Prime Factorization LCM Practice

Name: _____ Date: _____

Question 1

Find the least common multiple for each set of numbers

I. 18 , 30 , 50 , 48

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II. 9 , 12 , 6

III. 14 , 15

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IV. $180, 100, 450$

V. $81, 90$

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VI. $9a^3b$, $6ab^2$

VII. $8a^3b^2$, $10a^2c^4$

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VIII. a^3b, b^2c, ac^2

IX. $6r^3st^4, 8rs^2t$

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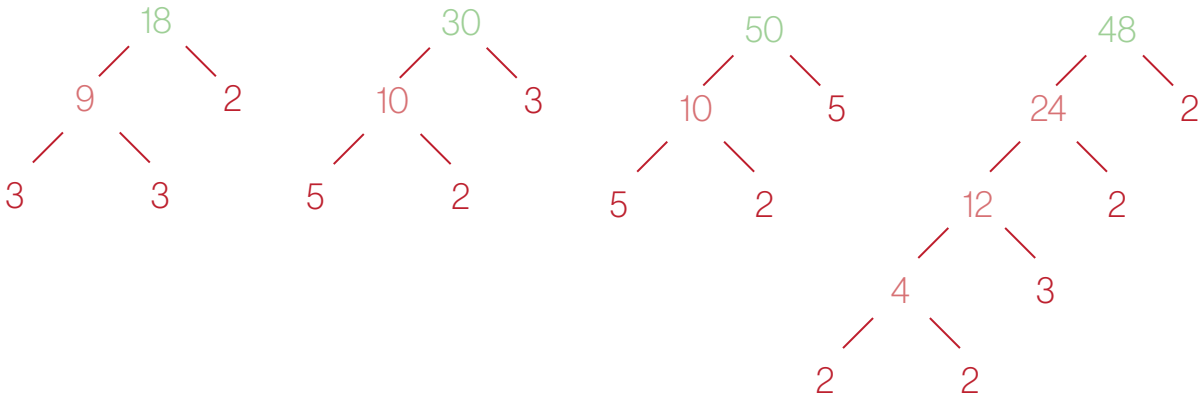
Question 1

Find the least common multiple for each set of numbers

I. 18, 30, 50, 48



Prime Factorizartion 18 : $2 \cdot 3 \cdot 3$ ⟶ $2 \cdot 3^2$ ⟶ $2 \cdot 3^2$

Prime Factorizartion 30 : $2 \cdot 3 \cdot 5$ ⟶ $2 \cdot 3 \cdot 5$ ⟶ $2 \cdot 3 \cdot 5$

Prime Factorizartion 50 : $2 \cdot 5 \cdot 5$ ⟶ $2 \cdot 5^2$ ⟶ $2 \cdot 5^2$

Prime Factorizartion 48 : $2 \cdot 2 \cdot 2 \cdot 2 \cdot 3$ ⟶ $2^4 \cdot 3$ ⟶ $2^4 \cdot 3$

LCM : $2^4 \cdot 3^2 \cdot 5^2 = 3{,}600$

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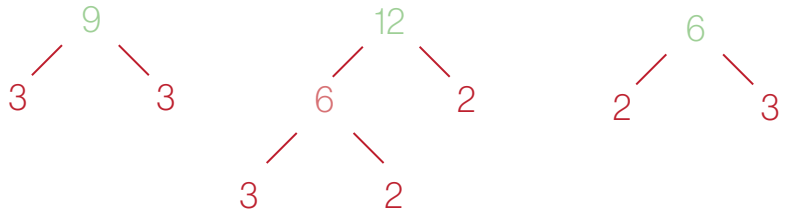
II. 9 , 12 , 6



Prime Factorizartion 9 : $3 \cdot 3 \longrightarrow 3^2 \longrightarrow 3^2$

Prime Factorizartion 12 : $2 \cdot 2 \cdot 3 \longrightarrow 2^2 \cdot 3 \longrightarrow 2^2 \cdot 3$

Prime Factorizartion 6 : $2 \cdot 3 \longrightarrow 2 \cdot 3 \longrightarrow 2 \cdot 3$

LCM : $2^2 \cdot 3^2 = 36$

III. 14 , 15

Prime Factorizartion 14 : $2 \cdot 7 \longrightarrow 2 \cdot 7 \longrightarrow 2 \cdot 7$

Prime Factorizartion 15 : $3 \cdot 5 \longrightarrow 3 \cdot 5 \longrightarrow 3 \cdot 5$

LCM : $2 \cdot 3 \cdot 5 \cdot 7 = 210$

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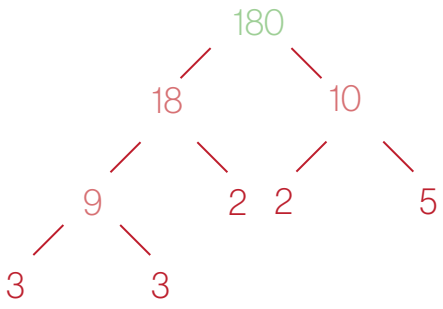
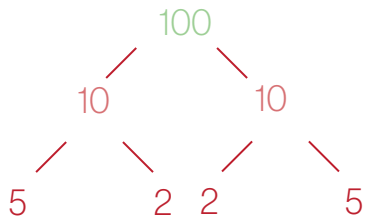
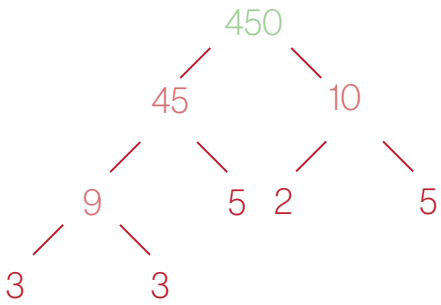
IV. 180, 100, 450







