

Math 9

Name \_\_\_\_\_ ID: 1

## Laws of Exponents (Review)

Date \_\_\_\_\_ Period \_\_\_\_\_

Simplify. Your answer should contain only one base.

1)  $[5^2 \times (5^4)]^6 = (5^6)^6 = 5^{36}$

2)  $[6^3 \times 6^3 \times 6^2]^2 = [6^8]^2 = 6^{16}$

3)  $5^3 \times 5^2 \times (5^0)^3 = 5^5 \times 5^0 = 5^5$

4)  $6^4 (6^2)^3 = 6^4 \times 6^6 = 6^{10}$

5)  $(4^3)^2 \times 4^2 = 4^6 \times 4^2 = 4^8$

6)  $6 \times (6^3)^2 = 6^1 \times 6^6 = 6^7$

7)  $\frac{3^3 \times 3^3}{3^3} = \frac{3^6}{3^3} = 3^3$

8)  $\frac{2^0 \times 2^3}{2^2} = \frac{2^3}{2^2} = 2^1$

9)  $\frac{6^3 \times 6^9}{6^5} = \frac{6^{12}}{6^5} = 6^7$

10)  $\frac{4 \times 4^3}{4^2 \times 4^2} = \frac{4^4}{4^4} = 4^0 = 1$

11)  $\frac{6^2 \times 6^0}{6^2} = \frac{6^2}{6^2} = 6^0 = 1$

12)  $\frac{3^{12}}{3 \times 3^0} = \frac{3^{12}}{3^1} = 3^{11}$

13)  $\left(\frac{5^4}{5^3}\right)^3 = (5^1)^3 = 5^3$

14)  $\frac{6^{22}}{6^{15}} = 6^7$

15)  $\left(\frac{5^2}{5^3}\right)^0 = 1$

16)  $\left(\frac{4^2}{(4^0)^2}\right)^3 = \left(\frac{4^2}{4^0}\right)^3 = (4^2)^3 = 4^6$

17)  $\left(\frac{4^3}{4^2}\right)^3 = (4^1)^3 = 4^3$

18)  $\frac{(2^3)^2}{2^3} = \frac{2^6}{2^3} = 2^3$

9)  $\frac{(3^2)^8}{3^2 \times 3^5} = \frac{3^{16}}{3^7} = 3^9$

20)  $\frac{4^3 \times (4^2)^2}{4^2} = \frac{4^3 \times 4^4}{4^2} = \frac{4^7}{4^2} = 4^5$

1)  $\frac{(2^2)^5}{2^4 \times 2^2} = \frac{2^{10}}{2^6} = 2^4$

22)  $\frac{[5^3 \times 5^2]^2}{5} = \frac{(5^5)^2}{5^1} = \frac{5^{10}}{5^1} = 5^9$

)  $\frac{6^3 \times (6^3)^3}{6^0} = \frac{6^3 \times 6^9}{6^0} = \frac{6^{12}}{6^0} = 6^{12}$

24)  $\frac{[2 \times (2^3)^0 \times (2^3)^2]^3}{2^6} = \frac{[2^1 \times 2^0 \times 2^6]^3}{2^6} = \frac{(2^7)^3}{2^6} = \frac{2^{21}}{2^6} = 2^{15}$

## Worksheet 2:

Math 9B (Sem 1)

Name \_\_\_\_\_

ID: 1

© 2021 Kuta Software LLC. All rights reserved.

## Intro to Laws of Exponents

Date \_\_\_\_\_ Period \_\_\_\_\_

Simplify. Your answer should contain only positive exponents.

