

2/27/20 Assignment (Due 3/3/20) Name: _____ Period: _____

Mario and Tony both want you to come and drive Go-Karts for their team. They will pay you in gold coins. Each one makes an offer:

Mario: I will give you 3 gold coins on the first day. Then, every day after that, I will pay you 3 times as much as I paid you the day before.

Tony: I will give you 3 gold coins on the first day. Then, every day after that, I will pay you 3 more coins than I paid you the day before.

1. Who would you rather work for? Use the table below to help you decide.

Mario's Deal	Daily Wage	Tony's Deal	Daily Wage
Monday		Monday	
Tuesday		Tuesday	
Wednesday		Wednesday	
Thursday		Thursday	
Friday		Friday	
Total Earnings		Total Earnings	

2. Whom would you rather work for and why?

I would rather work for _____ driving Go Karts because:

3. You have used exponents previously to represent whole numbers in expanded form as powers of ten. Complete the following table to remind you how exponents are used. The first couple of rows have been done for you.

10^1	means	10	which is equal to	10
10^2	means	$10 \cdot 10$	which is equal to	100
10^3	means		which is equal to	
10^5	means		which is equal to	
10^8	means		which is equal to	
10^{10}	means		which is equal to	

4. Write each expression given below in exponential form. *Exponential form: a base (or bases) with a single exponent*

a. $6 \cdot 6 \cdot 6 \cdot 6 \cdot 6 =$	b. $\frac{9}{7} \cdot \frac{9}{7} \cdot \frac{9}{7} =$	c. $\underbrace{(4 \cdot 4 \cdot 4 \cdots 4)}_{15 \text{ times}} =$
d. $(-2)(-2)(-2)(-2) =$	e. $\left(\frac{-2}{3}\right)\left(\frac{-2}{3}\right)\left(\frac{-2}{3}\right) =$	f. $x \cdot x \cdot x \cdot x \cdot x \cdot x =$
g. $\frac{1}{x} \cdot \frac{1}{x} \cdot \frac{1}{x} \cdot \frac{1}{x} \cdot \frac{1}{x} \cdot \frac{1}{x} \cdot \frac{1}{x} =$	h. $2 \cdot 2 \cdot 3 \cdot 3 \cdot 3 =$	i. $11 \cdot 11 \cdot 11 \cdot x \cdot x =$
j. $x \cdot x \cdot x \cdot y =$	k. $a \cdot a \cdot a \cdot b \cdot b \cdot b \cdot c \cdot c =$	l. $\underbrace{(r \cdot r \cdot r \cdots r)}_{20 \text{ times}} \underbrace{(q \cdot q \cdot q \cdots q)}_{9 \text{ times}} =$

Examine problem j. above. What exponent does the variable y have? Do you have to write the exponent?

THINK: Why do different bases have to stay separate when writing powers? **EXAMPLE:** $\pi \cdot \pi \cdot h \cdot h \cdot h$

Because π is used as a factor 2 times, its exponent is 2. Because h is used as a factor 3 times, its exponent is 3.

→ So, when simplified $\pi \cdot \pi \cdot h \cdot h \cdot h$ is equal to $\pi^2 \cdot h^3$

Notice the use of parentheses in problems d. and e. above. Why do you think they are they used?

5. Evaluate each exponential expression by first re-writing it using multiplication.

$(-3)^2$	means	$(-3)(-3)$	which is equal to	9
$(-3)^3$	means		which is equal to	
$(-3)^4$	means		which is equal to	
$(-3)^5$	means		which is equal to	
$(-3)^6$	means		which is equal to	
$(-3)^7$	means		which is equal to	

Describe one pattern that you notice in the table above.

6. Analyze the pairs of expressions given below; discuss the similarities and differences between them.

$(-4)^2$ and -4^2

$(-4)^3$ and -4^3