ST. LAWRENCE HIGH SCHOOL

A JESUIT CHRISTIAN MINORITY INSTITUTION

Second Term Examination - 2018

Sub :Algebra & Geometry **Class: 6** **FM:90**

Duration:2hrs 30 Mins. **Date: 06.08.2018**

GROUP – A

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

1.1 . $-x-[x+\{x+y-2x-(x-2y)\}-y]$ on simplification is equal to

a) $-2x$ c) $4x-2y$

b) $-4x+y$ d) $-2y$

1.2 . The minute hand when it moves 330 ° from 11 o'clock is now at:

a) 9 o'clock c) 12 o'clock

b) 11 o'clock d) 10 o'clock

1.3 . How many lines of symmetry does a regular pentagon have?

a) 1 c) 4

b) 2 d) 5

1.4 .Which of the following letters does not have a vertical line of symmetry?

a) M c) E

b) H d) V

1.5 .Two complementary angles are in the ratio 1 : 9. The angles are :

a) 54°, 36° c) 10° , 90°

b) 9° , 81° d) 11° , 99°

2. **State TRUE or FALSE for the following statements** [1x6=06]

2.1 Adjacent angles can be complementary.

2.2 Adjacent supplementary angles form a linear pair.

2.3 If two lnes intersect, then one pair of vertically opposite angles always consists of acute angles and the other obtuse angles.

2.4 A scalene triangle has no line of symmetry.

2.5 An isosceles triangle with more than one lineof symmetry is an equilateral triangle.

2.6 A regular hexagon has only one line of symmetry.

3. **Fill in the blanks** [1x8=08]

3.1 If $A = x - y$, $B = y - z$, $C = z - x$, Then $A + B + C =$ _____

3.2 Equal angles are angles having _____ measure.

3.3 An angle whose measure is _____ is called a straight angle.

3.4 Angles of 30° and 150° are _____ angles.

3.5 If two lines intersect, then the vertically opposite angles are _____.

3.6 An angle between 0° and 90° is called _____.

3.7 Two lines that are same distance apart everywhere are called _____.

3.8 The interior angles on the same side of a transversal cutting two parallel lines are _____.

4. **Answer the following questions:** [1x6=06]

4.1 State the type of angle formed between the following directions: East and North

4.2 State the type of angle formed between the following directions: East and West

4.3 State the type of angle formed between the following directions: North and South-East

4.4 State the type of angle formed between the following directions: North and North-East

4.5 40% of a right angle.

4.6 Classify the following as vertical, horizontal or oblique: A ladder leaning against a wall.

GROUP – B

5. **Answer the following question (all)** [2x5=10]

5.1 Find the sum of $3y^2 - 4y + 5$, $2y^2 - 7y - 1$, $y^2 - 3y - 5$

5.2 Subtract as indicated: $(7 - x + x^2) - (x^2 + 6 - 3x)$

5.3 When the seconds hand has moved from 12 to 6, how many degrees has it turned through?

5.4 Add : 47° 28' 55" and 27° 35' 49"

5.5 Find the number of degrees in $\frac{1}{5}$ of a right angle.

6. **Answer the following questions (any 5)** [3x5=15]

6.1 Simplify: $3y^2 - 6 - 2y + y^2 - 3y + 7 - y^2 - 4y - y^2 + 5$

6.2 Subtract $1 - p + p^2$ from $p^2 + p - 1$

6.3 Multiply: $(-5\ m^2np)$ by $(-4\ mn^2p)$

6.4 Simplify: $x(y-z) + y(z-x) + z(x-y)$

6.5 What is the time on the clock when the hour hand moves clockwise:

a) 60° from 6 o'clock

b) 180° from 10 o'clock

c) 270° from 12 o'clock

6.6 Find the measure of the angle, which is four times its complement.

6.7 Two angles are supplementary and the larger is 40° less than three times the smaller. Find the smaller angle.

GROUP – C

7. Answer the following questions (any 8) [5x8=40]

7.1 Simplify: $2a - 3b - [4a - 3b - \{a - 2c - (a - 2b - c)\}]$

7.2 Through how many degrees does the hour hand of a clock turn in :

a) 1 minute

b) 10 minutes

c) 20 minutes

d) 2 hours

e) 5 hours

7.3

a) Draw 50° using the inner (counter-clockwise) scale of a protractor.

b) Draw 20° using the outer (clockwise) scale of a protractor.

7.4 Classify the angles whose magnitudes are given below:

a) 132°

b) 26°

c) 170°

d) 30°

e) 79°

f) 175°

g) 98.7°

h) 320°

i) 90°

j) 0°

7.5 The co-interior angles formed, when a transversal cuts a pair of parallel lines are $4x°$ and $6x + 10°$. What is the value of each value?

7.6 Construct a line segment 6.8 cm long. Construct its line of symmetry.

7.7 Draw an angle measuring 75° with equal arms. Construct its line of symmetry.

7.8 How many lines of symmetry are there in the following figue/shape:

a) Isosceles trapezium

b) Regular pentagon

c) Isosceles triangle

d) Equilateral triangle

e) Rhombus

Also draw and show the lines of symmetry for each figure/shape.

