# WORK SHEET <br> SECOND TERM <br> SUBJECT- MATHS <br> LESSON - 5, 8 to16 <br> CLASS- VIII 

## SECTION-A ( 1 mark for each)

1. Write in standard form 0.0000507
2. If $62 y 3$ is a multiple of 3 , where $y$ is a single digit then what should be the minimum and maximum value of $y$ ?
3. What is the difference between Bar graph \& Histogram?
4. If edge of a cube is doubled then its surface area becomes $\qquad$ times and the volume becomes $\qquad$ times.
5. What is the probability to get an even prime number in a single throw of a die.
6. TSA of a prism $=L S A+2 X$ $\qquad$
7. The point where two co-ordinate axes ( $x$ axis and $y$ axis) intersect is called $\qquad$
8. Write all possible outcomes in a toss of two coins together.
9. When number of edges in the base of a pyramid become very large (infinite) then it becomes a $\qquad$ .
10. Multiply: $(2 x+y)(3 x-2 y)$

## SECTION- B ( 3 marks for each)

1. Write Eulers's Formula, then find no. of faces in a solid if no. of vertices is 8 and no. of edges is 12.
2. The data on the mode of transport used by 720 students are given below. Represent in a pie chart.

| Mode of transport | Bus | Cycle | Trair | Car | Scouter |
| :--- | :--- | :--- | :--- | :--- | :---: |
| Mo. of studerts | 120 | 180 | 240 | 80 | 100 |

3. Evaluate using suitable identity: $10.5 \times 9.5$
4.. Find length of the attitude of a rhombus if lengths of its two diagonals are 12 cm and 16 cm respectively.
4. Find $m$ if $4^{m}=8$
5. If 10 men do a work in 20 days. In how many days 20 men will do the same work.
6. Find $A, B, C$ if $A B$

X 5

CAB

## SECTION-C (4 marks for each)

1. Plot the following three vertices of a rectangle $A B C D$. $A(0,0), B(5,0), C(5,3)$ then determine the fourth vertex with the help of graph.
2. Draw a line graph for the following:-

| Side of square <br> $($ in cm$)$ | 10 | 20 | 25 | 30 | 40 |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Perimeter(in <br> $\mathrm{cm})$ | 40 | 80 | 100 | 120 | 160 |

20. Factorise :- $\quad m^{8}-n^{8}$
21. The marks obtained by 40 students of class VIII in an examination are given as followed $16,17,18,3,7,23,18,13,10,21,7,1,13,21,13,15,19,24,16,2,23,5,12,18,8,12,6,8$, $16,5,3,5,12,15,10,17,20,8,22,18$. Divide the data into five groups namely $0-5$, $5-10,10-15,15-20$ and 20-25. Then by choosing a suitable scale draw a histogram. .
22. Find LSA and TSA of a cube if its Volume is $125 \mathrm{~cm}^{3}$.
23. Evaluate by using suitable identities-
a) $(99)^{2}$
b) $9.3 \times 9.7$
24. Define Prism and Pyramid with examples.

25 Find Volume of a cube if its TSA is $150 \mathrm{~cm}^{2}$.
26. One of the parallel sides of a trapezium is 10 cm and its height is 4 cm . Find the length of the other side if its area is $34 \mathrm{~cm}^{2}$.
27. Find Volume of a cylinder if its CSA and TSA are $20 \pi \mathrm{~cm}^{2}$ and $28 \pi \mathrm{~cm}^{2}$ respectively.
28. A 5 m 60 cm high pole casts shadow of length 3 m 20 cm . Find at the same time the length of a shadow cast by another pole 10 m 50 cm high.
29. Simplify and express the result in power notation with positive exponent.

$$
\begin{array}{ll}
\text { (i) }(-3)^{4} \times\left(\frac{5}{3}\right)^{4} & \text { (ii) }\left(3^{-7} \div 3^{-10}\right) \times 3^{-5}
\end{array}
$$

