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ST. LAWRENCE HIGH SCHOOL

FOR GOD AND COUNTRY

THIRD TERM TEST – 2018
CLASS – VI

SUBJECT – ALGEBRA & GEOMETRY
DURATION – 2 HOURS 30 MINUTES

F.M.: 90
DATE - 10/11/2018

GROUP – A

1. MCQ **[1x5=5]**

1.1. One - Fourth of a region of a circle is – (b) Quadrant

1.2. Two or more circles with the same center are called – (b) Concentric Circles

1.3. Which of the following is double the radius of the circle? – (a) Diameter

1.4. Which quadrilateral is not a parallelogram? – (b) Trapezium

1.5. A triangle has one right angle. What could be the measures of the other two angles? –
(d)$20°$ *and* $70°$

2. State TRUE or FALSE for the following statements **[1X5=5]**

a) Each angles of a rectangle is a right angle – TRUE

b) The diagonals of a square are perpendicular to one another – TRUE

c) All the sides of a rhombus are of equal length – TRUE

d) All diameters are chords – TRUE

e) Twice a circle is a semicircle – FALSE

3. Fill in the blanks **[1X5 = 5]**

a) A quadrilateral with all sides and all angles equal is a square

b) A quadrilateral with four equal sides and no right angles can be called a Rhombus

c) A quadrilateral with exactly two sides parallel is a Trapezium

d) All the radii of a circle are equal

e) The distance around a circle is called circumference

4. Answer the following questions: **[1X4=4]**

a) Write the numerals in place of letters to make the following equations true: a+2=8

A: a=6 , 6+2 = 8

b)Write the following statement statement in equation form: 5 less than y is 24.

A: y – 5 =24

c) Classify the triangle the measure of whose side is given, as scalene, isosceles or equilateral: 6.8 cm, 8 cm, 6.8 cm

A: Isosceles Triangle

d) Classify the triangle whose angles measures are given below, as acute, obtuse or right:
$20°, 65°, 95°$
A: Obtuse angled Triangle

5. Match the following: [1X6 = 6]

i) One curved surface, one plane surface -- (e) Cone
ii) One unbroken curved surface --- (d) Sphere
iii) One curved surface, two plane faces of equal size --- (b) Cylinder
iv) Six square faces --- (a) Cube
v) One square base, four triangular faces --- (f) Pyramid
vi) Three rectangular faces, two triangular base of equal size --- (c) Triangular Prism

GROUP - B

1) Answer the following : (5X2 = 10)

i) Add: $2a + 3b \; and \; 3a + 4b$

A: $5a + 7b$

ii) Solve: $4x + 4 = 28$

A: $4x = 28 - 4$

$x = \frac{24}{4}$ = 6

iii) What is a/an:
a) **Scalene Triangle –** A triangle having sides of different length.
b) **Isosceles Triangle –** A triangle having two sides or 2 angles equal in length.

iv) a) What is a Radius of a circle?
A: A line segment joining the center of a circle to any point on the circle.
b) What is a Chord of a circle?
A: A line segment joining any two points on a circle.

v) **State Euler's Formula –** For any polyhedrons with V(vertices), E(edges) and F(faces),

$(V - E + F = 2)$

2) Answer the following: (Any 5) :-- (5X3 = 15)

i) Take away $2y^2 + yz - 2z^2 \; from \; 9y^2 - 3z^2$

A: $(9y^2 - 3z^2) - (2y^2 + yz - 2z^2) = 9y^2 - 3z^2 - 2y^2 - yz + 2z^2$
$= 7y^2 - z^2 - yz$

ii) Solve: $5(x - 4) - 1 = -7x + 3$
A: $5x - 20 - 1 = -7x + 3$
$or, 5x + 7x = 3 + 20 + 1$
$or, 12x = 24$
$or, x = \frac{24}{12}$
$therefore, x = 2$

iii) Draw an angle of $45°$, using a pair of compasses.

iv) Discuss the types of triangles according to angles
A: (i) Acute – angled triangle: If each angle of a triangle is less than $90°$.
(ii) Right – angled triangle: If a triangle has one of its angles as $90°$.
(iii) Obtuse – angled triangles: If a triangle has one of its angles more than $90°$.

v) What is a:

a) Trapezium – It is a quadrilateral with exactly one pair of opposite sides parallel.

b) Rhombus – Quadrilateral having opposite sides parallel, all sides equal, opposite angles equal, diagonals perpendicular.

c) Parallelogram – It is a quadrilateral with both pairs of opposite sides parallel and equal & opposite angles equal.

(Provide diagrams)

vi) What is a/an:

a) Tangent – A line which touches a circle at one point only.

b) Arc – Any continuous part of a circle.

c) Quadrant – If the two radii are at right angles to each other then a sector is called quadrant.

(Provide diagrams)

vii) What are Vertex, Face and Edge of Solids?

A: Vertex – Each corner(or point) of a solid is called a vertex.

Face – Each flat surface of a solid is called a face.

