પુખ્ના International School
Shree Swaminarayan Gurukul, Zundal

PERIODIC ASSIGNMENT - 3 2020-21		
Class –8	**CH -8 and 9**	**Sub: MATHS**

QUESTION 1

(i) Multiple Choice Questions: **[1 MARKS QUESTION]**

1. By selling 50 items, a shopkeeper lost the amount equal to the selling price of 10 items. His loss percent is

   a. 30/7 % b. 40/3 % c. 25/3 % d. 50/3 %

2. After allowing a discount of 15 % on the marked price of a pen-drive, it is sold for Rs 680. The marked price of the article is

   a. Rs 700 b. Rs 600 c. Rs 800 d. Rs 750

3. Sachin purchases a bat for Rs 660 including sales tax. If the rate of sales tax is 10 %, then the selling price of the bat is

   a. Rs 580 b. Rs 590 c. Rs 600 d. Rs 610

4. The buying price of 5 kg guava, at the rate Rs 20 per kg with 5 % sales-tax on the purchase, is

   a. Rs 22 b. Rs 23 c. Rs 24 d. None

5. A sum is taken for 2 year at 16 % per annum, if interest is compounded after every three months, the number of times for which interest is charged in 2 year is

   a. 8 b. 4 c. 6 d. 9

6. a (b + c) = a b + a c is

   a. commutative property b. closure property
   c.distributive property d. associative property

7. The product of a monomial and binomial is a

   a. binomial b. monomial c. trinomial d. None

8. In a polynomial, the exponents of the variables are always

a. integers
b. non-positive integers
c. non negative integers
d. None

9. Which of the following is a binomial?

a. 13XbXb
b. $6b^2 + 7a + 2c$
c. $45 (b^2 + a)$
d. 13a X 3b X 5c

10. Sum of 17abc, 13abc and 5abc is

a. 35ab
b. 30abc
c. 35abc
d None

(ii) Fill the blank: **[1 MARKS QUESTION]**

1. _____ is a reduction on the marked price of the article.

Answer: Discount

2. Discount = _____ - _____

Answer: Marked price, selling price

3. 3500 is greater than 500 by _____ %

Answer: 600

4. Ten times a number is _____ % increase in the number.

Answer: 900

5. If the discount of Rs 5y is available on the marked price of Rs 3x, then the discount per cent is _____

Answer: $(\frac{5y}{3x} \text{ X } 100)$ %

6. Coefficient of y in the term -13/3 y is _____

Answer: -13/3

7. The value of $(a + b)^2 – (a - b)^2$ is_____

Answer: 4ab

8. The product of two polynomials is a _____

Answer: polynomial

9. Square of (3a + 5b) is _____

Answer: $9a^2 + 30ab + 25b^2$

10. The product of two terms with like signs is a _____ term.

Answer: positive polynomial

(iii) Tell whether the statement is true or false: [1 MARKS QUESTION]

1. To calculate the growth of bacteria, if the rate of growth is known. The formula for calculation of amount in compound interest can be used. TRUE
2. C P = M P – Discount FALSE
3. . The sale price is regular price minus the discount. TRUE
4. The cost price of 10 tables is equal to the sale price of 5 tables. Then, profit percent is 100% FALSE
5. If for the principal P, rate R % and time T, the simple interest is SI and compound interest is CI. Then, CI > SI. TRUE
6. The value of $(a + b)^2 + (a - b)^2$ is 4ab. FALSE
7. The coefficient of x^2 yz in the term $-19x^2yz$ is -19. TRUE
8. An equation is true for all values of its variables. FALSE
9. The value of p for $21^2 - 19^2 = 10p$ is 8. TRUE
10. abc + bca + cab is a monomial TRUE

(iv) Solve: Each carry one mark: [1 MARKS QUESTION]

1. If 7/3 % of a number is 147, then find the number.
2. After increasing 15 % of the price of an article. Its price is Rs 1725. Find the increased amount.
3. Find the discount ,When M.P = Rs 625 and S P = Rs 562.50
4. Convert 7:3 in to percentage.
5. What per-cent of 500 is 35?
6. Add: 7xy and -5xy
7. Subtract: 4abc from 12abc
8. Find product: -4p, 7pq
9. Find product: $(a^2) \times (2a^3)$
10. Add: ab – bc, bc – ca and ca – ab.