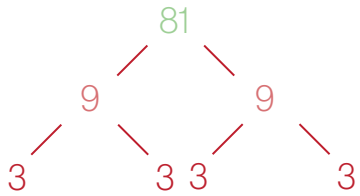
Prime Factorizartion 180 : $2 \cdot 2 \cdot 3 \cdot 3 \cdot 5 \longrightarrow 2^2 \cdot 3^2 \cdot 5 \longrightarrow 2^2 \cdot 3^2 \cdot 5$

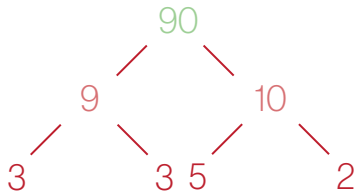
Prime Factorizartion 100 : $2 \cdot 2 \cdot 5 \cdot 5 \longrightarrow 2^2 \cdot 5^2 \longrightarrow 2^2 \cdot 5^2$

Prime Factorizartion 450 : $2 \cdot 3 \cdot 3 \cdot 5 \cdot 5 \longrightarrow 2 \cdot 3^2 \cdot 5^2 \longrightarrow 2 \cdot 3^2 \cdot 5^2$

LCM : $2^2 \cdot 3^2 \cdot 5^2 = 900$

V. 81, 90





Prime Factorizartion 81 : $3 \cdot 3 \cdot 3 \cdot 3 \longrightarrow 3^4 \longrightarrow 3^4$

Prime Factorizartion 90 : $2 \cdot 3 \cdot 3 \cdot 5 \longrightarrow 2 \cdot 3^2 \cdot 5 \longrightarrow 2 \cdot 3^2 \cdot 5$

LCM : $2 \cdot 3^4 \cdot 5 = 810$

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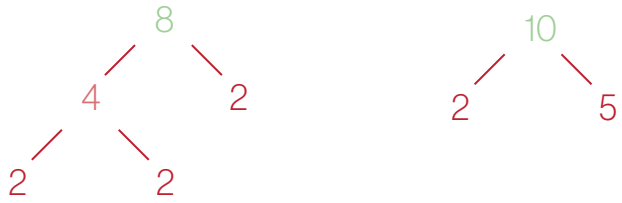
VI. $9a^3b, 6ab^2$

Prime Factorizartion 9 : $3 \cdot 3 \cdot a^3 \cdot b \longrightarrow 3^2 \cdot a^3 \cdot b \longrightarrow 3^2 \cdot a^3 \cdot b$

Prime Factorizartion 6 : $2 \cdot 3 \cdot a \cdot b^2 \longrightarrow 2 \cdot 3 \cdot a \cdot b^2 \longrightarrow 2 \cdot 3 \cdot a \cdot b^2$

LCM : $2 \cdot 3^2 \cdot a^3 \cdot b^2 = 18a^3b^2$

VII. $8a^3b^2, 10a^2c^4$



Prime Factorizartion 8 : $2 \cdot 2 \cdot 2 \cdot a^3 \cdot b^2 \longrightarrow 2^3 \cdot a^3 \cdot b^2 \longrightarrow 2^3 \cdot a^3 \cdot b^2$

Prime Factorizartion 10 : $2 \cdot 5 \cdot a^2 \cdot c^4 \longrightarrow 2 \cdot 5 \cdot a^2 \cdot c^4 \longrightarrow 2 \cdot 5 \cdot a^2 \cdot c^4$

LCM : $2^3 \cdot 5 \cdot a^3 \cdot b^2 \cdot c^4 = 40a^3b^2c^4$

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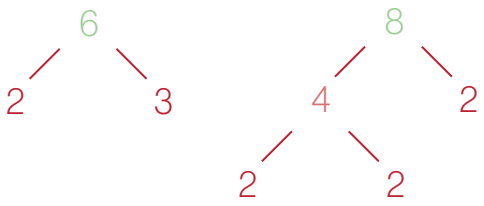
VIII. a^3b, b^2c, ac^2

$$a^3 \cdot b$$
$$b^2 \cdot c$$
$$a \cdot c^2$$

$$\text{LCM}: a^3 \cdot b^2 \cdot c^2 = a^3b^2c^2$$

IX. $6r^3st^4, 8rs^2t$



Prime Factorizartion $6: 2 \cdot 3 \cdot r^3 \cdot s \cdot t^4 \longrightarrow 2 \cdot 3 \cdot r^3 \cdot s \cdot t^4 \longrightarrow 2 \cdot 3 \cdot r^3 \cdot s \cdot t^4$

Prime Factorizartion $8: 2 \cdot 2 \cdot 2 \cdot r \cdot s^2 \cdot t \longrightarrow 2^3 \cdot r \cdot s^2 \cdot t \longrightarrow 2^3 \cdot r \cdot s^2 \cdot t$

$$\text{LCM}: 2^3 \cdot 3 \cdot r^3 \cdot s^2 \cdot t^4 = 24r^3s^2t^4$$

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