1)  $x^2 \cdot 3x$

$$3x^3$$

2)  $v^4 \cdot 2v^2$

$$2v^6$$

3)  $3x^2 \cdot 2x$

$$6x^3$$

4)  $x^3 \cdot 3x^4$

$$3x^7$$

5)  $(\cancel{2x})^0$

$$= 1$$

6)  $(3a^2)^2$

$$9a^4$$

7)  $(p^2)^4$

$$p^8$$

8)  $(\cancel{2x})^0$

$$1$$

9)  $\frac{4k^3}{k}$

$$4k^2$$

10)  $\frac{x^4}{2x^3}$

$$\frac{1}{2}x$$

11)  $\frac{3x^4}{2x^3}$

$$= \frac{3}{2}x$$

12)  $\frac{3a^4}{a^4}$

$$= 3$$

$$13) (n^2)^2 \cdot n^4$$

$$= n^4 \cdot n^4$$

$$= n^8$$

$$14) 2n^3 \cdot n^3$$

$$= 2n^6$$

$$15) (m^0 \cdot (2m)^4)^2 = m^0 (2m)^8$$

$$= (1 \cdot 16m^4)^2 \quad (i) (2^8) m^8$$

$$= 16m^4 \quad 256m^8$$

$$= 256m^8$$

$$16) n^3 n^2 \cdot (2n^4)^3$$

$$= n^5 \cdot (8n^{12})$$

$$= 8n^{17}$$

$$17) (2x^3)^2 \cdot x^4 \cdot 2x^3$$

$$= 4x^6 \cdot 2x^7$$

$$= 8x^{13}$$

$$18) (2x^3)^2 \cdot x \cdot 2x$$

$$= 4x^6 \cdot 2x^2$$

$$= 8x^8$$

$$19) \frac{b}{2b^4 \cdot 2b^2} = \frac{b}{4b^6}$$

$$= \frac{\cancel{b}^1}{4}$$

$$= \frac{1}{4b^5}$$

$$20) \frac{3n}{4n^4 \cdot 4n^3}$$

$$= \frac{3n}{16n^7}$$

$$= \frac{3n^{-6}}{16}$$

$$= \frac{3}{16n^6}$$

$$21) \frac{4x^4 \cdot 3x^3}{4x^2 \cdot x} = \frac{12x^7}{4x^3}$$

$$= 3x^4$$

$$22) \frac{x^2 x^3}{x^4}$$

$$= \frac{x^5}{x^4}$$

$$= x$$

$$23) \frac{3x^2}{2x^4 \cdot 4x^2} = \frac{3x^2}{8x^6}$$

$$= \frac{3}{8} x^{-4}$$

$$= \frac{3}{8x^4}$$

$$24) \frac{mn^4}{3n^3}$$

$$= \frac{n^5}{3n^3}$$

$$= \frac{n^2}{3}$$

$$25) \frac{2x^2}{(2x^4)^4} = \frac{2x^2}{16x^{16}}$$

$$= \frac{1}{8} x^{-14}$$

$$= \frac{1}{8x^{14}}$$

$$26) \left(\frac{n^2}{n}\right)^3$$

$$= (n)^3$$

$$= n^3$$

$$27) \frac{(2m^2)^3}{m^4} = \frac{8m^6}{m^4}$$

$$= 8m^2$$

$$28) \frac{2m}{(m^3)^0}$$

$$= \frac{2m}{1}$$

$$= 2m$$

$$29) \frac{2x^3}{x^0} = \frac{2x^3}{1}$$

$$= 2x^3$$

$$30) \frac{n^4}{n^3}$$

$$= n$$

$$31) \left(\frac{2x^3 \cdot 2x^0}{2x^3}\right)^2 = \left(\frac{4x^3}{2x^3}\right)^2$$

$$= (2)^2$$

$$= 4$$

$$32) \frac{n^4 \cdot 2n^4}{(2n^0)^3} = \frac{2n^8}{8n^0}$$

$$= \frac{1n^8}{4}$$

$$33) \frac{(b^4)^2}{b^3 \cdot b} = \frac{b^8}{b^4}$$

$$= b^4$$

$$34) \frac{x^4}{(2x^4 \cdot x)^4} = \frac{x^4}{(2x^5)^4}$$

$$= \frac{x^4}{16x^{20}}$$

$$\frac{1}{16x^{16}} = \frac{x^{-16}}{16}$$

$$35) \left(\frac{(n^4)^3}{n^3 \cdot 2n^2}\right)^0$$

$$= 1$$

$$36) \frac{(2k^3)^3}{2k^2 \cdot 2k^2}$$

$$= \frac{8k^9}{4k^4}$$

$$= 2k^5$$