ST. LAWRENCE HIGH SCHOOL
A JESUIT CHRISTIAN MINORITY INSTITUTION
1 ST Term Test – 2019

Sub: Algebra & Geometry Solution   **Class: 7**   **F.M.: 90**

Duration: $2\frac{1}{2}$ Hours   **Date: 23/4/2019**

Group - A

Answer the following questions:

1. Choose the correct alternative: 1x5=5

(i) Which of the following is a binomial?

(a) 8x + x; (b) $12a^2 + 7b + 5c$; (c) 5a × 7b × 8c; (d) $12(a^3 + a)$.

Ans: (d) $12(a^3 + a)$.

(ii) 3x, 4xy are _____ terms.

(a) like; (b) unlike; (c) binomial; (d) trinomial.

Ans: (b) unlike

(iii) The sum of a + b + ab; - b + c – bc and –c – a + ac is:

(a) 2c + ab – bc + ac; (b) ab – bc – ac; (c) ab – bc + ac; (d) 2a + 2b – 2c + ab – ac – bc.

Ans: (c) ab – bc + ac

(iv) If two lines are parallel than the alternate interior angles are:

(a) equal; (b) not equal; (c) complementary; (d) supplementary.

Ans: (a) equal

(v) The measures of two complementary angles are in the ratio of 1:2, what is the measure of the larger angle?

(a) 30^0; (b) 45^0; (c) 60^0; (d) 120^0

Ans: (c) 60^0

2. Fill in the blank: 1x5=5

(i) The complement of 50^0 is _____.

Ans: 40^0

(ii) The supplement of 95^0 is _____.

Ans: 85^0

(iii) The sum of the angles round a point = _____.

Ans: 360^0

(iv) $(\frac{1}{2} + \frac{2}{3})$ abc = _____.

Ans: 7/6abc

(v) $11y^2z – 5y^2z$ = _____.

Ans: $6y^2z$

3. State *True* or *False*:   1x5=5

(i) If two angles are equal and supplementary, then each angle is 90^0.

Ans: True

(ii) The sum of two acute angles can be 180^0.

Ans: False

(iii) The terms having different variable parts are called unlike terms.
Ans: True
(iv) A binomial is a sum or difference of two monomials.
Ans: True
(v) Dividend = Divisor × Quotient + Remainder.
Ans: True

4. Match the column: 1x5=5

(i) x-2y+3z   a) 1
(ii) I complete rotation   b) equal angle
(iii) x^0 c) trinomial
(iv) 25^0 and 25^0 d) x^{m+n}
(v) $x^m . x^n$ e) 360^0

Ans: (i) x-2y+3z   c) trinomial
      (ii) I complete rotation   e) 360^0
      (iii) x^0 a) 1
      (iv) 25^0 and 25^0 b) equal angle
      (v) $x^m . x^n$ d) x^{m+n}

5. Write Yes or No: 1x5=5
(i) Atransversal is a line that intersects two coplanar lines at two different points.
Ans: Yes
(ii) Supplementary angles whose sum is 108^0.
Ans: No
(iii) Adjacent angles means two angles with no common arm.
Ans: No
(iv) An unlimited number of lines can be drawn through a given point.
Ans: Yes
(v) Three or more points which lie on the same line are called collinear points.
Ans: Yes.

Group – B

6. Write very short answer of the following questions: 2x5=10
(i) Add: 4a-6c+2b, 2a+12c and -8b+5c.
Ans: 6a-6b+11c
(ii) Find the product of – $7x^2y$ and $5x^3y^3$.
Ans: $-35x^5y^4$
(iii) Solve: : $\frac{x}{3} + 2x = 14$
Ans: x+6x/3=14
Or 7x=42
Or x= 42/7=6

(iv) Find the complement of 54^0.

Ans: The sum of two complementary angles is 90^0

So the complement of 54^0 is $90^0-54^0=36^0$

(v) Define complete angle.

Ans: An angle whose measure is 360^0 is called complete angle.

7. Write short answer of the following questions: 3x5=15

(i) Simplify: 5x+3-[2x-{x-3(5x-6)}]

Ans: 5x+3-[2x-{x-3(5x-6)}]

= 5x+3-[2x-{x-15x+18}]

=5x+3-[2x-x+15x-18]

=5x+3-2x+x-15x+18

= -11x+21

(ii) Solve : 8y – 3 – 5y = 24

Ans: 8y – 3 – 5y = 24

Or 8y-5y-3=24

Or 3y-3=24

Or 3y=24+3=27

Or y=9

OR

Solve: 14 + 2n – 6 + 8n = 4n – 21 + n + 34

Ans: 14 + 2n – 6 + 8n = 4n – 21 + n + 34

Or 14-6+2n+8n=4n+n-21+34

Or 8+10n=5n+13

Or 10n-5n=13-8

Or 5n=5

Or n=1

(iii)One third of a number is 2 more than one fourth of the number; find the numbers.

Ans: Let the number be x. Then

One third of the number=x/3, one fourth of the number=x/4

The problem states that x/3-x/4=2

4x-3x=24

x=24

The required number is 24.

