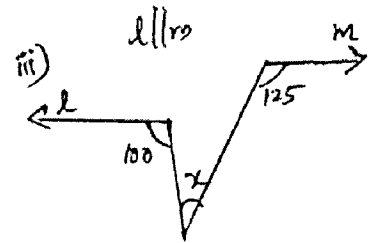
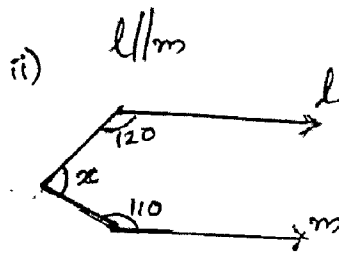
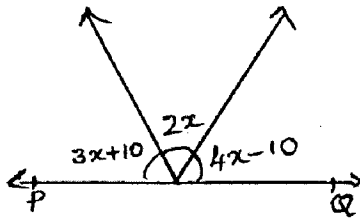
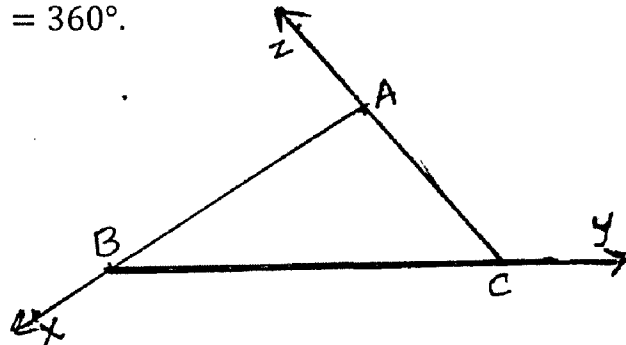


1. Find x:

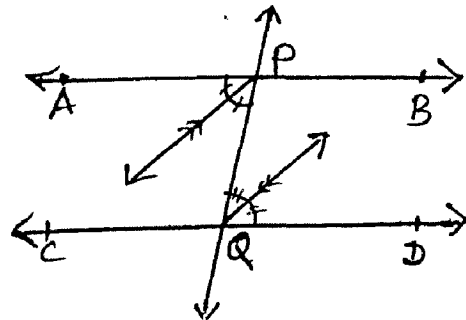
i)



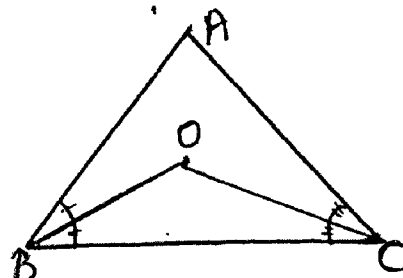
2. Angles of a linear pair are in the ratio 3:2. Find the angles.
3. An exterior angle of a triangle is 108° and the interior opposite angles are in the ratio 4:5. Find the angles of the triangle.
4. The sides of $\triangle ABC$ are produced as shown in the figure. Prove that $\angle CBX + \angle ACY + \angle BAZ = 360^\circ$.



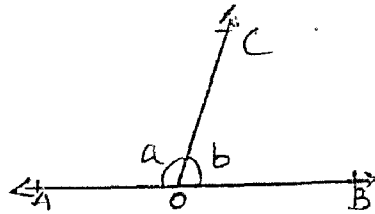
5. Lines AB and CD are intersected by the transversal PQ such that the bisectors of $\angle APQ$ and $\angle DQP$ are parallel. Prove that $AB \parallel CD$.



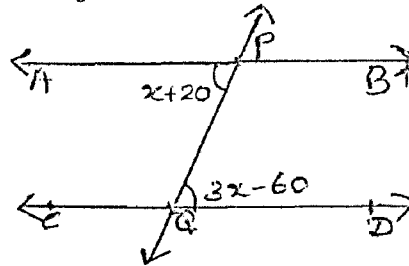
6. The bisector of $\angle B$ and $\angle C$ meet at O. Prove that $\angle BOC = 90^\circ + \frac{1}{2} \angle A$.



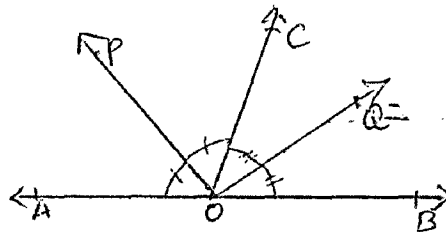
7. AOB is a straight line. If $a - b = 40^\circ$ find a and b.



8. $AB \parallel CD$, $\angle APQ = x + 20$ and $\angle DQP = 3x - 60$. Find x .