QUESTION 2

Solve: Each carry two marks:

1. 72% of 25 students are good in mathematics. How many are not good in mathematics?

Ans. Total number of students = 25

Number of good students in mathematics = 72% of 25 = $\frac{72}{100} \times 25 = 18$

Number of students not good in mathematics = 25 – 18 = 7

Hence percentage of students not good in mathematics = $\frac{7}{25} \times 100 = 28\%$

2. A football team won 10 matches out of the total number of matches they played. If their win percentage was 40, then how many matches did they play in all?

Ans. Let total number of matches be x.

According to question,

40% of total matches = 10

$\Rightarrow$ 40% of $x = 10$

$\Rightarrow \frac{40}{100} \times x = 10$

$\Rightarrow x = \frac{10 \times 100}{40} = 25$

Hence total number of matches is 25.

3. A man got 10% increase in his salary. If his new salary is Rs.1,54,000, find his original salary.

Ans. Let original salary be Rs.100.

Therefore New salary i.e., 10% increase

= 100 + 10 = Rs.110

$\because$ New salary is Rs.110, when original salary = Rs.100

New salary is Rs.1, when original salary = $\frac{100}{110}$

$\therefore$ New salary is Rs.1, 54,000, when original salary = $\frac{100}{110} \times 154000$ = Rs.1,40,000

Hence original salary is Rs. 1, 40,000.

4. On Sunday 845 people went to the Zoo. On Monday only 169 people went. What is the percent decrease in the people visiting the Zoo on Monday?

Ans. On Sunday, people went to the Zoo = 845 On

Monday, people went to the Zoo = 169

Number of decrease in the people = 845 – 169 = 676

Decrease percent = $\frac{676}{845} \times 100$ = 80%

Hence decrease in the people visiting the Zoo is 80%.

5. Add the following:

(i) $ab - bc, bc - ca, ca - ab$

(ii) $a - b + ab, b - c + bc, c - a + ac$

(iii) $2p^2q^2 - 3pq + 4,5 + 7pq - 3p^2q^2$

(iv) $l^2 + m^2, m^2 + n^2, n^2 + l^2 + 2lm + 2mn + 2nl$

Ans. (i) $ab - bc, bc - ca, ca - ab$

$$\begin{array}{l} ab - bc \\ \quad + bc - ca \\ -ab \quad\quad + ca \\ \hline \boxed{0 + 0 + 0} \end{array}$$

(ii) $a - b + ab, b - c + bc, c - a + ac$

$$\begin{array}{l} a - b - ab \\ \quad + b \quad\quad - c + bc \\ -a \quad\quad\quad + c \quad\quad + ac \\ \hline \boxed{0 + 0 + ab + 0 + bc + ac} \end{array}$$

Hence the sum if 0.

Hence the sum is $ab+bc+ac$.

(iii) $2p^2q^2-3pq+4, 5+7pq-3p^2q^2$

$$\begin{array}{l} 2p^2q^2-3pq+4 \\ -3p^2q^2+7pq+5 \\ \hline -p^2q^2+4pq+9 \end{array}$$

(iv) $l^2+m^2, m^2+n^2, n^2+l^2, 2lm+2mn+2nl$

$$\begin{array}{l} l^2+m^2 \\ +\quad m^2+n^2 \\ +l^2\quad +n^2 \\ +\qquad\qquad 2lm+2mn+2nl \\ \hline 2l^2+2m^2+2n^2+2lm+2mn+2nl \end{array}$$

Hence the sum is

$2\left(l^2+m^2+n^2+lm+mn+nl\right)$.

