Angeles City Science High School

Math 10

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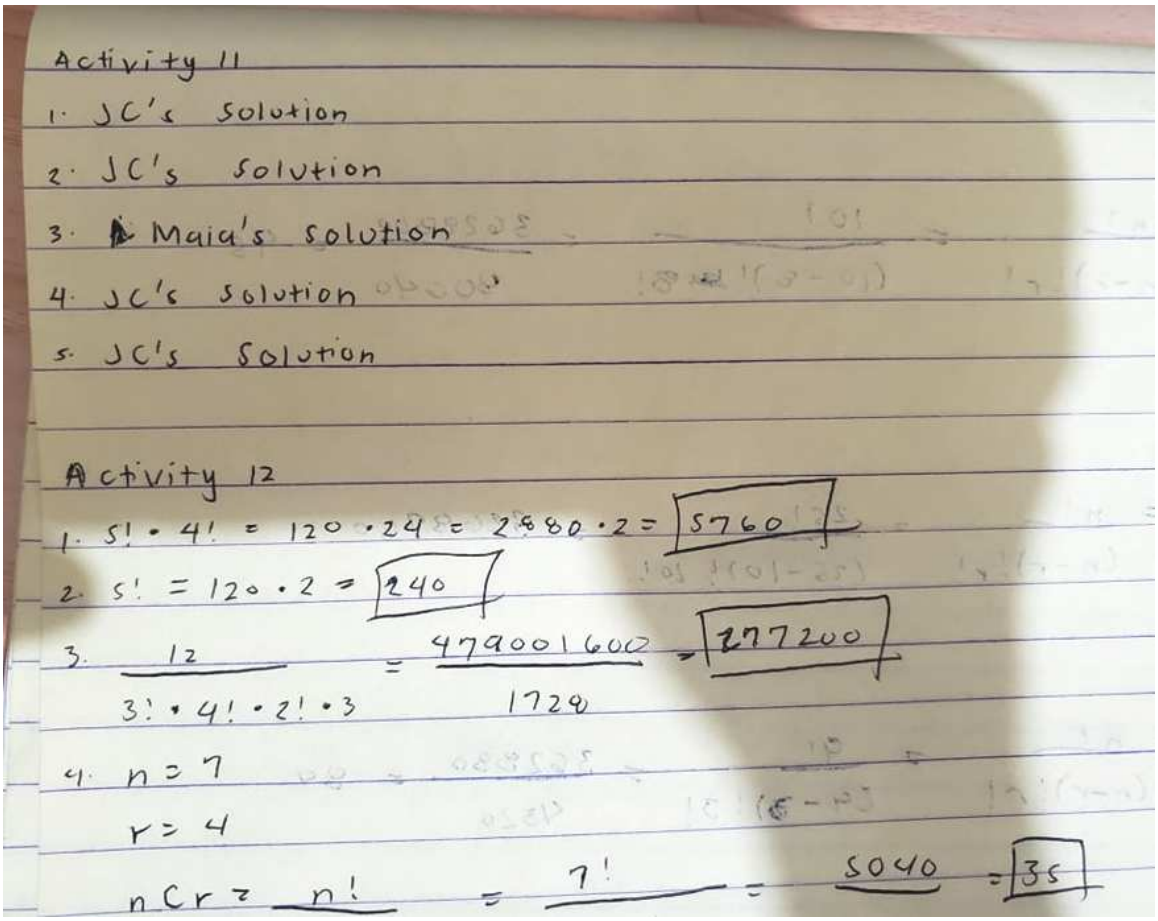

Activity 11

1. JC's solution
2. JC's solution
3. Maia's solution
4. JC's solution
5. JC's solution

Activity 12

1. $5! \cdot 4! = 120 \cdot 24 = 2880 \cdot 2 = \boxed{5760}$
2. $5! = 120 \cdot 2 = \boxed{240}$
3. $\frac{12}{3! \cdot 4! \cdot 2! \cdot 3} = \frac{479001600}{1728} = \boxed{277200}$
4. $n = 7$

   $r = 4$

   $nCr = \frac{n!}{} = \frac{7!}{} = \frac{5040}{} = \boxed{35}$

4. $n = 7$

$r = 4$

$$nCr = \frac{n!}{(n-r)!r!} = \frac{7!}{(7-4)!4!} = \frac{5040}{144} = \boxed{35}$$

5. $n_1 = 7$ | $n_2 = 5$

$r_1 = 3$ | $r_2 = 2$

$$\rightarrow n_1Cr_1 = \frac{n_1!}{(n_1-r_1)!r_1!} = \frac{7!}{(7-3)!3!} = \frac{5040}{144}$$

$$\rightarrow n_2Cr_2 = \frac{n_2!}{(n_2-r_2)!r_2!} = \frac{5!}{(5-2)!2!} = \frac{120}{12} \cdot \frac{5040}{144}$$

$$= 35 \cdot 10 = \boxed{350}$$

6. $n_1 = 8$ | $n_2 = 6$ | $n_3 = 8$ | $n_4 = 6$

$r_1 = 2$ | $r_2 = 1$ | $r_3 = 3$ | $r_4 = 0$

$$\frac{n_1!}{(n_1-r_1)!r_1!} = \frac{8!}{(8-2)!2!} = \frac{40320}{1440}$$

$$\frac{n_2!}{(n_2-r_2)!r_2!} = \frac{6!}{(6-1)!1!} = \frac{720}{120}$$

$$\frac{n_3!}{(n_3-r_3)!r_3!} = \frac{8!}{(8-3)!3!}$$

$$\frac{n_4!}{(n_4-r_4)!r_4!} = \frac{6!}{(6-0)!0!}$$

$$\rightarrow \left(\frac{40320}{1440} \cdot \frac{720}{120}\right) + \left(\frac{40320}{720} \cdot \frac{720}{720}\right) = \boxed{224}$$