

SHRI RAM CENTENNIAL SCHOOL

Worksheet

Subject: MATHEMATICS

Class: VIII

Number: [02/2627/8]

Date:

Roll No. –

Student's Name:

Section:

- Choose the greater number 4^5 or 5^4 ?
(a) 4^5 (b) 5^4 (c) equal (d) can't determine
- Express $a \times a \times b \times b \times c \times c$ in exponential form.
- Fill in the blanks :
(a) $(-1)^{25} =$ _____
(b) $(-1)^{200} =$ _____
- Find the value of
- $25 \times 169 = 5^x \times 13^y$, find value of $2x + 3y$?
- If $a = 2$ and $b = 3$, find the value of
(a) $b^b - a^{2a}$ (b) $\left(\frac{2b}{3a}\right)^{5ab}$
- 1 million = $10^?$
- Simplify the below and express in exponential form:
(a) $8^4 \times 5^4$
(b) $9^5 \div 4^5$
(c) $(3^2)^3 \div 3^4$
(d) $7^2 \times 7^3 \times 7^0$
- Evaluate $4^0 + 51^0 + 79^0 + 109^0 + 469^0$
- Find the value of 'n' if $5^{n-1} \times 25^{n-2} = 125$.
- Write answer in exponential form $\frac{-8}{1331}$
- Evaluate
(a) $\frac{3^4 \times 4^5 \times 9}{4 \times 3^5}$
(b) $\frac{16^3 \times 7^5 \times 5^4}{256 \times 7^3 \times 5^3}$
- Find the value of a in $\left(\frac{2}{7}\right)^{-3} \times \left(\frac{2}{7}\right)^{-11} = \left(\frac{2}{7}\right)^{7a}$. Mention all the laws of exponents used.
- Express the answer with positive powers using the law of exponents $\left(\frac{19}{11}\right)^{-5}$
- Evaluate:
(a) $\frac{(6a^2b^{10})^3 \times a^5b^9}{(4a^3b^4)^4}$ (b) $\frac{a^7b^3c^6d^{10}}{a^5b^9c^7d^4}$ (c) $2x^8y^2z \times 8x^2y^0z^5 \times x^0y^6z^2$
- Find the value of a in $\left\{\left(\frac{3}{5}\right)^2\right\}^7 \times \left(\frac{3}{5}\right)^3 \div \left(\frac{3}{5}\right)^2 = \left(\frac{3}{5}\right)^{3a}$ and mention all the laws of exponents used.
- Express the following in standard form.
(a) 8349800000
(b) 5098.3
(c) 63.92
(d) 4598
(e) 0.00096
- Express the following in usual form.
(a) 9×10^4
(b) 6.548×10^6
- A jar is filled with a chemical substance that doubles itself every day. On the 20th day, the jar is completely filled. On which day was jar half-filled?
- Find the value of $\left(\frac{-14}{11}\right)^3 \times \left(\frac{1}{-7}\right)^4$?

CHALLENGING SECTION

1. An asteroid splits into half every minute. If initially there was only one asteroid, how many asteroids will be there after 20 minutes? Express your answer mathematically to show how many asteroids will be present at any given minute.
2. Rohan purchased a number lock. It has 6 dials, each having numbers from 0 to 9. How many lock combinations are possible?
3. By what number $\left(\frac{5}{4}\right)^{-3}$ be divided so that quotient may be $\left(\frac{25}{16}\right)^{-2}$?
4. A short video gets 50 views on the first day. Each day, the number of views becomes 4 times the previous day's views. On which day will it cross 3 million views?
5. Find the value of n from the given expression.
$$\frac{16 \times 2^{n+1} - 4 \times 2^n}{16 \times 2^{n+2} - 2 \times 2^{n+2}} = \frac{1}{8}$$
6. $\left(\frac{3}{4}\right)^{-4} \times \left(\frac{4}{3}\right)^3 \times \left(\frac{6}{8}\right)^2 = \underline{\hspace{2cm}}$

CASE STUDY BASED QUESTIONS

Our solar system consists of our star, the Sun, and everything bound to it by gravity – the planets Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune; dwarf planets such as Pluto; dozens of moons; and millions of asteroids, comets, and meteoroids. Beyond our own solar system, we have discovered thousands of planetary systems orbiting other stars in the Milky Way. The distance of all the planets from the Sun in kilometers (km) is given in below table:

Planet	Distance from Sun (km)
Mercury	57,900,000
Venus	108,200,000
Earth	149,600,000
Mars	227,900,000
Jupiter	778,600,000
Saturn	1,433,500,000
Uranus	2,872,500,000
Neptune	4,495,100,000

Based on the above situation, answer the following questions:

- (i) Write the distance of Mercury from the Sun in standard form.
- (ii) Write the sum of the distances of Mercury and Venus from the Sun in standard form.
- (iii) Write the difference of the distances of Earth and Venus from the Sun in standard form.
- (iv) Find the mean distance of Earth and Venus from the Sun in standard form.