6. Obtain the volume of rectangular boxes with the following length, breadth and height respectively:

(i) $5a, 3a^2 7a^4$

(ii) $2p, 4q, 8r$

(iii) $xy, 2x^2y, 2xy^2$

(iv) $a, 2b, 3c$

Ans. (i) Volume of rectangular box

$= length \times breadth \times height$

$= 5a \times 3a^2 \times 7a^4 = (5 \times 3 \times 7)(a \times a^2 \times a^4)$

$= 105a^7$ cubic units

(ii) Volume of rectangularbox

$= length \times breadth \times height$

$= 2p \times 4q \times 8r = (2 \times 4 \times 8)(p \times q \times r)$

$= 64pqr$ cubic units

(iii) Volume of rectangularbox

$= length \times breadth \times height$

$= xy \times 2x^2y \times 2xy^2$

$= (1 \times 2 \times 2)(x \times x^2 \times x \times y \times y \times y^2)$

$= 4x^4y^4$ cubic units

(iv) Volume of rectangularbox

$= length \times breadth \times height$

$= a \times 2b \times 3c = (1 \times 2 \times 3)(a \times b \times c)$

$= 6abc$ cubic units

7. Find the product:

(i) $(a^2) \times (2a^{22}) \times (4a^{26})$

(ii) $\left(\frac{2}{3}xy\right) \times \left(\frac{-9}{10}x^2y^2\right)$

(iii) $\left(\frac{-10}{3}pq^3\right)\times\left(\frac{6}{5}p^3q\right)$

(v) $x\times x^2\times x^3\times x^4$

Ans.

(i) $\left(a^2\right)\times\left(2a^{22}\right)\times\left(4a^{26}\right)$

$=(2\times4)\left(a^2\times a^{22}\times a^{26}\right)$

$=8\times a^{2+22+26}=8a^{50}$

(ii) $\left(\frac{2}{3}xy\right)\times\left(\frac{-9}{10}x^2y^2\right)$

$=\left(\frac{2}{3}\times\frac{-9}{10}\right)\left(x\times x^2\times y\times y^2\right)$

$=\frac{-3}{5}x^3y^3$

(iii) $\left(\frac{-10}{3}pq^3\right)\left(\frac{6}{5}p^3q\right)$

$=\left(\frac{-10}{3}\times\frac{6}{5}\right)\left(p\times p^3\times q^3\times q\right)$

$=-4p^4q^4$

(iv) $x\times x^2\times x^3\times x^4=x^{1+2+3+4}=x^{10}$

8. Multiply the binomials:

(i) (2x+5) and (4x-3)

(ii) $(y-8)$ and $(3y-4)$

(iii) $(2.5l-0.5m)$ and $(2.5l+0.5m)$

(iv) $(a+3b)$ and $(x+5)$

(v) $(2pq+3q^2)$ and $(3pq-2q^2)$

(vi) $\left(\frac{3}{4}a^2+3b^2\right)$ and $4\left(a^2-\frac{2}{3}b^2\right)$

Ans.