OR

If a number is multiplied by 5 and 8 is subtracted from the product, the result is 12. Find the number

Ans: Let the required number be x . Then 5x is 5 times the number. If 8 is subtracted from 5x, the result is 5x-8. The problem states that this is equal to 12.

5x-8=12

5x=12+8

5x=20

x=4

The required number is 4.

(iv) What do you mean by adjacent angles? Draw the diagram.
Ans: Two angles with a common vertex, a common arm and the other arms lying on the opposite sides of the common arm form a pair of adjacent angles.
(v) Mention three conditions to prove two lines are parallel.
Ans: Two lines are parallel, if :
a) a pair of corresponding angles are equal
b) alternate interior angles are equal.
c) the same side interior angles are supplementary.

Group – C

8. Write the answer of the following questions: 5x8=40

(i) Simplify: $3m - 2(m + 3) + 4(m - 1)$
Ans: $3m - 2(m + 3) + 4(m - 1)$
$= 3m-2m-6+4m-4$
$=5m-10$
$=5(m-2)$
(ii) Divide: $6x^3 - x + 19x^2 - 29$ by $2x + 3$.
Ans: $6x^3 - x + 19x^2 - 29$ by $2x + 3$.
Let us arrange the dividend in descending powers of x.
$6x^3+ 19x^2-x-29$ by $2x+3$
The quotient is $3x^2+5x-8$ with a remainder of -5.

OR

Divide: $2x^2 - 11x + 12$ by $x - 4$.
Ans: The quotient is $2x-3$ and remainder is 0.
(iii) Simplify: $(a + 1)(a + 2)(a + 3)$.
Ans: $(a + 1)(a + 2)(a + 3)$
$=(a+1) \{(a+2) (a+3)\}$
$=(a+1) \{a^2+3a+2a+6\}$
$=(a+1) \{a^2+5a+6\}$
$=(a^3+5a^2+6a) + (a^2+5a+6)$
$= a^3+6a^2+11a+6$
(iv) Solve: $5(p+4) -8(4-p) = 25 -3(7-p) +144$
Ans: $5(p+4) -8(4-p) = 25 -3(7-p) +144$
Or $5p+20-32+8p=25-21+3p+144$
Or $5p+8p+20-32=25-21+144+3p$
Or $13p-12=148+3p$
Or $13p-3p=148+12$
or $10p=160$
or $p=16$

OR

Solve: $1.32y + 0.02y = 1.19+y$.
Ans: $1.32y + 0.02y = 1.19+y$.

Or 132y/100+2y/100-y=119/100

Or 132y+2y-100y=119

Or 34y=119

Y=119/34=7/2

(v) Three years ago Raja was 5 years older than Rina was then. If he is now twice as old as she is, find their present ages.

Ans: Let Rina's present age is x. 3 years ago her age was x-3.

So Raja's present age is 2x and 3 years ago his age was 2x-3.

It is given that Raja's age 3 years ago = 5 more than Rina's age 3 years ago.

Or 2x-3=x-3+5

Or 2x-x=-3+5+3

Or x=5

So Rina is now 5 years old and Rja is 10 years old.

(vi) An angle is 40^0 less than three times its supplement. Find the angles.

Ans: Let one angle be x^0. The supplement of this angle is $(180-x)^0$
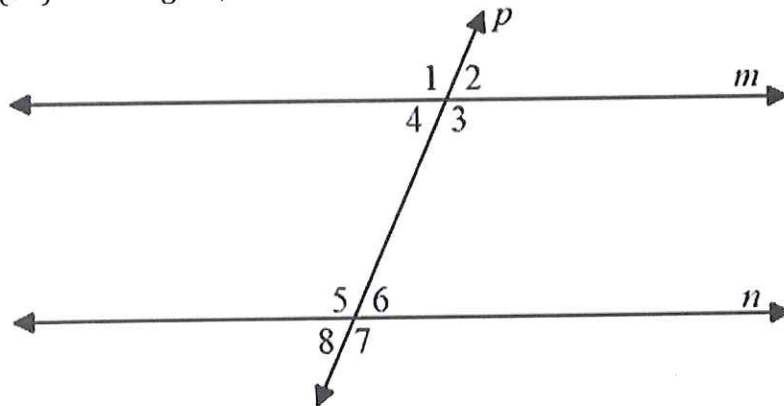
According to the question,

X= 3(180-x)-40

Or x=540-3x-40

Or x+3x=500

Or 4x=500

Or $x=125^0$

Supplement= $180^0-125^0=55^0$

(vii) In the figure, if $\angle 1 =110^0$ and $\angle 6 = 70^0$, show that line m||n.

Ans: $\angle 1 + \angle 2 = 180^0$

Or $110^0 + \angle 2 = 180^0$

Or $\angle 2 = 180^0 - 110^0 = 70^0$

Given $\angle 6 = 70^0$.

$\angle 2$ and $\angle 6$ are corresponding angles and $\angle 2 = \angle 6$ so m||n.

(viii) Draw $\angle ABC = 125^0$ with the help of a protractor. Construct $\angle PQR = \angle ABC$.

Ans: Construction of an angle equal to a given angle $\angle ABC = 125^0$