

## Unit 9A Study Guide

**Exponents**

1. Linda solved the following problems involving exponents. Determine if each answer she gave is correct by checking "Agree" or "Disagree." If Linda is wrong, explain how you know by giving the correct answer.

	<b>Problem</b>	<b>Answer</b>	<b>Agree</b>	<b>Disagree</b>	<b>Correct Answer</b>
<b>A</b>	$6^3$	18			
<b>B</b>	$-12^2$	144			
<b>C</b>	$5^{-3}$	-125			
<b>D</b>	$(-11)^2$	121			

2. Classify each of the numbers below as perfect squares, perfect cubes, both, or neither. Each number should be listed only once.

1    25    64    89    125    144    160    175    196    343    512

Perfect Squares but Not Perfect Cubes	Both Perfect Squares and Perfect Cubes	Perfect Cubes but Not Perfect Squares	Neither Perfect Squares nor Perfect Cubes

3. Compare the following using  $>$ ,  $<$ , or  $=$ . Justify your answer by evaluating each term.

	<b>Justify</b>	<b>Compare</b>
<b>A</b>	$4^2 = \underline{\hspace{2cm}}$ $2^2 = \underline{\hspace{2cm}}$	$4^2 \underline{\hspace{1cm}}$ $2^2$
<b>B</b>	$^3\sqrt{512} = \underline{\hspace{2cm}}$ $\sqrt{196} = \underline{\hspace{2cm}}$	$^3\sqrt{512} \underline{\hspace{1cm}}$ $\sqrt{196}$
<b>C</b>	$\sqrt{36} = \underline{\hspace{2cm}}$ $^3\sqrt{216} = \underline{\hspace{2cm}}$	$\sqrt{16} \underline{\hspace{1cm}}$ $^3\sqrt{216}$
<b>D</b>	$(-8)^2 = \underline{\hspace{2cm}}$ $-8^2 = \underline{\hspace{2cm}}$	$(-8)^2 \underline{\hspace{1cm}}$ $-8^2$
<b>E</b>	$-3^3 = \underline{\hspace{2cm}}$ $(-3)^3 = \underline{\hspace{2cm}}$	$-3^3 \underline{\hspace{1cm}}$ $(-3)^3$

4. Simplify the following roots. Put your answer in simplest form. SHOW YOUR WORK!

a.  $\sqrt{\frac{144}{64}}$

b.  $\sqrt{\frac{169}{49}}$

c.  $\sqrt[3]{\frac{-27}{729}}$

d.  $\sqrt[3]{\frac{-1000}{343}}$

**Exponent Rules**

5. Use your understanding of exponent rules to write the following in simplest form. Use only positive exponents in your answer.

Problem	Simplified Answer
$15^0$	
$(5x^9)^3$	
$4^{-3}$	
$x^{-6}$	
$x^4 \cdot x$	
$x^6 \cdot x^{-2}$	
$8x^9 \cdot 9x^7$	
$\frac{x^{15}}{x^{12}}$	
$\frac{x^{10}}{x^{-5}}$	
$\frac{100x^6}{25x}$	
$(2x^{12})^6$	
$(x^{-7})^4$	