## SECTION-D (7 marks for each)

30. (a) Factorise then divide: $-156 y^{3}\left(36 y^{2}-64\right) / 104 y^{2}(6 y+8)$
(b) Factorise: $-16 a^{2}-25 b^{2}+60 b c-36 c^{2}$

31 If two dice are thrown together, find all possible outcomes (i.e. sample space). Further find the probability to get the sum of digits on their upper faces as to be
(a) exactly 8 (b) at least 8 (c) at most 8 .
$(1+2+2+2)$
32. A rectangular sheet of length 176 cm and width 88 cm is rolled along its length and thus formed a cylinder. Find its volume. Now it is rolled along its width and turned into a cylinder again. Compare the volume of cylinder so formed in both case and find in which case the volume is more and by how much.
33. If 8 men can complete a piece of work in 6 days. Find in how many days 12 men can complete twice of that work.
34. Diagram of the below picture frame has outer dimensions $=24 \mathrm{~cm} \times 28 \mathrm{~cm}$ and inner dimensions $=16 \mathrm{~cm} \times 20 \mathrm{~cm}$. Find the area of each section of the frame, if the width of each section is same.

35. If three coins are thrown together then write total possible outcomes and the probability to get (a) exactly three heads (b) at least three heads (c) at most two heads.

## WORK SHEET <br> SECOND TERM SUBJECT- MATHS LESSON - 5, 9 to16 <br> CLASS- VIII <br> DATA HANDLING

1. When a die is thrown, list the outcomes and probability of an event of getting
(i) (a) a prime number
(b) not a prime number.
(ii) (a) a number greater than 5
(b) a number not greater than 5 .
2. The weekly wages (in rupees) of 30 workers in a factory are.
830.835,890,810,835,836,869,845,898,890,820,860,832,833,855,845,804,808,812,840, $885,835,835,836,878,840,868,890,806,840$. Using tally marks make a frequency table with intervals as $800-810,810-820$ and so on. Also draw a histogram to represent the above data.
3. What is the use of double bar graph?
4. Choice of food for a group of people is given below. Draw the Pie Chart (circle graph) for the given data.

| Favourite food | North Indian | South Indian | Chinese | others |
| :--- | :---: | :---: | :---: | :---: |
| No. of people | 30 | 40 | 25 | 25 |

## ALGEBRAIC EXPRESSIONS \& IDENTITIES

Q 1 Using identity $(x-a)(x+a)=x^{2}-a^{2}$ find $6^{2}-5^{2}$.
Q 2 Find the product of $(7 x-4 y$ ) and ( $3 x-7 y$ ).
Q 3 Using suitable identity find $(a+3)(a+2)$.
Q 4 Using identity $(a+b)^{2}=a^{2}+2 a b+b^{2}$ find the value of $103^{2}$.
Q 5 Using identity $(a-b)^{2}=a^{2}-2 a b+b^{2}$ find the value of $98^{2}$.
Q 6 Using identity find $(2 x+3)^{2}$.
Q 7 Subtract $7 x-3 x^{2}$ from $4 x+8 x^{2}$.
Q 8 Using suitable identity find $(7 x-3 y)^{2}$.
Q 9 Add $4 x^{2}+2 x y-4$ and $7 x^{2}-3 x y+4$.
Q 10 Find the product of $4 \mathrm{x}, 7 \mathrm{x}^{2},-2 \mathrm{x}$.
Q 11 Find the product of $\left(x^{2}-y^{2}\right)(2 x+y)$.
Q 12 Simplify: $(x y+y z)^{2}-(x y-y z)^{2}$
Q 13 Multiply: $\left(a^{2}+2 c^{2}\right)(3 a-3 c)$
Q 14 Simplify: $(x+y)(2 x-3 y+z)-(2 x-3 y) z$
Q 15 Subtract $3 x(x-4 y+5 z)$ from $4 x(2 x-3 y+10 z)$.
Q 16 Simplify: $\left(x^{2}-y^{2}\right)^{2}$
Q 17 Simplify $3 a(4 a-5)+3$ and find its value for $a=3$.
Q 18 Using suitable identity find $\left(6 x^{2}-\frac{5}{3}\right)^{2}$.
Q 19 Using identity $a^{2}-b^{2}=(a+b)(a-b)$, find $(1.02)^{2}-(0.98)^{2}$.
Q 20 Using $(x+a)(x+b)=x^{2}+(a+b) x+a b$ find $105 X 107$.
Q 21 Using identity find the value of $(7.2)^{2}$.
Q 22 Using identity evaluate $297 \times 303$.
Q 23 Using identity find the value of (4.7) ${ }^{2}$.
Q 24 Simplify $(x y+y z)^{2}-2 x^{2} y^{2} z$. Find the value when $x=-1, y=1$ and $z=2$.
Q 25 Simplify: $(1.5 x-4 y)(1.5 x+4 y+3)-4.5 x+12 y$