Edge – The joint between separate faces of a solid is called an edge.

Group – C

1. Add : - $3x^2$-5x+6 ; -3x+$5x^2$ – 4 ; x-$4x^2$; -5+x^2

$= 3x^2 - 5x + 6 - 3x + 5x^2 - 4 + x - 4x^2 - 5 + x^2$

$= 3x^2 + 5x^2 - 4x^2 + x^2 - 5x - 3x + x + 6 - 4 - 5$

$= 8x^2 - 3x^2 - 8x + x + 2 - 5$

$= 5x^2 - 7x - 3$

OR.

Add : - $3x^2$-5x+6 ; -3x+$5x^2$ – 4 ; x-$4x^2$; -5+x^2

$= -3x^2 - 5x + 6 - 3x + 5x^2 - 4 + x - 4x^2 - 5 + x^2$

$= -3x^2 + 5x^2 - 4x^2 + x^2 - 5x - 3x + x + 6 - 4 - 5$

$= +2x^2 - 3x^2 - 8x + x + 2 - 5$

$= -x^2 - 7x - 3$

2. With compasses and a ruler construct 120^0 .

Construction.

3. Subtract :- a^2-3ab+b^2 from 4ab-3a^2-2b^2

$4ab - 3a^2 - 2b^2$

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

(+) (-) (-)

$7ab - 4a^2 - 3b^2$

OR

Subtract : - a^2-3ab+b^2 from 4ab-3a^2-2b^2

$4ab - 3a^2 - 2b^2$

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

(+) (+) (-)

$7ab - 2a^2 - 3b^2$

4. Simplify :- 6a-[3b-{5a-(3c-2b)+4c-3(a+2b-3c)}]

6a-[3b-{5a-(3c-2b)+4c-3(a+2b-3c)}]

= 6a-[3b-{5a-3c+2b+4c-3a-6b+9c}]

= 6a-[3b-{5a-3a-3c+4c+9c+2b-6b}]

=6a-[3b-{2a+10c-4b}]

=6a-[3b-2a-10c+4b]

=6a-[3b+4b-2a-10c]

=6a-[7b-2a-10c]

=6a-7b+2a+10c

=6a+2a-7b+10c

=8a-7b+10c.

OR

Simplify : - 6a-[3b-{5a-(3c-2b)+4c-3(a+2b-3c)}]

-6a-[3b-{5a-(3c-2b)+4c-3(a+2b-3c)}]

= -6a-[3b-{5a-3c+2b+4c-3a-6b+9c}]

= -6a-[3b-{5a-3a-3c+4c+9c+2b-6b}]

=-6a-[3b-{2a+10c-4b}]

=-6a-[3b-2a-10c+4b]

=-6a-[3b+4b-2a-10c]

=-6a-[7b-2a-10c]

=-6a-7b+2a+10c

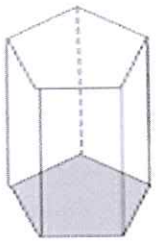
=-6a+2a-7b+10c

=-4a-7b+10c.

5. **Ronit is 8 year older than Rahul , and the sum of their ages is 26. Find their ages.**
   Ans - Let Rahul be x years old.Therefore , Ronit is (x+8) years old.
   B.T.P, x+ (x+8)=26 or, 2x + 8 = 26 or, 2x = 26-8 or, 2x = 18 or, x = 18/2 = 9
   Therefore, Rahul is 9 years old. Ronit is (x+8)=(9+8)=17 years old.
   Ans :- Rahul is 9 years old and Ronit is 17 years old.

6. **Draw a line segment MN= 7.5cm. Mark a point P on MN such that MP=5.4cm. Draw a ray perpendicular to MN at P.**
   Ans - Construction.

7. **Find the number of faces, vertices and edges in the given figure. Also verify Euler's Formula.**



The number of faces are 7, vertices are 10 and edges are 15.

Therefore according to Euler's Formula, we have

(V-E+F=2)

(10-15+7=2) Hence proved.

8. **Mark a point O. With centre O, draw two circles of radii 3cm and 5cm . What type of circles are these.**

Ans - Construction.

9. A number divided by 5 is 8, find the number.

Let the number be x. Then by the problem , $\frac{x}{5} = 8$ or, x = 8 x 5 or, x = 40.

Ans :_ The number is 40.

10. Simplify:- (2x – y) + (2y – 3x) + (3y – x)

(2x – y) + (2y – 3x) + (3y – x)

= 2x –y + 2y – 3x + 3y – x

= 2x – 3x – x – y + 2y + 3y

= - 1x – x + 1y + 3y

= - 2x + 4y.

OR

Simplify: - (2x – y) + (2y – 3x) + (3y – x)

=-(2x – y) + (2y – 3x) + (3y – x)

= -2x +y + 2y – 3x + 3y – x

= -2x – 3x – x + y + 2y + 3y

= - 5x – x + 3y + 3y

= - 6x + 6y.