9. AOB is a straight line. If \overrightarrow{OP} and \overrightarrow{OQ} are bisectors of $\angle AOC$ and $\angle BOC$ respectively. Prove the $\angle POQ = 90^\circ$.



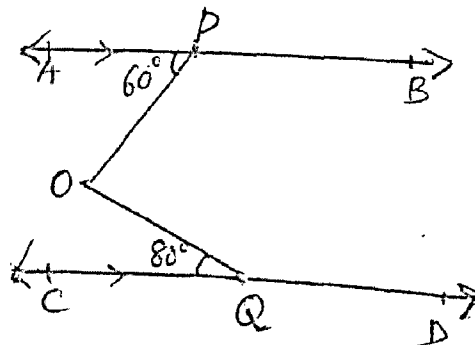
10. State and prove angle sum property of a triangle.

11. Prove that if two lines intersect then pair of vertically opposite angles are equal.

12.

$AB \parallel CD$

Find reflex $\angle POQ$.



INTERNATIONAL INDIAN SCHOOL DAMMAM
MATHEMATICS WORKSHEET -- 2018 – 2019 CLASS: IX

NUMBER SYSTEMS

1. Rationalize $\frac{3}{\sqrt{10}}$ and find the value if $\sqrt{10} = 3.162$

2. Simplify

a) $\frac{3\sqrt{12}}{6\sqrt{27}}$ b) $\frac{\sqrt{8}}{\sqrt{32+2\sqrt{72}}}$ c) $\frac{\sqrt{32}+\sqrt{48}}{\sqrt{8}+\sqrt{12}}$ d) $\sqrt{54} + 5\sqrt{243} - 3\sqrt{75}$

e) $(\sqrt{3} + 2\sqrt{2})^2$ f) $(3\sqrt{3} - 2\sqrt{5})^2$ g) $(\sqrt{11} + \sqrt{5})(\sqrt{11} - \sqrt{5})$ h) $\frac{\sqrt{24}}{8} + \frac{\sqrt{54}}{12}$

3. Find 2 irrational numbers between

a) 4.37646..... and 4.2765..... b) $\frac{3}{5}$ and $\frac{4}{5}$ c) 0.1 and 0.12

4. Visualize 3.75 up to 3 decimal places by the method of successive magnification.

5. Represent on the numberline. a) $\sqrt{8.7}$ b) $\sqrt{11}$

6. Express in $\frac{p}{q}$ form, where p and q are integers and $q \neq 0$

a) 0.67 b) 2.49 c) 3.327

7. Simplify by rationalizing the denominator

a) $\frac{\sqrt{6}}{\sqrt{2}+\sqrt{3}}$ b) $\frac{4\sqrt{3}+2\sqrt{2}}{4\sqrt{3}-2\sqrt{2}}$ c) $\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}} + \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$

8. If $a = 3 + \sqrt{8}$, find the value of $(a + \frac{1}{a})^2$

9. Find a and b where a and b are rational numbers

a) $\frac{5-2\sqrt{6}}{3+\sqrt{6}} = a+b\sqrt{6}$ b) $\frac{\sqrt{7}+\sqrt{3}}{\sqrt{7}-\sqrt{3}} = a-\sqrt{21}b$

10. If $x = \frac{1}{2-\sqrt{3}}$ and $y = \frac{2-\sqrt{3}}{2+\sqrt{3}}$, find the value of

a) $x^2 + y^2$ b) $x^2 - xy + y^2$

11. Evaluate : $\sqrt[4]{81} + 7\sqrt[3]{216} + 5\sqrt[5]{32}$

12. Find x if a) $5^x = 625\sqrt{5}$ b) $3^{2x-1} = 243$

13. Find one rational and irrational number between 0.7041 and 0.7151.

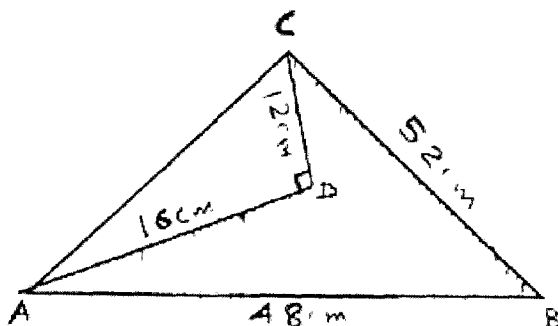
14. Express $1.3\bar{2} + 0.3\bar{5}$ in the form $\frac{p}{q}$, where p and q are integers.

