SOL HW 1.6b

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Name:_____ Date:_____

Math 8 Section 1.6b Order of Operations with Exponents:

1. Evaluate each of the following operations. Remember the order of the operations. Show all your steps:

a) $4+5^2$ $4+25$ $=29$	b) 3×2^4 $=3\times16$ $=48$ //	c) $11+3\times2^3$ $=11+3\times8$ $=11+24$ $=35$ //
d) $3\times2+3^3$ $=6+27$ $=33$ //	e) $2^2+3^2+4^2$ $=4+9+16$ $=29$ //	f) $4-(1+2)^2$ $4-(3)^2$ $4-9$ $=-5$ //
g) $2(3+4)^2-10$ $2(7)^2-10$ $2(49)-10$ $98-10$ $=88$ //	h) $(4)(1+2)^2$ $4(3)^2$ $=4(9)$ $=36$ //	i) $\left(\sqrt{12+4}\right)-3^2$ $(\sqrt{16})-9$ $4-9$ $=-5$ //
j) $\sqrt{3^2+4^2}$ $\sqrt{9+16}$ $\sqrt{25}$ $=5$ //	k) $3-2^3\times4$ $3-8\times4$ $3-32$ $=-29$ //	L) $3^3-2^2+1^1$ $27-4+1$ $=24$ //
m) $5\times3^2-4$ $5\times9-4$ $45-4$ $=41$	n) $(-2)^2+3$ $4+3$ $=7$ //	p) -2^2+6 $-4+6$ $=2$ // $-(2\times2)+6$ $-(4)+6$ $-4+6$ $=2$ //

Q) $40 \div 2 \times 3^2 - 4$ $= 40 \div 2 \times 9 - 4$ $= 20 \times 9 - 4$ $= 180 - 4$ $= 176$	r) $\frac{3^3 - 2^2 + 5}{12 \div 3}$ $\frac{27 - 4 + 5}{4}$ $= \frac{28}{4}$ $= 7$	s) $\frac{(21-17) \div 3}{10^2 \div 20}$ $\frac{4 \div 3}{100 \div 20}$ $= \frac{\frac{4}{3}}{5}$ $= \frac{4}{3} \div \frac{5}{1}$ $= \frac{4}{3} \times \frac{1}{5}$ $= \frac{4}{15}$
t) $2 \times (14 \div 2)^2 + 5 \times 12$ $2 \times (7)^2 + 5 \times 12$ $2 \times 49 + 60$ $98 + 60$ $= 158$	u) $4 \times (13+8) - 8^2 \div (2 \times 4)$ $4 \times (21) - 64 \div (8)$ $84 - 8$ $= 76$	v) $(34+12) \times 8 \div 2 + 2^5$ $46 \times 8 \div 2 + 32 =$ $368 \div 2 + 32 =$ $184 + 32$ $= 216$
w) $36 \div (6+3) \times (3^3 + 17) \div 4$ $36 \div 9 \times (27+17) \div 4$ $36 \div 9 \times 44 \div 4$ $4 \times 44 \div 4$ $\frac{4 \times 44}{4} = 44$	x) $(3^4 \div 9) + 32 - (5 \times 10) + 6$ $(81 \div 9) + 32 - (50) + 6$ $9 + 32 - 50 + 6$ $41 - 50 + 6$ $= -3$	y) $18 + (57 - 38) \times 10 + 4^2$ $18 + (19) \times 10 + 16$ $18 + 190 + 16$ $208 + 16$ $= 224$

2. Indicate which of the following is bigger? Circle the bigger value:

a) 3^2 or 2^3 9 or 8	b) 5^3 or 3^5 125 243	c) 2^4 or 4^2 EQUAL 16 = 16

3. Challenge: Use numbers 1, 2, 3, and 4, each once to replace variables in $a + b \times c^d$. What is the ~~maximum~~ value of the expression?

minimum

$a + b \times c^d$

$1 + 2 \times 3^4$

$1 + 2(81) = 163$

$3 + 2 \times 1^4$

$3 + 2 \times 1$

$= 5$