(i) $(2x+5)\times(4x-3)$

$= 2x(4x-3)+5(4x-3)$

$= 2x\times 4x-2x\times 3+5\times 4x-5\times 3$

$= 8x^2-6x+20x-15$

$= 8x^2+14x-15$

(ii) $(y-8)\times(3y-4) = y(3y-4)-8(3y-4)$

$= y\times 3y-y\times 4-8\times 3y-8\times -4$

$= 3y^2 - 4y - 24y + 32$

$= 3y^2 - 28\ y + 32$

(iii) $(2.5l-0.5m)\times(2.5l+0.5m)$

$= 2.5l\times(2.5l+0.5m)-0.5m\times(2.5l+0.5m)$

= 2.5l x 2.5l + 2.5l x 0.5m - 0.5m x 2.5l - 0.5m x0.5m

$= 6.25l^2 + 1.25lm - 1.25lm - 0.25m^2$

$= 6.25l^2 - 0.25m^2$

(iv) $(a+3b)\times(x+5) = a(x+5) + 3b(x+5)$

$= a\times x + a\times 5 + 3b\times x + 3b\times 5$

$= ax + 5a + 3bx + 15b$

(v) $\left(2pq + 3q^2\right)\left(3pq - 2q^2\right)$

$= 2pq\times\left(3pq - 2q^2\right) + 3q^2\left(3pq - 2q^2\right)$

$= 2pq\times 3pq - 2pq\times 2q^2 + 3q^2\times 3pq - 3q^2\times 2q^2$

$= 6p^2q^2 - 4pq^3 + 9pq^3 - 6q^4$

$= 6p^2q^2 + 5pq^3 - 6q^4$

(vi) $\left(\frac{3}{4}a^2 + 3b^2\right)\times 4\left(a^2 - \frac{2}{3}b^2\right)$

$= \left(\frac{3}{4}a^2 + 3b^2\right)\times\left(4a^2 - \frac{8}{3}b^2\right)$

$= \frac{3}{4}a^2\times\left(4a^2 - \frac{8}{3}b^2\right) + 3b^2\times\left(4a^2 - \frac{8}{3}b^2\right)$

$= \frac{3}{4}a^2\times 4a^2 - \frac{3}{4}a^2\times\frac{8}{3}b^2 + 3b^2\times 4a^2 - 3b^2\times\frac{8}{3}b^2$

$= 3a^4 - 2a^2b^2 + 12a^2b^2 - 8b^4$

$= 3a^4 + 10a^2b^2 - 8b^4$

Solve: Each carry three marks

1. Kamala borrowed Rs.26, 400 from a Bank to buy a scooter at a rate of 15% p.a. compounded yearly. What amount will she pay at the end of 2 years and 4 months to clear the loan?

(Hint: Find A for 2 years with interest is compounded yearly and then find SI on the 2nd year amount for $\frac{4}{12}$ years).

Ans. Here, Principal (P) = Rs. 26,400, Time(n) = 2 years 4 months, Rate of interest (R) = 15% p.a.

Amount for 2 years (A) = $P\left(1+\frac{R}{100}\right)^n$

$= 26400\left(1+\frac{15}{100}\right)^2 = 26400\left(1+\frac{3}{20}\right)^2$

$= 26400\left(\frac{23}{20}\right)^2 = 26400\times\frac{23}{20}\times\frac{23}{20}$

= Rs. 34,914

Interest for 4 months = $\frac{4}{12}=\frac{1}{3}$ years at the rate of 15% = $\frac{34914\times15\times1}{100}$

= Rs. 1745.70

∴ Total amount = Rs. 34,914 + Rs. 1,745.70

= Rs. 36,659.70

2. Fabina borrows Rs.12,500 per annum for 3 years at simple interest and Radha borrows the same amount for the same time period at 10% per annum, compounded annually. Who pays more interest and by how much?

Ans. Here, Principal (P) = Rs.12, 500, Time (T) = 3 years,

Rate of interest (R) = 12 % p.a.

Simple Interest for Fabina = $\frac{P\times R\times T}{100}$

$= \frac{12500 \times 12 \times 3}{100}$ = Rs. 4,500

Amount for Radha, P = Rs. 12,500, R = 10% and n = 3 years

Amount (A) = $P\left(1+\frac{R}{100}\right)^n$

$= 12500\left(1+\frac{10}{100}\right)^3 = 12500\left(1+\frac{1}{10}\right)^3$

$= 12500\left(\frac{11}{10}\right)^3 = 12500 \times \frac{11}{10} \times \frac{11}{10} \times \frac{11}{10}$

= Rs. 16,637.50

∴ C.I. for Radha = A – P

= Rs. 16,637.50 – Rs. 12,500 = Rs. 4,137.50

Thus, Fabina pays more interest

= Rs. 4,500 – Rs. 4,137.50 = Rs. 362.50

3.. I borrows Rs.12, 000 from Jam shed at 6% per annum simple interest for 2 years. Had I borrowed this sum at 6% per annum compound interest, what extra amount would I have to pay?