7.9 Complete the following tables:

S.No.	Name of the solid	Number of Faces (F)	Number of Vertices(V)	Number if Edges (E)
a	Rectangular prism			
b	Rectangular pyramid			

Also write the Eulers formula. For any polyhedrons with V (vertices), E (edges) and F (faces).

7.10 Complete the following table:

Angle	Complement	Supplement
5°		
25°		
88°		

Angle	Supplement
95°	
104°	
175°	
38°	

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SECOND TERM – 2018

FOR GOD AND COUNTRY

Sub : Algebra & Geometry | **Class : 6** | **F.M. : 90**

Duration : 2hrs 30mins. | **SOLUTION** | **Date : 06.08.18**

GROUP – A

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

1.1 d) -2y

1.2 d) 10 o'clock

1.3 d) 5

1.4 c) E

1.5 b) 9° , 81°.

2. **State TRUE or FALSE for the following statements** [1x6=06]

2.1 TRUE

2.2 TRUE

2.3 TRUE

2.4 TRUE

2.5 TRUE

2.6 FALSE

3. **Fill in the blanks** [1x8=08]

3.1 0 (ZERO)

3.2 Same

3.3 180°

3.4 supplementary

3.5 equal

3.6 acute

3.7 parallel

3.8 supplementary

4. **Answer the following questions:** [1x6=06]

4.1 Right angle

4.2 Straight angle

4.3 Obtuse angle

4.4 Acute angle

4.5 36°

4.6 Oblique

GROUP – B

5. **Answer the following question (all)** [2x5=10]

5.1 $3y^2 - 4y + 5 + 2y^2 - 7y - 1 + y^2 - 3y - 5 = 6y^2 - 14y - 1$

5.2 $(7 - x + x^2) - (x^2 + 6 - 3x) = 7 - x + x^2 - x^2 - 6 + 3x = 1 + 2x$

5.3 When the seconds hand has moved from 12 to 6, it has turned through 180°

5.4 $47° 28' 55'' + 27° 35' 49'' = 75° 4' 44''$

5.5 $\frac{1}{5}$ of a right angle $= \frac{1}{5} \times 90° = 18°$

6. **Answer the following questions (any 5)** [3x5=15]

6.1 $3y^2 - 6 - 2y + y^2 - 3y + 7 - y^2 - 4y - y^2 + 5 = 2y^2 - 9y + 6$

6.2 $(p^2 + p - 1) - (1 - p + p^2) = p^2 + p - 1 - 1 + p - p^2 = 2p - 2$

6.3 $(-5\, m^2np) \times (-4\, mn^2p) = 20\, m^3n^3p^2$

6.4 $x(y-z) + y(z-x) + z(x-y) = xy - xz + yz - xy + xz - yz = 0$

6.5

a) 8 o'clock b) 4 o'clock c) 9 o'clock

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FOR GOD AND COUNTRY

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6.6 Let the angle be x

$x = 4(90° - x)$ or $5x = 4 \times 90°$ or $x = 72°$.

6.7 Let the smaller angle be x.

$180° - x = 3x - 40°$ or $4x = 220°$ or $x = 55°$

GROUP – C

7. **Answer the following questions (any 8)** [5x8=40]

7.1 $2a - 3b - [4a - 3b - \{a - 2c - (a - 2b - c)\}]$

$= 2a - 3b - [4a - 3b - \{a - 2c - a + 2b + c\}] = 2a - 3b - [4a - 3b - \{ - c + 2b \}]$

$= 2a - 3b - [4a - 5b + c] = 2a - 3b - 4a + 5b - c = -2a + 2b - c$

7.2 Through how many degrees does the hour hand of a clock turn in :

a) $\frac{1}{2}°$ b) 5° d) 60°
c) 10° e) 150°

7.3

a) Construction b) Construction

7.4 Classify the angles whose magnitudes are given below:

a) 132° – Obtuse angle f) 175° – Obtuse angle
b) 26° – Acute angle g) 98.7° – Obtuse angle
c) 170° – Obtuse angle h) 320° – Reflex angle
d) 30° – Acute angle i) 90° – Right angle
e) 79° – Acute angle j) 0° – Zero angle

7.5 $4x° + 6x + 10° = 180°$ (since they are co-interior angles) or $x = 17°$

Thus the angles are $4x = 4\ (17°) = 68°$ and $6x + 10° = 6(17°) + 10° = 112°$

7.6 Construction. 7.7 Construction.

7.8 How many lines of symmetry are there in the following figue/shape:

a) Isosceles trapezium – one b) Regular pentagon – Five

c) Isosceles triangle – One

d) Equilateral triangle – Three

e) Rhombus – Two

Also diagrams for the lines of symmetry for each figure/shape

7.9 Complete the following tables:

S.No.	Name of the solid	Number of Faces (F)	Number of Vertices(V)	Number if Edges (E)
a	Rectangular prism	6	8	12
b	Rectangular pyramid	5	5	8

Eulers formula for any polyhedrons with V (vertices), E (edges) and F (faces) is

V – E + F = 2.

7.10 Complete the following table:

Angle	Complement	Supplement
5°	85°	175°
25°	65°	155°
88°	2°	92°

Angle	Supplement
95°	85°
104°	76°
175°	5°
38°	142°