INTERNATIONAL INDIAN SCHOOL, DAMMAM

MATHEMATICS WORKSHEET: CLASS - IX 2018-2019

HERON'S FORMULA

1. The area of an equilateral triangle is $4\sqrt{3} \text{ cm}^2$. Find the perimeter of the triangle.
2. The altitude of an equilateral triangle is $5\sqrt{3} \text{ cm}$. Find its area.
3. The perimeter of an equilateral triangle is 48cm. Find its area.
4. Find the area of an isosceles triangle whose perimeter is 108 cm and base 48cm.
5. Find the area of a rhombus whose side is 20cm and one of its diagonal is 24 cm.
6. The sides of a triangle are 120m, 170m and 250m. Find its area and height of the triangle if base is 250m.
7. Find the area of a quadrilateral field ABCD in which $AB = 50\text{m}$, $BC=18\text{m}$, $CD=82\text{m}$, $DA=50\text{m}$ and $\angle CBD = 90^\circ$.
8. The perimeter of a rhombus is 52cm and one of the diagonal is 24cm. Find the area of the rhombus
9. The adjacent sides of a parallelogram are 34cm and 20cm and a diagonal is 42cm. Find the area of the parallelogram.
10. Sides of a triangle are in the ratio 3:5:4 and its perimeter is 900cm. find its area.
11. Two parallel sides of a trapezium are 120cm and 154cm and other sides are 50cm and 52cm. Find the area of trapezium.
12. Find the area of a quadrilateral PQRS in which $PQ=8\text{cm}$, $QR=6\text{cm}$, $RS=14\text{cm}$, $PS=16\text{cm}$ and $PR=10\text{cm}$.
13. The area of a rhombus is 72cm^2 . If one of the diagonals is 18cm, find the length of the other diagonal
14. Calculate the area of the shaded portion in the given figure.



INTERNATIONAL INDIAN SCHOOL DAMMAM

MATHEMATICS WORKSHEET 2018-2019

Polynomials

CLASS-IX

- If $\frac{x}{y} + \frac{y}{x} = -1$ where $x \neq 0, y \neq 0$, then find the value of $x^3 - y^3$
- Find the remainder when $p(x) = x^3 - 3x^2 + 4x + 32$ is divided by $x + 2$
- When $p(x) = x^3 - ax^2 + x$ is divided by $x - a$, Find the remainder
- For what value of a , $(x - 3)$ is a factor of $x^3 + x^2 - 17x + a$
- If -4 is the zero of the polynomial $P(x) = x^2 + 11x + K$. Then find the value of K
- Using suitable identity – Evaluate
(A) 99^3 , (B) 102^2 (C) $102^2 - 2^3$ (D) 105×95 (E) $(1.5)^3 - (0.9)^3 - (0.6)^3$
- Factorise
 - $x(x - y)^3 + 3x^2y(x - y)$
 - $a^3 - b^3 + 1 + 3ab$
 - $(p - q)^3 + (q - r)^3 + (r - p)^3$
 - $a(a - 1) - b(b - 1)$
 - $x^6 - y^6$
- If $3x + y + z = 0$ show that $27x^3 + y^3 + z^3 = 9xyz$
- If $a + b + c = 0$ then $\frac{a^2}{bc} + \frac{b^2}{ac} + \frac{c^2}{ab} = ?$
- If $a + b + c = 9$, $ab + bc + ac = 26$ find $a^2 + b^2 + c^2$
- If $x + y = 12$ and $xy = 27$, then find the value of $x^3 + y^3$
- If both $(x - 2)$ and $(x - \frac{1}{2})$ are factors of polynomial $p(x) = x^2 + 5x + r$. Show that $\frac{p}{r} = 1$
- If the polynomials $(2x^3 + ax^2 + 3x - 5)$ and $(x^3 + x^2 - 2x + a)$ leave the same remainder when divided by $(x - 2)$. Find the value of a . Also find the remainder in each case.
- On dividing polynomials $x^3 + 2x^2 - 5ax - 7$ and $x^3 + ax^2 - 12x + 6$ by $(x + 1)$ and $(x - 2)$ respectively remainders R_1 and R_2 are obtained. If $2R_1 + R_2 = 6$, then find the value of a .
- Find the value of a and b for which $(x - 1)$ and $(x + 3)$ are two factors of polynomials $x^3 - ax^2 - 13x + b$
- Divide $p(x) = x^4 - 13x^3 + 29x^2 + 12x - 30$ by $q(x) = x + 1$. Also find what should be subtracted from $p(x)$ so that it is divisible by $q(x)$
- Find common factor in polynomials $x^2 + 8x + 15$ and $x^2 + 3x - 10$
- Show that $2x + 1$ is a factor of polynomials $2x^3 + x^2 - 6x - 3$. Hence factorise the polynomial.