## Short Questions :-

Q 1 What are algebraic expressions?
Q 2 Expressions consists of $\qquad$ \& $\qquad$ .
Q 3 The value of an expression changes with the value chosen for the variables it contains. (T/F)
Q 4 When numbers/literals are added or subtracted, they are called $\qquad$ .
Q 5 When numbers/literals are multiplied, they are called $\qquad$ .
Q 6 The terms in the expression $4 a b+5 a(b+c)$ are:
Q 7 The factors in the term $5 a(b+c)$ are :
Q 8 While multiplying two monomials, Coefficient of product = $\qquad$ X $\qquad$ .
Q 9 Identify the terms, their coefficients for the expression: $0.75 x+0.44 y+1.56 \mathrm{zx}$
Q 10 Classify the following as binomials and trinomials:
$2 a+3 b, 2 x+3 y-5, a+4,12 x+13 y+17 z$
Q 11 What are the polynomials? Give an example.
Q 12 What are like and unlike terms?
Q 13 Classify as like and unlike terms: 2abc and bac, $x 2 y 2 z$ and $y 2 z x 2.7 x$ and $3 y x y+z$ and xyz
Q 14 Add: $2 p^{2} q^{2}-3 p q+4 \& 5+7 p q-3 p^{2} q^{2}$
Q 15 Find the product of : $2 z, 4 y, 2 y^{2} \& 6 x y z$
Q 16 State the distributive property.
Q 17 T/F: $n(4+m)=4 n+n m$
Q 18 T/F: $p(9-p)=9 p-2 p$
Q 19 Find: $\mathrm{a}^{2}(2 \mathrm{ab}-5 \mathrm{c})$
Q 20 Simplify $x(x-3)+2$ and evaluate for $x=2$
Q 21 Find using distributive property: 125 X 42
Q 22 Find: $a b\left(a^{2}+b c+c^{2}\right)$
Q 23 Multiply : $(a b+5)\left(a+c^{2}\right)(b+6)$
Q 24 Simplify: $(m+n)(3 m+n)+(m+2 n)((m-n)$
Q 25 Simplify: $(3.5 e-4.5 f)(1.5 e+4 f+6 f)-4.5 e+10 f$
Q 26 Simplify : $(3.5 e-4.5 f)(1.5 e+4 f+6 f)-4.5 e+10 f$
Q 27 What is an identity.
Q 28 True/False An equation, which is true for only certain values of the variable in it, is not an identity.
Q $29(x+a)(x+b)=$ $\qquad$
Q $30(\mathrm{a}-\mathrm{b})^{2}=$ $\qquad$
Q $31(x-a)(x+a)=$ $\qquad$ .
Q 32 Find using identities: $106^{2}$
Q 33 Find using identities: $(4.8)^{2}$
Q 34 Find using identities: $(-\mathrm{p}+\mathrm{q})(-\mathrm{p}+\mathrm{q})$
Q 35 Find: $(2 x+5 y)(2 x+3 y)$
Q 36 Find: $(2 x-y)(2 x+y)\left(4 x^{2}+y^{2}\right)$
Q 37 Multiply:
$\left[p^{2}+(q r)^{2}\right]\left[p^{2}-(q r)^{2}\right]$
and evaluate for $p=1, q=2, r=3$.