Ans. Here, Principal (P) = Rs.12,000, Time (T) = 2 years, Rate of interest (R) = 6% p.a. Simple Interest

$= \frac{P \times R \times T}{100}$

$= \frac{12000 \times 6 \times 2}{100}$ = Rs. 1,440

Had he borrowed this sum at 6% p.a., then

Compound Interest = $P\left(1+\frac{R}{100}\right)^n - P$

$= 12000\left(1+\frac{6}{100}\right)^2 - 12000$

$= 12000\left(1+\frac{3}{50}\right)^2 - 12000$

$= 12000\left(\frac{53}{50}\right)^2 - 12000$

$= 12000 \times \frac{53}{50} \times \frac{53}{50} - 12000$

= Rs. 13,483.20 – Rs. 12,000

= Rs. 1,483.20

Difference in both interests

= Rs. 1,483.20 – Rs. 1,440.00 = Rs. 43.20

Thus, the extra amount to be paid is Rs.43.20

4. Vasudevan invested Rs.60, 000 at an interest rate of 12% per annum compounded half yearly. What amount would he get:

(i) After 6 months?

(ii) after 1 year?

Ans. (i) Here, Principal (P) = Rs. 60,000, Time (n) = 6 months = 1 year(compounded half yearly)
Rate of interest (R) = 12% = 6% (compounded half yearly)

Amount (A) = $P\left(1+\frac{R}{100}\right)^n$

$= 60000\left(1+\frac{6}{100}\right)^1$

$= 60000\left(1+\frac{3}{50}\right)^1$

$= 60000\left(\frac{53}{50}\right)^1$

$= 60000 \times \frac{53}{50}$

= Rs.63,600

After 6 months Vasudevan would get amount Rs. 63,600.

(ii) Here, Principal (P) = Rs. 60,000,

Time (n) = 1 year = 2 year(compounded half yearly)

Rate of interest (R) = 12% = 6% (compounded half yearly)

Amount (A) = $P\left(1+\frac{R}{100}\right)^n$

= $60000\left(1+\frac{6}{100}\right)^2$

= $60000\left(1+\frac{3}{50}\right)^2$

= $60000\left(\frac{53}{50}\right)^2$

= $60000\times\frac{53}{50}\times\frac{53}{50}$

= Rs. 67,416

After 1 year Vasudevan would get amount Rs. 67,416.

5. Find the product:

(i) $(5-2x)(3+x)$

(ii) $(x+7y)(7x-y)$

(iii) $(a^2+b)(a+b^2)$

(iv) $(p^2-q^2)(2p+q)$ Ans. (i)

