

Name \_\_\_\_\_

Period \_\_\_\_\_

Date \_\_\_\_\_

Multiplying powers with  
the same base

$$1) 4^5 \cdot 4^3$$

$$4^{5+3} = (4^8)$$

$$2) 2^4 \cdot 2^6 \cdot 2^2$$

$$2^{4+6+2} = (2^{12})$$

$$3) 5^6 \cdot 5^{-2} \cdot 5^{-1}$$

$$5^{6-2-1} = (5^3)$$

$$4) 10^{-4} \cdot 10^4 \cdot 10^2$$

$$10^{-4+4+2} = (10^2)$$

$$5^6 \cdot 5^{-2} \cdot 5^{-1}$$

$$\frac{5^6}{5^2 \cdot 5^1} \cdot \frac{\cancel{5} \cdot \cancel{5} \cdot \cancel{5} \cdot \cancel{5} \cdot \cancel{5} \cdot \cancel{5}}{\cancel{5} \cdot \cancel{5} \cdot \cancel{5}} = (5^3)$$

$$\frac{5^6}{5^2 \cdot 5^1}$$

$$\frac{5^6}{5^3}$$

$$5^{6-3} = (5^3)$$

$$5) 7^9 \cdot 7^3 \cdot 7^{-10}$$

$$7^{9+3-10} = (7^2)$$

$$6) 9^2 \cdot 9^{-8} \cdot 9^6$$

$$9^{2+(-8)+6} = 9^0 = 1$$

$$7) z^8 \cdot z^5$$

$$z^{8+5} = z^{13}$$

$$8) -4k^{-3} \cdot 6k^4$$

$$-4 \cdot 6 k^{-3+4}$$

$$-24k$$

$$9) (-5b^3)(-3b^6)$$

$$15b^{3+6}$$

$$15b^9$$

$$10) (13x^{-8})(3x^{10})$$

$$39x^{-8+10}$$

$$39x^2$$

$$11) (-2h^5)(4h^{-3})$$

$$-8h^{5-3}$$

$$-8h^2$$

$$12) -8n \cdot 11n^9$$

$$-88n^{1+9}$$

$$-88n^{10}$$

$$13) mn^2 \cdot m^2n^{-4} \cdot mn^{-1}$$

$$m^4n^{-3}$$

$$\frac{m^4}{n^3}$$

$$14) (6a^3 b^{-2})(-4a^1 b^{-8})$$

$$-24a^{3+1} b^{-2+8}$$

$$-24a^4 b^{-10}$$

$$\frac{-24a^4}{b^{10}}$$

$$15) (12mn)(-m^3 n^2 p^5)(2m)$$

$$-24m^{1+3+1} n^{1+2} p^5$$

$$-24m^5 n^3 p^5$$

$$\frac{-24m^5 p^5}{n^3}$$

$$16) 6.2 \times 10^7 \cdot 3 \times 10^2$$

$$18.6 \times 10^{9+1}$$

$$1.86 \times 10^{10}$$

$$17) 1.5 \times 10^3 \cdot 4.3 \times 10^2$$

$$6.45 \times 10^5$$

$$18) 16^{\frac{1}{4}} = 2 \quad 19) 125^{\frac{1}{3}} = 5 \quad 20) 243^{\frac{1}{5}} = 3$$

$$21) 8^{\frac{2}{3}} = 4 \quad 22) 64^{\frac{2}{3}} = 16 \quad 23) 25^{\frac{3}{2}} = 125$$

$$24) (7q^{\frac{4}{3}} \cdot 6r^{\frac{3}{5}}) \cdot (7q^{\frac{1}{3}} \cdot 6r^{\frac{1}{5}})$$

$$49q^{\frac{5}{3}} \cdot 36r^{\frac{4}{5}}$$

$$25) (3h^{\frac{5}{2}} \cdot 2k^{\frac{3}{4}}) \cdot (2h^{\frac{3}{2}} \cdot 3k^{\frac{5}{4}})$$

$$9h^{\frac{15}{4}} \cdot 4k^{\frac{9}{4}}$$

$$26) (8p^{\frac{1}{6}} \cdot 5m^{\frac{1}{2}}) (8p^{\frac{1}{4}} \cdot 5m^{\frac{5}{6}})$$

