m and its sides are in the ratio 25 : 17 : 12. Find the area of the field. Also, find the cost of ploughing the field at ₹ 5 per m^2. **5 Marks**

Q2. Find the area of the shaded region in the figure given below. **5 Marks**



Q3. Find the area of the triangle whose sides are 42cm, 34cm and 20cm in length. Hence, find the height corresponding to the longest side. **5 Marks**

Q4. In figure, ray OS stand on a line POQ. Ray OR and ray OT are angle bisectors of $\angle \mathrm{POS}$ and $\angle \mathrm{SOQ}$ respectively. If $\angle \mathrm{POS} = \mathrm{x}$, find $\angle \mathrm{ROT}$. **5 Marks**



Q5. Using factor theorem, factorize the following polynomials: **5 Marks**

$x^3 - 23x^2 + 142x - 120$

Q6. Verify that: **3 Marks**

$$x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x + y + z)\left[(x - y)^2 + (y - z)^2 + (z - x)^2\right]$$

Q7. Evaluate the following using identities: **3 Marks**

991 × 1009

Q8. Find the value of *a* such that (x - 4) is a factors of $5x^3 - 7x^2 - ax - 28$.

Q9. Factorise:

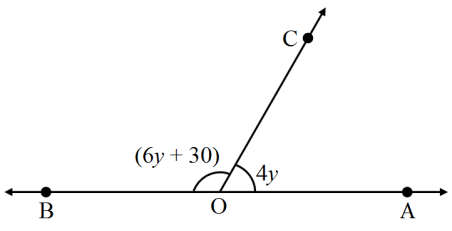
Prove that $\frac{0.85\times0.85\times0.85+0.15\times0.15\times0.15}{0.85\times0.85-0.85\times0.15+0.15\times0.15} = 1$

Q10. If 3x - 2y = 11 and xy = 12, find the value of $27x^3 - 8y^3$.

Q11. Factorize the following expressions:

$a^3 + 3a^2b + 3ab^2 + b^3 - 8$

Q12. What value of y would make AOB a line in the below figure, If $\angle \mathrm{AOC} = 4\mathrm{y}$ and $\angle \mathrm{BOC} = (6\mathrm{y} + 30)$? **3 Marks**

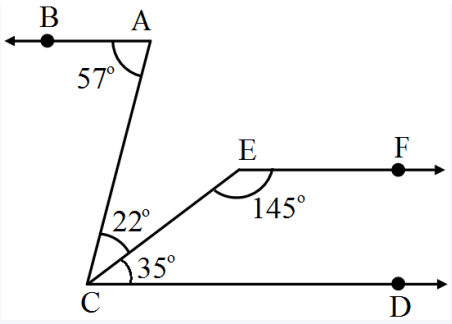


Q13. Factorise: **3 Marks**

$7(x - 2y)^2 - 25(x - 2y) + 12$

Q14. Find the value of m for which (2x - 1) is a factor of $(8x^4 + 4x^3 - 16x^2 + 10x + m)$. **3 Marks**

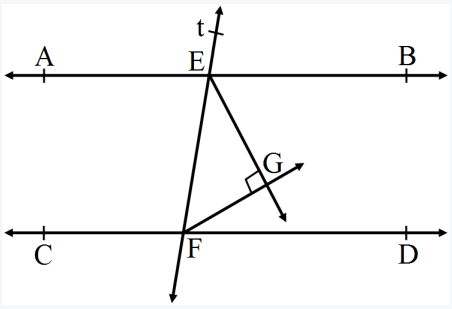
Q15. In figure, show that AB || EF. **3 Marks**



Q16. Write the following cubes in expanded form: **3 Marks**

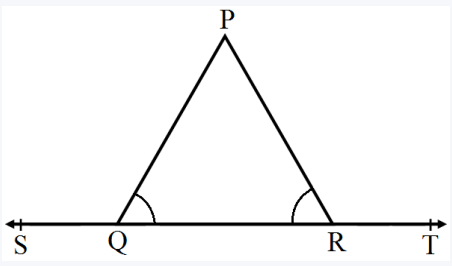
$(2a - 3b)^3$

Q17. In the given figure, AB || CD transversal t cuts them at E and F respectively. If EG and FG are the bisectors of $\angle BEF$ and $\angle EFD$ respectively, prove that $\angle EGF = 90^\circ$. **3 Marks**



Q18. If a + b + c = 5 and ab + bc + ca = 10, then prove that $a^3 + b^3 + c^3 - 3abc = -25$. **3 Marks**

Q19. In Fig $\angle PQR = \angle PRQ$, then prove that $\angle PQS = \angle PRT$. **3 Marks**



Q20. Expand the following, using suitable identities: **3 Marks**

$(-2x + 3y + 2z)^2$