



**THIRD SPACE
LEARNING**

Dividing Exponents Worksheet

Algebra

Grades 6 to 8

Skill Questions

Name:

Date:

1 Evaluate the expression:

$$\frac{3^7}{3^4}$$

Answer

2 Evaluate the expression:

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

Answer

3 Simplify the expression:

$$\frac{2 \times 6^3}{6^4}$$

Answer

4 Evaluate the expression:

$$\frac{2^5}{2^8}$$

Answer

5 Simplify the expression:

$$\frac{x^7}{x^2}$$

Answer

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6 Simplify the expression:

$$\frac{xy^8}{x^2y}$$

Answer

7 Simplify:

$$\frac{a^5b^8}{a^4b^{10}}$$

Answer

8 Simplify the expression:

$$\frac{x^{-3}y^7}{x^{-6}y^4}$$

Answer

9 Simplify:

$$\frac{16x^4y^{-1}}{4x^5y^9}$$

Answer

10 Simplify the expression:

$$\frac{5a^8b^{10}}{10a^4b^6}$$

Answer

Applied Questions

- 11 Mr. Bolen gave his class the following problem to simplify.

$$\frac{6x^5y^{12}}{12x^7y}$$

Dani simplifies the answer to be: $2x^2y^{11}$

Juan simplifies the answer to be: $\frac{y^{11}}{2x^2}$

Jo simplifies the answer to be: $\frac{y^{11}}{6x^2}$

Who is correct and why?

-
- 12 Complete the chart of values for, $y = \frac{x^4}{x^5}$
(Hint: first simplify the expression).

x	y
-1	
	1
2	
	$\frac{1}{4}$

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13 Explain why $\frac{3^2}{3^3}$ is not 3.

14 Identify the error:

Step 1: $\frac{5x^4y^7}{15xy^8}$

Step 2: $\frac{3x^3}{y}$

15 Using your knowledge of exponent rules, what do you think the value of x is in the equation below?

$$\frac{2x}{x^2} = 8$$

Answer

Answers

Question number	Question	Answers	Standard
1	Evaluate the expression: $\frac{3^7}{3^4}$	$3^3 = 27$	8.EE.A.1
2	Evaluate the expression: $\frac{5^4}{5^5}$	$5^{-1} = \frac{1}{5}$	8.EE.A.1
3	Simplify the expression: $\frac{2 \times 6^3}{6^4}$	$\frac{2}{6} = \frac{1}{3}$	8.EE.A.1
4	Evaluate the expression: $\frac{2^5}{2^8}$	$2^{-3} = \frac{1}{2^3}$ $= \frac{1}{8}$	8.EE.A.1
5	Simplify the expression: $\frac{x^7}{x^2}$	x^5	8.EE.A.1 HSN-RN.A.2
6	Simplify the expression: $\frac{xy^8}{x^2y}$	$\frac{y^7}{x}$	8.EE.A.1 HSN-RN.A.2
7	Simplify: $\frac{a^5b^8}{a^4b^{10}}$	$ab^{-2} = \frac{a}{b^2}$	8.EE.A.1 HSN-RN.A.2

Dividing Exponents Worksheet | Grades 6 to 8 | Answers

Question number	Question	Answers	Standard
8	Simplify the expression: $\frac{x^{-3}y^7}{x^{-6}y^4}$	x^3y^3	8.EE.A.1 HSN- RN.A.2
9.	Simplify: $\frac{16x^4y^{-1}}{4x^5y^9}$	$4x^{-1}y^{-10}$ $= \frac{4}{xy^{10}}$	8.EE.A.1 HSN- RN.A.2
10	Simplify the expression: $\frac{5a^8b^{10}}{10a^4b^6}$	$\frac{a^4b^4}{2}$	8.EE.A.1 HSN- RN.A.2
11	Mr. Bolen gave his class the following problem to simplify. $\frac{6x^5y^{12}}{12x^7y}$ Dani simplifies the answer to be: $2x^2y^{11}$ Juan simplifies the answer to be: $\frac{y^{11}}{2x^2}$ Jo simplifies the answer to be: $\frac{y^{11}}{6x^2}$ Who is correct and why?	Juan simplified the problem correctly. Divide the coefficients, $6 \div 12 = \frac{1}{2}$ Subtract the exponents of the x expressions, $5 - 7 = -2$ so x^{-2} goes to the denominator as x^2 Subtract the exponents of the y expressions, $12 - 1 = 11$ $\frac{6x^5y^{12}}{12x^7y} = \frac{y^{11}}{2x^2}$	8.EE.A.1 HSN- RN.A.2

Dividing Exponents Worksheet | Grades 6 to 8 | Answers

Question number	Question	Answers	Standard																				
12	<p>Complete the chart of values for, $y = \frac{x^4}{x^5}$, (Hint: first simplify the expression.)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>-1</td> <td></td> </tr> <tr> <td></td> <td>1</td> </tr> <tr> <td>2</td> <td></td> </tr> <tr> <td></td> <td>$\frac{1}{4}$</td> </tr> </tbody> </table>	x	y	-1			1	2			$\frac{1}{4}$	$y = \frac{x^4}{x^5} = \frac{1}{x}$ <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>-1</td> <td>-1</td> </tr> <tr> <td>1</td> <td>1</td> </tr> <tr> <td>2</td> <td>$\frac{1}{2}$</td> </tr> <tr> <td>4</td> <td>$\frac{1}{4}$</td> </tr> </tbody> </table>	x	y	-1	-1	1	1	2	$\frac{1}{2}$	4	$\frac{1}{4}$	8.EE.A.1 HSN-RN.A.2
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13	Explain why $\frac{3^2}{3^3}$ is not 3.	$\frac{3^2}{3^3} = 3^{-1} = \frac{1}{3}$	8.EE.A.1 HSN-RN.A.2																				
14	<p>Identify the error:</p> <p>Step 1: $\frac{5x^4y^7}{15xy^8}$</p> <p>Step 2: $\frac{3x^3}{y}$</p>	<p>The error was made with the coefficient.</p> $\frac{5}{15} = \frac{1}{3}$ <p>This means that the correct answer is:</p> $\frac{x^3}{3y}$	8.EE.A.1 HSN-RN.A.2																				
15	<p>Using your knowledge of exponent rules, what do you think the value of x is in the equation below?</p> $\frac{2x}{x^2} = 8$	<p>The value of x is $\frac{1}{4}$ because:</p> $\frac{2x}{x^2} = 8$ $\frac{2}{x} = 8$ $2 = 8x$ $\frac{2}{8} = x$ $\frac{1}{4} = x$	8.EE.A.1 HSN-RN.A.2																				

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