1

Charge will be the sum of the following:
x cents for for the first $\frac{1}{9}$ mile;

In 1 mile there are 9 parts of $\frac{1}{9}$, hence in y miles (where y is a whole number) there are $9y$ parts of $\frac{1}{9}$ miles *minus* one part (first $\frac{1}{9}$ mile) = $9y-1$ parts of $\frac{1}{9}$ miles to be charged additionally. $\frac{x}{9}$ cents per part = $(9y-1)*\frac{x}{9}$ cents;

$$x+(9y-1)*\frac{x}{9}=x+\frac{9xy-x}{9}.$$

If you say that OA is E, then charge for each additional 1/9 mile should be x/5 cents instead of x/9.

2

"3/4th of the mineral deposits are removed after 1 cycle" means that 1/4th of mineral deposits are remained after 1 cycle.

After 3 cycles $(\frac{1}{4})^3=\frac{1}{64}$th of the minerals will remain thus $1-\frac{1}{64}=\frac{63}{64}$ will be removed.

Answer: A.

3

Given: A:B:C:D:E=4x:5x:6x:7x:8x, for some multiple x. Assume the maximum marks of each subject to be y, so the the maximum marks of ALL 5 subjects will be 5y.

So, we have that $4x+5x+6x+7x+8x=\frac{72}{100}*5y$ --> $30x=\frac{72*5}{100}*y$ --> $x=\frac{12}{100}*y$. $4x=\frac{48}{100}*y$ and $5x=\frac{60}{100}*y$, so in subject A Roger scored 48% (less than 50%) and in subject B 60% (more than 50%). Obviously in all other subjects Rogers scores will be higher than 50%.

Roger failed in only one subject A.

Answer: A.

4

Question asks to determine lowest ratio of amount disposed / amount recycled.

(A) 142,800 / 16,700 = ~ 8 - 9

(B) 48,000 / 8,800 = ~ 6

(C) 51,400 / 13,000 = ~4

(D) 20,300 / 3,900 = ~ 5

(E) 16,200 / 3,300 = ~ 5

Answer: C.

My advice is before doing calculations estimate the numbers and start with the easiest. No need for exact numerical values, so good approximation will work in this case.

5

Given: $\frac{B}{\frac{P}{W}}=\frac{2}{\frac{50}{100}}$;

The ratio of baking soda to water is halved --> $\frac{B}{W}=\frac{1}{2}*\frac{2}{100}=\frac{1}{100}=\frac{4}{400}$;

The ratio of baking soda to peroxide is doubled --> $\frac{B}{P}=2*\frac{2}{50}=\frac{4}{50}$;

New ratio: $\frac{B}{\frac{P}{W}}=\frac{4}{\frac{50}{400}}$ --> $\frac{P}{W}=\frac{50}{400}$ --> if $P=2*50=100$ then $W=2*400=800$.

Answer: E.