SENIOR 5 A & 5B SUB-MATHS 1 (S475/1)TERM 1 HOLIDAY WORK 1,2020

*Students are encouraged to attempt **all** the given work in order for easy facilitation of the next topics.*

1. Simplify the following;

(a) $(3a^3)^2$ (b) $(4y^{-4})^{-3}$ (c) $(3/y^2)^{-2}$ (d) $(6c^{-3})^{-2}/(2c^2)^3$

(e) $(4y^2t)^2/(2y^4t^3)^{-2}$ (f) $\left(\dfrac{125}{8}\right)^{\frac{2}{3}}$ (g) $\left(\dfrac{256}{81}\right)^{-\frac{3}{4}}$ (h) $\dfrac{9^{y+1}X6^{y-1}}{3^{2y-1}X2^y}$

2) Solve for y if ;

(a) $4^y = 16^{-4y+1}$ (b) $36^{-2y+3} = 216^{2y-3}$ (c) $32^y = 16^{-2y-1}$

(d) $4^y = 0.25$

3) Simplify without table or calculator;

(a) $\sqrt{18} + \sqrt{98}$ (b) $\sqrt{\dfrac{245}{100}}$ (c) $\sqrt{20}$ X $\sqrt{45}$ - $\sqrt{80}$ + $\sqrt{20}$

(d) $(3+\sqrt{3})(6-2\sqrt{3})$ (e) $2\sqrt{3}(3\sqrt{3} - 4\sqrt{3})$ (f) $\dfrac{(\sqrt{6}+\sqrt{3})^2 - (\sqrt{6}-\sqrt{3})^2}{2\sqrt{3}}$

4) Rationalise the denominator and simplify for each case.

(a) $\dfrac{24}{3+\sqrt{3}}$ (b) $\dfrac{\sqrt{6}+\sqrt{3}}{\sqrt{6}-\sqrt{3}}$ (c) $\dfrac{4(3+\sqrt{5})}{(3-\sqrt{3})}$

    5(a) Use the matrix method to solve the equations ;

$$3x=16+y, \quad 2y=3-x.$$

(b)If matrices $p=\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$, $q=\begin{pmatrix} a & b \\ c & d \end{pmatrix}$ and $r=\begin{pmatrix} 4 & 3 \\ 12 & 5 \end{pmatrix}$ and pq=r, find q.

6)The results of the voting in an election were as follows ;

Candidate	Votes
MARY	2045
JANE	4238
JANET	8605
GRACE	12012

 Represent this information on a pie diagram.

7(a) Find the mean for the given data;

X	1	2	3	4	5
Frequency ,f	4	5	8	10	17

(b) The table below shows the results of the students of Sub-maths.

Marks	0-9	10-19	20-29	30-39	40-49	50-59
No.of students(f)	7	26	40	46	28	13

(i)Calculate the mean mark.(ii) Draw a cumulative frequency curve and use it to estimate the median mark.

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8(a)Convert ;(i) 144km/min into m/s (ii)360kmhr^{-1} into ms^{-1}

(iii)45m/s into km/hr

(b)36km/min into m/s

(c)If the speed of light is 3×10^8m/s and the distance from the sun to the earth 1.5×10^8km, find the time in seconds taken by the sun to reach the earth.

(d)Janet walks 400m due north in a time of 100 seconds and then 0.7km south in a time of 5 minutes . Find the

(i) average speed (ii) average velocity.

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