The first step shown here is not mandatory. If your student understands the exponent rules, they should be able to complete this step using mental math.

1. $35^{11+3} = 35^{14}$

2. $7^{4+-2+8} = 7^{10}$

3. $x^{5+3} = x^{8}$

4. $a^{\frac{2}{3}+\frac{5}{3}} = a^{\frac{7}{3}}$

5. $a^{6+3}b^{5+1} = a^{9}b^{6}$

6. $3 \cdot 5\,a^{14+1}b^{-3+7} = 15a^{15}b^{4}$

7. $x^{3\cdot 3} = x^{9}$

8. $5^{14\cdot\frac{1}{3}} = 5^{\frac{14}{3}}$

9. $x^{5\cdot 4}y^{9\cdot 4} = x^{20}y^{36}$

10. $7^{5\cdot 2}a^{12\cdot 2}b^{7\cdot 2} = 7^{10}a^{24}b^{14}$

11.

$A = lw$

$A = (2x^{5}y^{11})(x^{4}y^{2}) = 2\,x^{5+4}\,y^{11+2}$

$A = 2x^{9}y^{13}$ square units

12.

$V = \frac{4}{3}\pi r^{3}$

$V = \frac{4}{3}\pi(2a^{5}b)^{3}$

$V = \frac{4}{3}\pi\,2^{3}a^{5\cdot 3}b^{3}$

$V = \frac{4}{3}\pi\,8a^{15}b^{3}$

$V = \frac{32}{3}\pi a^{15}b^{3}$ cubic units

13.

$A = \frac{1}{2}bh$

$A = \frac{1}{2} \cdot 3x^5y \cdot 6xy^3$

$A = \frac{1}{2} \cdot 3 \cdot 6 \cdot x^{5+1}y^{3+1}$

$A = 9x^6y^4$ square units

14.

$(a^{12}b^6)^{\frac{1}{3}} \cdot a^2b^5$

$a^4b^2 \cdot a^2b^5 = a^{4+2}b^{2+5}$

a^6b^7

15.

$8y^2z \cdot (2x^3y)^2$

$8y^2z \cdot 2^2x^6y^2 = 8 \cdot 4 \cdot x^6y^{2+2}z$

$8 \cdot 4x^6y^4z$

$32x^6y^4z$

16.

$(a^{\frac{1}{2}}b^{\frac{3}{2}})^4 \cdot a^{-1}b^{-2}$

$a^2b^6 \cdot a^{-1}b^{-2} = a^{2+-1}b^{6+-2}$

ab^4