

Order of Operations Worksheet

Solve in the correct order.

1 a. $(3 - 2) \cdot (-7 - 10 - 7)$	1 b. $-9 + 7 \cdot 5^2$
2 a. $\frac{0}{4} + 5 \cdot 9$	2 b. $\frac{-4 - 6 \cdot (-4)}{-8}$
3 a. $4 + (-5 + 10) \cdot (-8) - 2$	3 b. $\frac{-2 + 7}{(5 + 3)^2}$
4 a. $-8 + 1^2 \cdot 10$	4 b. $-10 - \frac{9 \cdot 0}{-1}$

Order of Operations of Integers Assignment:

Perform the operations in the correct order.

1. $2 \times 5 - 7$

2. $9 \times (3 + (-1))$

3. $-8 - 5 + (-5)$

4. $-3 + 6 + (-9)$

5. $5 \div (-1)^4$

6. $-10 - 2 \div (-2)$

7. $1 \times 1 + (-9)$

8. $-1 - (-9 + (-3))$

9. $[(10 \div (-10))^7]^2$

10. $2 \times (-6) \div ((-6) \times 2)$

11. $(6 - (-10)) \div (4 \div (-2))$

12. $(2+1) \times 6 \div (-9)$

13. $(-2) \div 2 \div (1 \div (-1))$

14. $9 - (10 \div (-2) - 5)$

$$15. 1 \times (-9 + (-9) + 2^2)$$

$$16. 1 \times (-2 + 3) \times (-9 + 7)$$

$$17. -6 - (-10 + (-1 - (-5))) \times 5$$

$$18. (10 - 8) \times (-4) \div 2 \times 4$$

$$19. 8 \div (-2 - 4 + 8 + (-4) + (-6))$$

$$20. 9 \div (10+6 - (1 - (-6))) + (-4)$$



Index Laws: Multiplying and Dividing

1 Write these products in index form

a) $3^5 \times 3^2$

b) $2^3 \times 2^3$

c) $5^2 \times 5^4$

d) $2^6 \times 2^2$

e) $5^3 \times 5^3$

f) $7^5 \times 7^6$

2 Write these products in index form

a) $a^2 \times a^3$

b) $a^4 \times a^5$

c) $a^5 \times a$

d) $b^3 \times b^2$

e) $b^6 \times b^3$

f) $m^4 \times m^4$

g) $m^6 \times m^4$

h) $a^9 \times a^3$

i) $a^3 \times a^5$

j) $y^5 \times y$

3 Write the answers to these divisions in index form

a) $2^7 \div 2^2$

b) $3^4 \div 3$

c) $5^5 \div 5^2$

d) $3^8 \div 3^2$

e) $2^6 \div 2$

f) $7^8 \div 7^5$

2 Write the answers to these divisions in index form

a) $y^6 \div y^4$

b) $y^{10} \div y^3$

c) $a^8 \div a^5$

d) $y^6 \div y$

e) $m^4 \div m^3$

f) $a^{12} \div a^7$

g) $a^{14} \div a^7$

h) $b^7 \div b$

i) $m^9 \div m^2$

j) $a^{10} \div a^3$



Index Laws: Multiplying and Dividing 2

1 Write these products in index form

a) $4a^2 \times 3a^3$

b) $5a^4 \times 4a^5$

c) $6a^4 \times 2a$

d) $7b^2 \times 3b^2$

e) $5b^6 \times 3b^3$

f) $2m^3 \times 9m^4$

g) $12m^3 \times 3m^4$

h) $8a^9 \times 7a^3$

i) $4a^3 \times 6a^4$

j) $8y^6 \times 2y$

2 Write the answers to these divisions in index form

a) $21y^6 \div 7y^3$

b) $15y^{10} \div 3y^4$

c) $12a^8 \div 4a^6$

d) $9y^6 \div 3y$

e) $16m^4 \div 4m^3$

f) $32a^{11} \div 2a^7$

g) $7a^{14} \div 7a^7$

h) $7b^7 \div b$

i) $15m^9 \div 5m^3$

j) $18a^8 \div 6a^2$

Name _____

Date _____

Cube Roots Practice Worksheet

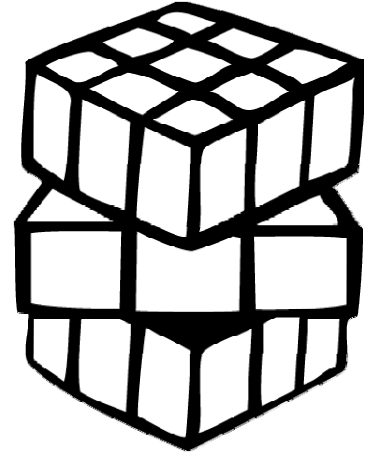
For questions 1-4 find the final value of the exponents.

1. 5^3

2. 15^3

3. 8^3

4. 11^3



For questions 5-10 find the value of all the cube roots.