## VISUALISING SOLID SHAPES

1. 

Draw the side view of the given figure.

2.

Verify Euler's formula for these solids.

3. Write Eulers's Formula then find no. of faces in a solid if no. of vertices is 8 and no. of edges is 12.
4. Define Prism and Pyramid with examples.

MENSURATION

1. Find the area of Polygon MNOPQR in the given figure if $M P=9 \mathrm{~cm}, \mathrm{MD}=7 \mathrm{~cm}, \mathrm{MC}=6 \mathrm{~cm}$, $M B=4 \mathrm{~cm}, M A=2 \mathrm{~cm} . N A, O C, Q D$ and $R B$ are perpendiculars to diagonal MP.

2. There is a regular hexagon MNOPQR of side 5 cm in (Fig.1). Aman and Ridhima divided it in two different ways (Fig.2). Find the area of this hexagon using both ways.


Fig. 1


Ridhima's method


Aman's method
Fig. 2
3. The floor of a building consists of 3000 tiles which are rhombus shaped and each of its diagonals are 45 cm and 30 cm in length. Find the total cost of polishing the floor, if the cost per $\mathrm{m}^{2}$ is Rs. 4 .
4. Top surface of a raised platform is in the shape of a regular octagon as shown in the figure. Find the area of the octagonal surface.

5. An aquarium is in the form of a cuboid whose external measures are $80 \mathrm{~cm} \times 30 \mathrm{~cm} \times 40 \mathrm{~cm}$. The base, side faces and back face are to be covered with a coloured paper. Find the area of the paper needed?
6. Rukhsar painted the outside of the cabinet of measure $1 \mathrm{~m} \times 2 \mathrm{mX} 1.5 \mathrm{~m}$. How much surface area did she cover if she painted all except the bottom of the cabinet.

7. A closed cylindrical tank of radius 7 m and height 3 m is made from a sheet of metal. How much sheet of metal is required.
8. A rectangular piece of paper $11 \mathrm{~cm} \times 4 \mathrm{~cm}$ is folded without overlapping to make a cylinder of height 4 cm . Find the volume of the cylinder.

1. Solve for $x$ : $4^{2} \times 8^{x}=32$
2. Find the value of (a) $\left(\frac{2}{3}\right)^{-1}+\left(\frac{3}{4}\right)^{-1}+\left(\frac{8}{3}\right)^{-1} \quad$ b) $\frac{12^{4} \times 9^{3} \times 4}{6^{3} \times 8^{2} \times 27} \quad$ c) $2^{3} \times a^{3} \times 5 a^{4}$
3. If $27^{x}=\frac{9}{3^{x}}$, find $x$.
4. Simplify :-[\{(2) $\left.\left.{ }^{1 / 2} \cdot(4)^{3 / 4} \cdot(8)^{5 / 6} \cdot(16)^{7 / 8} \cdot(32)^{9 / 10}\right\}^{4}\right]^{3 / 25}$
5. Write in standard form 0.0000507

## DIRECT \& INVERSE VARIATIONS

1. In a model of a ship, the mast is 9 cm high, while the mast of the actual ship is 12 m high. If the length of the ship is 28 m , how long is the model ship?
2. A 5 m 60 cm high vertical pole casts a shadow 3 m 20 cm long. Find at the same time (i) the length of the shadow cast by another pole 10 m 50 cm high (ii) the height of a pole which casts a shadow 5 m long.
3. There are 100 students in a hostel. Food provision for them is for 20 days. How long will these provisions last, if 25 more students join the group?
4. If 15 workers can build a wall in 48 hours, how many workers will be required to do the same work in 30 hours?
5. A batch of bottles were packed in 25 boxes with 12 bottles in each box. If the same batch is packed using 20 bottles in each box, how many boxes would be filled?

