

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.

$$A = lw$$

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

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

12.

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

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

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

$$V = \frac{4}{3} \pi 8a^{15} b^9$$

$$V = \frac{32}{3} \pi a^{15} b^9 \text{ cubic units}$$

13.

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

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

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

$$A = 9x^6y^4 \text{ square units}$$

14.

$$a^6b^7$$

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

$$a^{4 \cdot 2}b^{2 \cdot 6} = a^{4+2}b^{2+5}$$

$$a^6b^7$$

15.

$$32x^6y^4z$$

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

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

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

$$32x^6y^4z$$

16.

$$ab^4$$

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

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

$$ab^4$$