$(5-2x)(3+x)$

$=5\times(3+x)-2x(3+x)$

$= \quad 5\times 3+5\times x-2x\times 3-2x\times x$

$=15+5x-6x-2x^2=15-x-2x^2$

(ii) $(x+7y)(7x-y)$

$=x(7x-y)+7y\times(7x-y)$

$=x\times 7x-x\times y+7y\times 7x-7y\times y$

$=7x^2-xy+49xy-7y^2$

$=7x^2+48xy-7y^2$

(iii) $\left(a^2+b\right)\left(a+b^2\right)$

$=a^2\times\left(a+b^2\right)+b\times\left(a+b^2\right)$

$=a^2\times a+a^2\times b^2+b\times a+b\times b^2$

$= \quad a^3+a^2b^2+ab+b^3$

(iv) $\left(p^2-q^2\right)(2p+q)$

$=p^2\times(2p+q)-q^2(2p+q)$

$= \quad p^2\times 2p+p^2\times q-q^2\times 2p-q^2\times q$

$= \quad 2p^3+p^2q-2pq^2-q^3$

6. Simplify:

(i) $\left(x^2-5\right)(x+5)+25$

(ii) $\left(a^2+5\right)\left(b^2+3\right)+5$

(iii) $\left(t+s^2\right)\left(t^2-s\right)$

(iv) $(a+b)(c-d)+(a-b)(c+d)+2(ac+bd)$

(v) $(x+y)(2x+y)+(x+2y)(x-y)$

(vi) $(x+y)\left(x^2-xy+y^2\right)$

(vii) $(1.5x-4y)(1.5x+4y+3)-4.5x+12y$

(viii) $(a+b+c)(a+b-c)$

$\left(x^2-5\right)(x+5)+25$

$= x^2(x+5)-5(x+5)+25$

Ans. (i)

$= x^2\times x+x^2\times 5-5\times x-5\times 5+25$

$= x^3+5x^2-5x-25+25$

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

(ii) $\left(a^2+5\right)\left(b^3+3\right)+5$

$= a^2\left(b^3+3\right)+5\left(b^3+3\right)+5$

$= a^2\times b^3+a^2\times 3+5\times b^3+5\times 3+5$

$= a^2b^3+3a^2+5b^3+15+5$

$= \quad a^2b^3 + 3a^2 + 5b^3 + 20$

(iii) $\left(t+s^2\right)\left(t^2-s\right) = t\left(t^2-s\right)+s^2\left(t^2-s\right)$

$= \quad t\times t^2 - t\times s + s^2\times t^2 - s^2\times s$

$= \quad t^3 - st + s^2t^2 - s^3$

(iv) $(a+b)(c-d)+(a-b)(c+d)+2(ac+bd)$

$= a(c-d)+b(c-d)+a(c+d)-b(c+d)+2ac+2bd$

$= ac-ad+bc-bd+ac+ad-bc-bd+2ac+2bd$

$= ac+ac-ad+ad+bc-bc-bd-bd+2ac+2bd$

$= 2ac-2bd+2ac+2bd$

$= \quad 4ac$

(v) $(x+y)(2x+y)+(x+2y)(x-y)$

$= x(2x+y)+y(2x+y)+x(x-y)+2y(x-y)$

$= \quad 2x^2+xy+2xy+y^2+x^2-xy+2xy-2y^2$

$= 2x^2+x^2+xy+2xy-xy+2xy+y^2-2y^2$

$= \quad 3x^2+4xy-y^2$

(vi) $\left(x+y\right)\left(x^2-xy+y^2\right)$

$= x\left(x^2 - xy + y^2\right) + y\left(x^2 - xy + y^2\right)$

$= x^3 - x^2y + xy^2 + x^2y - xy^2 + y^3$

$= x^3 - x^2y + x^2y + xy^2 - xy^2 + y^3$

$= x^3 + y^3$

(vii) $(1.5x - 4y)(1.5x + 4y + 3) - 4.5x + 12y$

$= 1.5x(1.5x + 4y + 3) - 4y(1.5x + 4y + 3) - 4.5x + 12y$

$= 2.25x^2 + 6.0xy + 4.5x - 6.0xy - 16y^2 - 12y - 4.5x + 12y$

$= 2.25x^2 + 6.0xy - 6.0xy + 4.5x - 4.5x - 16y^2 - 12y + 12y$

$= 2.25x^2 - 16y^2$

(viii) $(a + b + c)(a + b - c)$

$= a(a + b - c) + b(a + b - c) + c(a + b - c)$

$= a^2 + ab - ac + ab + b^2 - bc + ac + bc - c^2$

$= a^2 + ab + ab - ac + ac - bc + bc + b^2 - c^2$

$= a^2 + b^2 - c^2 + 2ab$