## FACTORIZATION OF ALGEBRAIC EXPRESSIONS

Q 1 Factorise $2 x+4$.
Q 2 Factorise $12 a^{2} b+15 a b^{2}$.
Q 3 Factorise $10 x^{2}-14 x^{3}+18 x^{4}$
Q 4 Factorise $20 x^{2} y+30 a x y$.
Q 5 Factorise $x^{2}+x y+8 x+8 y$.
Q 6 Factorise $1+a+a c+a^{2} c$.
Q 7 Factorise $a^{2}+b c+a b+a c$.
Q 8 Factorise $x^{2}-36$ using identity.
Q 9 Factorise $x y-p q+q y-p x$.
Q 10 Factorise $5 a(2 x-3 y)+2 b(2 x-3 y)$.
Q 11 Factorise $a x^{2}+b y^{2}+b x^{2}+a y^{2}$.
Q 12 Factorise $8(4 x+5 y)^{2}-12(4 x+5 y)$.
Q 13 Factorise using identity $\mathrm{x}^{2}+10 \mathrm{x}+25$.
Q 14 Factorise using identity $4 x^{2}+9 y^{2}+12 x y$.

Q 15 Factorise $a x^{2} y+b x y^{2}+c x y z$.
Q 16 Factorise $15 x y-6 x+5 y-2$.
Q 17 Factorise $6 p q-4 q+6-9 p$.
Q 18 Find the factors of $x^{2}-7 x+12$.
Q 19 Find the factors of $3 x^{2}+9 x+6$.
Q 20 Factorise $(a+b)^{2}-(a-b)^{2}$.
Q 21 Factorise the expression $10 a b+4 a+5 b+2$.
Q 22 Divide $24 x^{2} y^{2} z^{2}$ by $6 y z$.
Q 23 Divide $\left(7 a^{2}+14 a\right)$ by $(a+2)$.
Q 24 Divide $x\left(5 x^{2}-80\right)$ by $5 x(x+4)$.
Q 25 Divide $x^{2}+7 x+10$ by $x+5$.
Q 26 Divide $12 p q\left(9 p^{2}-16 q^{2}\right)$ by $4 p q(3 p+4 q)$.
Q 27 Divide $39 x^{3}\left(50 x^{2}-98\right)$ by $26 x^{2}(5 x+7)$.
Q 28 Find the factors of $25 x^{2}-4 y^{2}+28 y z-49 z^{2}$.

## INTRODUCTION TO GRAPHS

1. Draw the line passing through $(2,3)$ and $(3,2)$. Find the coordinates of the points at which this line meets the $x$-axis and $y$-axis.
2. Draw the graph for the following table of values, with suitable scales on the axes.
a) Distance travelled by a car

| Time (in hours) | 6 a.m | 7 a.m | 8 a.m | 9 a.m |
| :--- | :---: | :---: | :---: | :---: |
| Distances (in km) | 40 | 80 | 120 | 160 |

3. Draw a graph for the following.
i)

| Side of square (in cm) | 2 | 3 | 3.5 | 5 | 6 |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Perimeter (in cm) | 8 | 12 | 14 | 20 | 24 |

Is it a linear graph?
ii)

| Side of square (in cm) | $\mathbf{2}$ | $\mathbf{3}$ | $\mathbf{4}$ | 5 | 6 |
| :--- | :--- | :--- | :---: | :---: | :---: |
| Area (in $\mathrm{cm}^{2}$ ) | 4 | 9 | 16 | 25 | 36 |

Is it a linear graph?

## PLAYING WITH NUMBERS

Find the values of the letters $A$ and $B$.
3 A
$\begin{array}{r}+\quad 25 \\ \hline \text { B } 2\end{array}$
2. If the three digit number $\mathbf{2 4 x}$ is divisible by 9 , what is the value of $\boldsymbol{x}$ ?
3. Find $A, B, C$ if

> | AB |
| :---: |
| $\times 5$ |
| ------ |
| CAB |

4. If $62 y 3$ is a multiple of 3 , where $y$ is a single digit then what should be the minimum and maximum value of $y$ ?