5. $\sqrt[3]{1,728}$

6. $\sqrt[3]{2,744}$

7. $\sqrt[3]{46,656}$

8. $\sqrt[3]{4,913}$

9. $\sqrt[3]{512}$

10. $\sqrt[3]{13,824}$





Year 9 Mathematics Indices Practice Test 1

Name _____

1 Simplify the following giving answers in index form

a) $3^3 \times 3^2$

b) $2^4 \times 2$

c) $a^3 \times a^5$

2 Simplify giving answers in index form

a) $\frac{2^5}{2^3}$

b) $3^4 \div 3$

c) $a^5 \div a^2$

3 Express in simplest index form

a) $(2^3)^2$

b) $(5^2)^4$

c) $(n^3)^5$

4 Simplify the following

a) $4^3 \div 4^3$

b) $a^4 \div a^4$

5 Simplify, giving answers in index form

a) $2^4 \times 2^5$

b) $3a^2 \times 2a^5$

c) $a^2b^3 \times a^4b^5$

d) $7a^5 \div 3ab^2$

6 Simplify, giving answers in index form

a) $5^6 \div 5^2$

b) $12a^7 \div 6a^2$

c) $m^7n^3 \div m^6n$

d) $24p^5q^2 \div 8p^3q^2$

7 Simplify

a) $(a^6)^3$

b) $(a^3)^2 \div a^4$

c) $(2a^2)^4$

d) $(p^4)^3 \div (p^2)^4$

8 Simplify

a) 6^0

b) $3^3 \times 5^0$

c) $10a^5 \div 5a^5$

d) $(2p^3)^4 \div (4p^6)^2$

9 Express the following in standard notation (scientific notation)

a) 243

b) 67 000

c) 93 800 000

10 Write as a basic numeral

a) 1.3×10^2

b) 2.431×10^2

c) 4.63×10^7

11 Express in standard notation (scientific notation)

a) 0.043

b) 0.000 059 7

12 Write the basic numeral for

a) 2.9×10^{-2}

b) 9.38×10^{-5}

13 Calculate

a) $630\,000 \times 45\,700$

b) $965 \times 476 \times 8947$

c) $43 \div 5987$

d) $0.015 \div 2.73$

14 Evaluate

a) 3^{-2}

b) 5^{-1}

c) $\left(\frac{1}{4}\right)^{-2}$

d) $\left(\frac{2}{3}\right)^{-3}$

15 Write as fractions

a) $3a^{-5}$

b) $9b^{-2}$

16 Evaluate

a) $25^{\frac{1}{2}}$

b) $27^{\frac{1}{3}}$

17 Simplify

a) $(49m^6)^{\frac{1}{2}}$

b) $2x^{\frac{1}{2}} \times 4x^{\frac{1}{2}}$



Zero Index and Power to a Power

1 Write the value of

a) 3^0

b) 10^0

c) $5^0 + 5^0$

d) $3^0 + 5^0$

2 Find the value of

a) 6×5^0

b) 8×10^0

c) $6^0 - 7^0$

d) $4^0 + 8^0$

e) $(4 \times 2)^0 + 3^2$

f) $(3m^2)^0$

g) $3 \times 2^0 + 4$

h) $5^0 - 4^0$

i) $5^2 \div 5^2$

j) $y^5 \div y^5$

3 Simplify the following

a) $(m^2)^3$

b) $(a^3)^4$

c) $(y^4)^3$

d) $(a^5)^2$

e) $(m^5)^3$

f) $(a^2)^5$

f) $(y^6)^2$

g) $(y^2)^2$

g) $(m^8)^2$

h) $(b^2)^3$

i) $(m^7)^2$

j) $(k^3)^2$

4 Simplify the following

a) $(5y^3)^2$

b) $(6a^5)^2$

c) $(3y^2)^3$

d) $(3y^2)^2$

e) $(10y^4)^2$

f) $(4a^4)^3$

g) $(4k^6)^3$

h) $(3y^3)^3$



Index Notation

1 Express each of the following products in index form

a) $2 \times 2 \times 2$

b) 10×10

c) 4×4

d) $2 \times 2 \times 2 \times 2 \times 2 \times 2$

e) $a \times a \times a \times a$

f) $b \times b \times b \times b \times b$

g) $k \times k \times k$

h) $y \times y \times y \times y \times y \times y \times y \times y \times y \times y$

2 Write the following in expanded form

a) 8^2

b) 5^3

c) 3^5

d) 9^4

e) a^4

f) t^6

g) y^3

h) b^5

3 Evaluate the following

a) 2^4

b) 5^3

c) 3^2

d) 1^{20}

4 Write the prime factors of these numbers in index form

a) 20

b) 96

c) 36

d) 100

5 Write the following in index form

a) $2 \times a \times b \times a \times 2 \times a \times 2 \times b$

b) $3a \times 2b \times 3a \times 2b$

c) $4d \times 2f \times 4d \times 2f$

d) $5ab(5ab)5b$

e) $2cd(2cd)(2cd)(2cd)$

f) $7ab \times 7ab \times ab \times 7$