8th Grade Assignment – Week #2

Individual Work:

- Do as much as you can with the problems on **Number Bases - Practice Sheet #2**.

Group Assignment for either Tuesday or Thursday

For Tuesday

- See how far you can get with **Number Bases - Group Sheet #2**.

For Thursday

- See how far you can get with **Number Bases - Group Sheet #3**.

Number Bases – Group Sheet #2

1) Convert from octal to decimal. (If you get stuck, then try writing it in expanded notation first.)

a) 75_{oct}

b) 123_{oct}

c) 270_{oct}

d) 3046_{oct}

2) Convert from decimal to octal.

a) 28_{dec}

b) 70_{dec}

c) 73_{dec}

d) 94_{dec}

e) 164_{dec}

3) Add or subtract. Think only in octal. For example, with $6_{oct} + 4_{oct}$, *don't* think that 6+4 is 10 in decimal, and convert that into 12 in octal. But rather, count in octal four above six: 7, 10, 11, 12.

a) $45_{oct} + 57_{oct}$

b) $245_{oct} + 716_{oct}$

c) $73_{oct} - 27_{oct}$

d) $523_{oct} - 265_{oct}$

4) Fill in the octal multiplication table below. Look for patterns and similarity with the decimal multiplication table.

	0	1	2	3	4	5	6	7
0								
1								
2								
3								
4								
5								
6								
7								

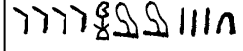
5) Use the above multiplication table in order to multiply. (Check your answer by casting out sevens!)

a) $45_{oct} \times 57_{oct}$

b) $573_{oct} \times 247_{oct}$

Number Bases – Practice Sheet #2

1) Fill in the table.

	Egyptian	Decimal	Scientific
a)			$6.02 \cdot 10^4$
b)		350	
c)			
d)			$3.041 \cdot 10^3$
e)		43,530	

2) Convert to standard decimal form.

a) $5.03 \cdot 10^5$

b) $5.03 \cdot 10^{-3}$

c) $5.03 \cdot 10^{-9}$

d) $5.03 \cdot 10^0$

3) Convert to scientific notation.

a) 65200

b) 700,000,000

c) 0.0000063

d) 0.000408

e) 8.2

4) Convert to expanded notation.

a) 652

b) 8327

c) 70,800

5) Convert to standard decimal form.

a) $5 \cdot 10^2 + 4 \cdot 10^1 + 3 \cdot 10^0$

b) $8 \cdot 10^6 + 3 \cdot 10^4$

c) $7 \cdot 10^3 + 2 \cdot 10^2 + 6 \cdot 10^0$

6) Write down the four numbers that follow each octal (base-eight) number.

a) 6_{oct}

b) 25_{oct}

c) 46_{oct}

d) 52_{oct}

e) 75_{oct}

f) 65_{oct}

g) 146_{oct}

7) Write each octal number in expanded notation.

a) 73_{oct}

b) 163_{oct}

c) 345_{oct}

8) Convert from octal (base-eight) to decimal (base-ten).

a) 37_{oct}

b) 52_{oct}

c) 5_{oct}

d) 107_{oct}

e) 234_{oct}

9) Convert from decimal to octal.

a) 23_{dec}

b) 39_{dec}

c) 67_{dec}

d) 80_{dec}

Number Bases – Group Sheet #3

1) Convert from octal to decimal.

a) 246_{oct}

b) 777_{oct}

c) 1000_{oct}

2) Convert from decimal to octal.

a) 87_{dec}

b) 384_{dec}

3) Octal arithmetic!

a) $456_{oct} + 372_{oct}$

b) $333333_{oct} - 55555_{oct}$

c) $46_{oct} \times 57_{oct}$

Base-five

4) What are the digits in the base-five system?

5) Count in base-five until you are ten past the point of needing three digits.

6) What are the first four place values of the base-five system? (Write them in decimal.)

7) Convert to decimal.

a) 23_{five}

b) 42_{five}

c) 103_{five}

d) 433_{five}

8) Convert to base-five.

a) 6_{dec}

b) 16_{dec}

c) 58_{dec}

Hexadecimal (Base-16)

9) What are the digits in the hexadecimal system?

10) Count in hex up to 30_{hex}.

11) Write down the three numbers that follow each hexadecimal number.

a) 18_{hex}

b) $3E_{hex}$

c) $4A8_{hex}$

d) $29E_{hex}$

e) $6FE_{hex}$

12) What are the first four place values of the hexadecimal system? (Write them in decimal.)

13) Convert to decimal.

a) 23_{hex}

b) $A2_{hex}$

c) $13B_{hex}$

14) Convert to hex.

a) 6_{dec}

b) 28_{dec}

c) 268_{dec}

15) Fill in the table.

Place Value (Exponent)

10	9	8	7	6	5	4	3	2	1	0	BASE
											2
											5
											8
					100000	10000	1000	100	10	1	10
											16