$$64p^{\frac{5}{12}} \cdot 25m^{\frac{4}{3}}$$

$$27) 9^{-2} \cdot 9^4 = 9^{\boxed{2}} \checkmark$$

$$28) 5^{\boxed{-1}} \cdot 5^3 = 5^2$$

$$29) 2^8 \cdot 2^{\boxed{-10}} = 2^{-2}$$

$$-2 - 10 = 8$$

$$30) z^{\boxed{8}} \cdot z^{-5} = z^3$$

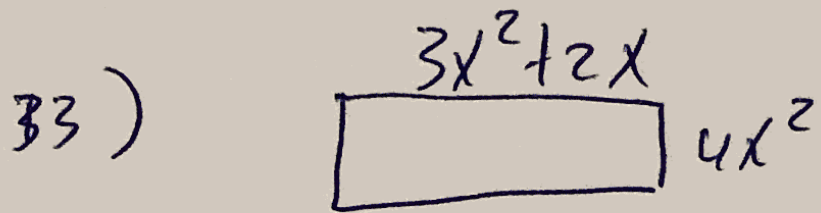
$$3 - 5 = 8$$

$$31) m^{\frac{1}{3}} \cdot m^{\frac{1}{6}} \cdot m^{\boxed{\frac{1}{2}}} = m^2$$

$$2 - \frac{1}{3} - \frac{1}{6}$$

$$32) d^7 \cdot d^{-13} \cdot d^{-9} = d^{\boxed{-15}}$$

Find the Area.

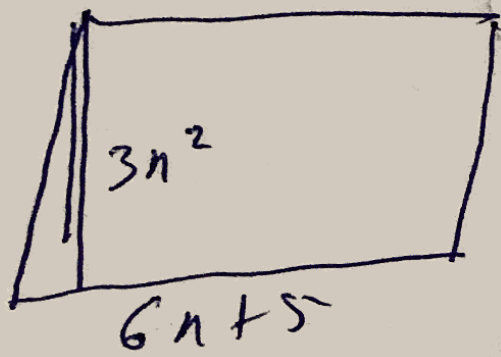


$$A = L W \quad A = b h$$

$$A = (3x^2 + 2x)(4x^2)$$

$$A = 12x^4 + 8x^3$$

34.)

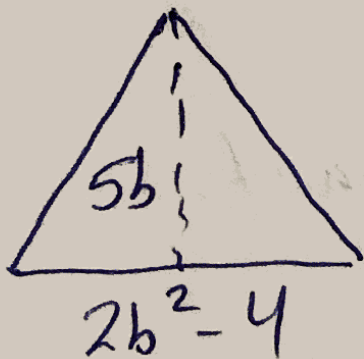


$$A = L W$$

$$A = (6n + 5)(3n^2)$$

$$A = 18n^3 + 15n^2$$

35.)



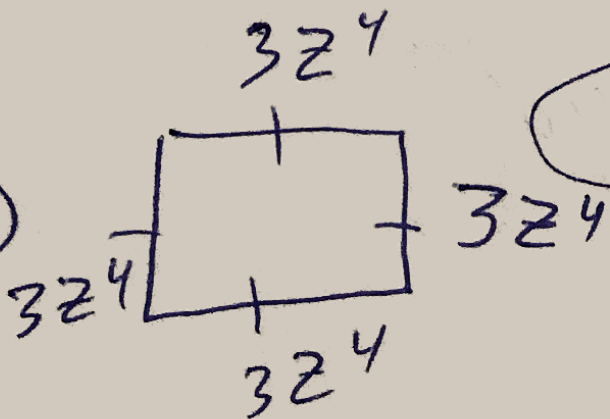
$$A = \frac{1}{2} b h$$

$$A = \frac{1}{2} (2b^2 - 4)(5b)$$

$$A = \frac{1}{2} (10b^3 - 20b)$$

$$A = 5b^3 - 10b$$

36.)



$$A = \text{side}^2$$

$$A = (3z^4)^2$$

$$A = 9z^8$$

$$A = L W$$

$$A = (3z^4)(3z^4)$$

$$A = 9z^8$$

$$37) (7 \times 10^{17}) (8 \times 10^{-28})$$

$$-17 + 1$$

$$56 \times 10$$

$$\rightarrow 5.6 \times 10^{10}$$

$$38) (4 \times 10^{-11}) (0.8 \times 10^7)$$

$$3.2 \times 10^{-4}$$

$$39) (0.9 \times 10^{15}) (0.1 \times 10^{-6})$$

$$0.09 \times 10^{9-2}$$

$$\rightarrow 9.0 \times 10^7$$

$$40) (0.8 \times 10^5) (0.6 \times 10^{-17})$$

$$0.48 \times 10^{-12-1}$$

$$\rightarrow 4.8 \times 10^{-13}$$

right subtract.

$$41) (0.5 \times 10^3) (0.6 \times 10^0)$$

$$0.3 \times 10^{3-1}$$

$$\rightarrow 3.0 \times 10^2$$

$$42) (0.2 \times 10^{11}) (0.4 \times 10^{-14})$$

$$0.08 \times 10^{-3-2}$$

$$\rightarrow 8.0 \times 10^{-5}$$