

# Group Homework 1

G2 - Robert Krenzy, Austin Pringle, Anthony Stepich

September 7, 2021

1.  $0.24_8$  to base 10

$$\begin{array}{l|l} n \geq 2\log_{10}8 & = \frac{2}{8^1} + \frac{4}{8^2} \\ n = 2 & = \boxed{.31_{10}} \end{array}$$

2.  $0.24_{10}$  to base 8

$$\begin{array}{l|l} n \geq 2\log_8 10 & 8 \times .24 = 1 + .92 \\ n = 3 & 8 \times .92 = 7 + .36 \\ & 8 \times .36 = 2 + .88 \\ & 8 \times .88 = 7 + .04 \\ & \boxed{.173_8} \end{array}$$

3.  $0.24_{12}$  to base 10

$$\begin{array}{l|l} n \geq 2\log_{10}12 & = \frac{2}{12^1} + \frac{4}{12^2} \\ n = 3 & = \boxed{.194_{12}} \end{array}$$

4.  $0.2B_{13}$  to base 10

$$\begin{array}{l|l} n \geq 2\log_{10}13 & = \frac{2}{13^1} + \frac{11}{13^2} \\ n = 3 & = \boxed{.219_{10}} \end{array}$$

5.  $0.12_{10}$  to base 20

$$\begin{array}{l|l} n \geq 2\log_{20}10 & 20 \times .12 = 2 + .4 \\ n = 2 & 20 \times .4 = 8 + .00 \\ & 20 \times 0 = 0 \\ & \boxed{.28_{20}} \end{array}$$

6.  $0.14_5$  to base 10

$$\begin{array}{l|l} n \geq 2\log_5 10 & = \frac{1}{5^1} + \frac{4}{5^2} \\ n = 3 & = \boxed{.360_{10}} \end{array}$$

7.  $0.24_{10}$  to base 27

$$\begin{array}{l|l} n \geq 2\log_{27} 10 & 27 \times .24 = 6 + .48 \\ & 27 \times .48 = 12 + .96 \\ n = 2 & 27 \times .96 = 25 + .92 \\ & \boxed{.6D_{27}} \end{array}$$

8.  $0.22_4$  to base 10

$$\begin{array}{l|l} n \geq 2\log_4 10 & = \frac{2}{4^1} + \frac{2}{4^2} \\ n = 3 & = \boxed{.625_{10}} \end{array}$$

9.  $0.124_{10}$  to base 12

$$\begin{array}{l|l} n \geq 3\log_{12} 10 & 12 \times .124 = 1 + .488 \\ & 12 \times .488 = 5 + .856 \\ n = 3 & 12 \times .856 = 10 + .272 \\ & 12 \times .272 = 3 + .264 \\ & \boxed{.15A_{12}} \end{array}$$

10.  $0.204_{10}$  to base 9

$$\begin{array}{l|l} n \geq 3\log_9 10 & 9 \times .204 = 1 + .836 \\ & 9 \times .836 = 7 + .524 \\ n = 4 & 9 \times .524 = 4 + .716 \\ & 9 \times .716 = 6 + .444 \\ & 9 \times .444 = 3 + .996 \\ & \boxed{.1746_9} \end{array}$$