Antonine Sisters' School
Hazmieh - Jamhour
Grade: 8A
Name: ______________________

Supplementary
Practice 1
October 2019
Nº_____

MATHEMATICS

I) Answer by true or false and justify by **solving**.

1) $3^2 + 4^2 = 7^2$ 2) $\frac{2^6 \times 7^6}{14^6} = 1$ 3) $(3^3)^7 > 9^{11}$

4) $(3 + 3^{-1}) \div 3^{-1} = 10$ 5) $3^4 \times 9^3 \times (-27)^2 = -3^{16}$ 6) If $\frac{a}{b} = 4$, then $\frac{a^2}{b^2} = 8$

7) $5^{62} \times 0.2^{62} \times 5 = 5$ 8) $4^{55} \times 0.25^{53} = 8$

9) $(-98)^4 \times (-23) \times (-54)^5$ is a negative number.

10) If $a \times b = -1$, then $a^5 \times 3 \times b^3$ is positive.

11) $10^3 = 10{,}000$ 12) $10^{-3} = 0.0001$ 13) $2^{-3} = 0.002$ 14) $-2^4 = 16$

II) Copy and complete:

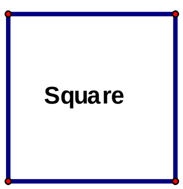
1) $16^2 = 2^{\cdots}$ 2) $25^{-3} = 5^{\cdots}$ 3) $12^4 \times 3^4 = 6^{\cdots}$ 4) $4^2 \times 8^3 \times 2^{\cdots} = 2^{16}$

III) Simplify each expression. Represent the final answer as a product of prime bases raised to integer exponents.

1) $\frac{2^5 \times 3^5 \times 5^6}{2^7 \times 3^5 \times 5^5}$ 2) $\frac{12^3 \times (-4)^2}{(-18)^3 \times 2^7}$ 3) $\frac{6^3 \times (0.3)^5}{(-0.04)^2 \times 90}$ 4) $\frac{3 \times 5^{-2}}{4^{-1} \times 12}$

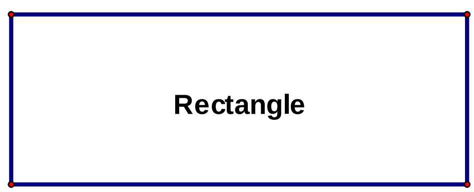
IV) Determine the perimeter and area of each figure:

1)



One side = $10^3\ cm$

2)



Dimensions: length=$4^2\ cm$ and width=$4^3\ cm$

V) 1) The area of a square is $9^8\ cm^2$. What is the length of one side of this square?

2) The area of a rectangle is $24 cm^2$. Calculate the missing dimension in each of the following cases:

a) Length = 12 cm; width = ?

b) Length = 8cm; width = ?

c) Width = 2cm; length = ?

d) Width = 4cm; length = ?

3) The area of a rectangle is $10^7 cm^2$. If its length is $10^5 cm$, calculate its width.

4) The area of a rectangle is the same as that of the square in part 1 of this exercise.
If the width of the rectangle is $3^6\ cm$, calculate its length.

VI) Write each of the following numbers in scientific notation:

1) $45{,}000$ 2) 0.0004389 3) $4^2 \times 10^3$ 4) $12^4 \times 10^{-2}$

5) $4 \times 10{,}000 + 3 \times 1{,}000 + 5 \times 100 + 8 \times 10 + 7 \times 1$ 6) $6 \times 10^2 - 44$

VII) Calculate each of the following:

1) $\left(\frac{3}{4}\right)^5 \times \left(\frac{4}{3}\right)^7$ 2) $\left(\frac{10}{11}\right)^3 \div \left(\frac{10}{22}\right)^4$ 3) $\left(\frac{2}{3}\right)^2 + \left(\frac{2}{3}\right)^2$

4) $\left(\frac{4}{5}\right)^{-1} - 1.25$ 5) $\frac{4}{4^{-2}} \div (-64)$ 6) $(0.3)^2 + (0.4)^2$

VIII) Compare each of the following: (Use the symbols $<, >$ or $=$ to fill in the blanks.)

1) $\left(\frac{1}{2}\right)^2$ ... $\left(\frac{1}{2}\right)^3$ 2) $(0.3)^3$ ... $(0.3)^2$ 3) 5×10^{-4} ... 5×10^{-2}

IX) Insert between two consecutive powers of ten:

1) $34{,}908$ 2) 0.000717 3) 0.62×10^3

X) 1) Write in decimal form: $\frac{3}{5}$

2) Deduce the scientific notation of $\frac{3}{5}$.

3) Deduce the scientific notation of: $\frac{3\times10^7}{5\times10^5}$

XI) 1) Is $\frac{3\times4}{5\times6}$ the same as $\frac{3}{5} \times \frac{4}{6}$? Why? 2) Is $\frac{3\times4}{5\times6}$ the same as $\frac{3}{6} \times \frac{4}{5}$? Why?

3) Is $\frac{3+4}{5+6}$ the same as $\frac{3}{5} + \frac{4}{6}$? Why? 4) Is $\frac{3-4}{5\times6}$ the same as $\frac{3}{30} - \frac{4}{30}$? Why?

XII) 1) a)Determine the prime decomposition of 24 and 36.

b) Use the prime decomposition to calculate the GCF and LCM of 24 and 36.

c) Use the GCF to simplify the fraction: $\frac{24}{36}$

d) Use the LCM in order to calculate the following sum: $\frac{5}{36} + \frac{7}{24}$

e) If $a = 24, b = 36, d = GCF(24;36) and\ m = LCM(24;36)$, check the rule: $a \times b = d \times m$.

2) The GCF of two natural numbers is 5 and their LCM is 60.
If one of these numbers is 20, calculate the other. (Use the rule in part “e” above.)

3) What do we call two numbers whose GCF is equal to 1?

4) Determine the GCF and LCM in each of the following **special** cases:

a) $a = 12\ and\ b = 4$ b) $a = 15\ and\ b = 16$ c) $a = 15\ and\ b = 28$

-- END OF PRACTICE 1 --