Name: _____ Class: M 2/_____ Number:_____

$$\boxed{\textit{Worksheet 2 Exponents}}$$

1. Simplify the following with positive exponents only.

1) $\left[(5a)^{5mn} \div \left(5^m\right)^{5n} \left(a^{2m}\right)^{-3n} \right]^{-2}$

$= \left[5^{\boxed{}} \cdot a^{\boxed{}} \right]^{\boxed{}}$

$= \dfrac{1}{a^{\boxed{}}}$

2) $\dfrac{9^{n-1}}{3^{n-1}} \div \dfrac{27^{n+1}}{81^{n-1}}$

$= \dfrac{\boxed{}^{(n-1)}}{3^{n-1}} \times \dfrac{\boxed{}^{(n-1)}}{\boxed{}^{(n+1)}}$

$= 3^{\boxed{}} \times 3^{\boxed{}}$

$= 3^{\boxed{} - \boxed{}}$

3) $\dfrac{2^{m+3}}{15^{-m-1}} \times \dfrac{6^{-m+2}}{5^{m+1}}$

$= \dfrac{2^{m+3}}{\left(3 \times \boxed{}\right)^{-m-1}} \times \dfrac{\left(2 \times \boxed{}\right)^{-m+2}}{5^{m+1}}$

$= \dfrac{2^{m+3}}{\boxed{}^{-m-1} \times \boxed{}^{-m-1}} \times \dfrac{\boxed{}^{-m+2} \times \boxed{}^{-m+2}}{5^{m+1}}$

$= \dfrac{2^{\boxed{}} \times 3^{\boxed{}}}{5^{\boxed{}}}$

$= 2^{\boxed{}} \times 3^{\boxed{}}$

4) $\dfrac{4^{n+3}}{15^{-n-1}} \times \dfrac{12^{-n+2}}{5^{n+1}} \times \dfrac{1}{24^3}$

$= \dfrac{\left(2^{\boxed{}}\right)^{n+3}}{\left(\boxed{} \times \boxed{}\right)^{-n-1}} \times \dfrac{\left(2 \times \boxed{}\right)^{-n+2}}{5^{n+1}} \times \dfrac{1}{\left(2^{\boxed{}} \times \boxed{}\right)^3}$

$= \dfrac{2^{\boxed{}(n+3)}}{\boxed{}^{-n-1} \times \boxed{}^{-n-1}} \times \dfrac{2^{(-n+2)} \times \boxed{}^{-n+2}}{5^{n+1}} \times \dfrac{1}{2^{\boxed{}(3)} \times \boxed{}^3}$

$= \boxed{}$

$= \boxed{}$

5) $\left[\dfrac{c^{-1}}{(ab)^2}\right]^3 \div \left[\dfrac{b^3}{(ab)^{-3}}\right]^{-2}$

$= \dfrac{c^{-1(3)}}{(ab)^{2\times3}} \div \dfrac{b^{3(-2)}}{(ab)^{-3(-2)}}$

$= \dfrac{c^{\boxed{}}}{(ab)^{\boxed{}}} \times \dfrac{(ab)^{\boxed{}}}{b^{\boxed{}}}$

$= \dfrac{b^{\boxed{}}}{c^{\boxed{}}}$

6) $\dfrac{4^{2n}\left(4^{2n-1}\right)^{2n}}{4^{n+3}4^{3n-3}}\times\dfrac{1}{16^{2n^2-2n}}$

$=\dfrac{4^{2n}\cdot 4^{(2n-1)(2n)}}{4^{\boxed{}n}}\times\dfrac{1}{\boxed{}^{\boxed{}(2n^2-2n)}}$

$=\dfrac{4^{\boxed{}n^2}}{4^{\boxed{}n}}\times\dfrac{1}{4^{\boxed{}n^2-\boxed{}n}}$

$=4^{\boxed{}}\qquad =\underline{\boxed{}}$

2. Read each statements below. Write T if the statement is true and F if it is false. For what reason

$\boxed{}$ 1) $(0.000000005)^0 =1$

$\boxed{}$ 2) $a^0 =1$; a is any number

$\boxed{}$ 3) $10^{-5} < 0$

$\boxed{}$ 4) $-5^4 = (-5)^4$

$\boxed{}$ 5) $(0.5)^2 = (2)^{-2}$

$\boxed{}$ 6) $100^{10} = 10^{100}$

$\boxed{}$ 7) $\left(\dfrac{3}{7}\right)^{-4} < \left(\dfrac{7}{3}\right)^{4}$

$\boxed{}$ 8) $\dfrac{2^{10}}{10^2} > \dfrac{10^2}{2^{10}}$

$\boxed{}$ 9) $10^a +10^a = 20^a$; a is integer number

10) $10^a + 10^a = 10^{a+b}$; a and b is integer number

11) $10^a \times 10^b < 1$; a and b is integer number that $a+b < 0$

12) $10^a \times 10^b = 1$; a=0 and b=0

13) $a^{10} \times b^{10} = (a \times b)^{20}$; a and b is any number

14) $10^a \div 10^b > 1$; a and b is integer number that $a-b < 0$

15) $a^2 > a$; a is any number