

**\*REAL NUMBERS.** Show work.

1. Write 450 as a product of prime numbers in exponential form.

450 = 

Simplify  $\sqrt{450}$  as a mixed radical.

 $\sqrt{450} =$  

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2. Write 200 as a product of prime numbers in exponential form.

200 = 

Simplify  $\sqrt[3]{200}$  as a mixed radical.

 $\sqrt[3]{200} =$  

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3. Simplify.  $3\sqrt{10} \cdot 2\sqrt{6}$

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4. Simplify.  $-4(2\sqrt{18})(-3\sqrt{2})$

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5. A cube has a volume of  $1000 \text{ mm}^3$ .  
What is the length of an edge?

Edge = 

Find the surface area of the cube.

Surface Area =

6. A cube has a surface area of  $96 \text{ cm}^2$ .  
What is the length of an edge?

Edge =

Find the volume of the cube.

Volume =

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7. Explain why  $-\sqrt{40}$  is a real number.

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8. Explain why  $-\frac{4}{5}$  is a rational number but not an integer.

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9. Which values of  $x$  would make this expression undefined?

$$\sqrt{2x + 10}$$

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10. Which is false and why?

- a)  $-\sqrt{64} = -8$
- b)  $\sqrt[3]{-64} = -4$
- c)  $\sqrt[3]{-8} = 2$
- d)  $\sqrt{-8}$  is not a real number.

**\*\*EXPONENTS.** Show work.

1. Simplify with positive exponents only.  $\frac{(-4x)^2}{2x \cdot 3y^4}$

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2. Simplify with positive exponents only.  $\frac{6x^8}{7y^{-5}} \cdot \frac{-y^5}{3x}$

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3. Write  $\sqrt{m^5} \cdot \sqrt[3]{m^4}$  in exponential form.

Simplify in exponential form.

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4. Write  $\sqrt{y} \cdot \sqrt{y^4} \cdot \sqrt{y^8}$  in exponential form.

Simplify in exponential form.

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5. Simplify with positive exponents only.  $\left(\frac{5x}{2}\right)^{-2}$

6. Simplify with positive exponents only.  $\left(\frac{1}{6xy}\right)^{-3}$

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7. Simplify with positive exponents only.  $\left(10m^{\frac{1}{2}} \cdot 3m^{\frac{5}{2}}\right)^3$

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8. Write  $\sqrt{x^6} \cdot \sqrt[3]{x}$  with exponents and simplify. Write your answer in radical form.

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9. Write  $\frac{x}{\sqrt[3]{x}}$  with exponents and simplify. Write your answer in radical form.

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10. Simplify as a radical.  $\frac{x^{\frac{-5}{2}}}{x^{-2}}$