

Answers to MAC283 Classwork NO. 1

$$(3)^2 \quad (3)^3$$

1. Convert 870678(9) = x(27)

8 7 0 6 7 8(9) Converting it to base 3 using 2 digits.

22 21 00 20 21 22 (3)

222 100 202 122 Packing in in a group of 3 each because 27 is 3^3

Group 1 $\rightarrow 2 \cdot 3^2 + 2 \cdot 3^1 + 2 \cdot 3^0 = 18 + 6 + 2 = 26 = Q$

Group 2 $\rightarrow 2 \cdot 3^2 + 0 + 0 \rightarrow 9$

Group 3 $\rightarrow 2 \cdot 3^2 + 0 + 2 \cdot 3^0 = 18 + 0 + 2 = 20 = K$

Group 4 $\rightarrow 1 \cdot 3^2 + 2 \cdot 3^1 + 2 \cdot 3^0 = 9 + 6 + 2 = 17 = H$

Answer: **Q9KH(27)**

$$4^2 \quad 4^3$$

2. Convert ABF(16) = x(64)

10 11 15

A B F

22 23 33 converting it to base 4 (group of 2 because $16 = 4^2$)

222 333 Packing it into group of 3 because $64 = 4^3$

Group 1 $\rightarrow 2 \cdot 4^2 + 2 \cdot 4^1 + 2 \cdot 4^0 = 32 + 8 + 2 = 42$

Group 2 $\rightarrow 3 \cdot 4^2 + 3 \cdot 4^1 + 2 \cdot 4^0 = 48 + 12 + 3 = 63$

Answer: **gβ (64)**

Subtract APG(32) - 7RK(32) =

$$\begin{array}{r}
 90 \\
 \cancel{APG(32)} \\
 -7RK(32) \\
 \hline
 2TS(32)
 \end{array}$$

APG(32)

- 7RK(32)

2TS(32) $G = 16, K = 20$ $G - K = 16 - 20$ therefore we need to borrow the base (32)

So $16 + 32 = 48 - 20 = 28 = S$. The P in the next level is minus 1

and therefore it becomes O. $O (=24) - R (=27)$ needs another borrow of 32

Thus, $24 + 32 = 56 - R (=27) = 29 = T$. Since we borrow from the A it became

9. Thus, $9 - 7 = 2$.

4. BF(16) $A * F = 10 * 15 = 150 = 9 * 16 + 6$: 9 is a carry over and 6 is a remainder.

* CA(16) $A * B = 110 + 9 = 119 = 7 * 16 + 7$: 7 = carry over and 7 remainder.

776 $C * F = 12 * 15 = 180 = 11 * 16 + 4$: 11 carry over 4 remainder

8F4 $C * B = 12 * 11 = 132 + 11(\text{carry}) = 143 = 8 * 16 + 15(F)$

96B6 adding the numbers $^{\wedge} + 0 = 6$. $7 + 4 = 11(B)$ $7 + F = 22 = 16 + 6$

Therefore, remainder is 6 and carry over is 1.

$8 + 1 = 9$