Homework

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Questions:

11 d bf

12 d b F hj

l 8 a c

20

11. Write each radical in simplest form, if possible.

a) $\sqrt[3]{16}$ b) $\sqrt[3]{81}$

c) $\sqrt[3]{256}$ d) $\sqrt[3]{128}$

e) $\sqrt[3]{60}$ f) $\sqrt[3]{192}$

g) $\sqrt[3]{135}$ h) $\sqrt[3]{100}$

i) $\sqrt[3]{500}$ j) $\sqrt[3]{375}$

11. a) $2\sqrt[3]{2}$ b) $3\sqrt[3]{3}$

c) $4\sqrt[3]{4}$ d) $4\sqrt[3]{2}$

e) Cannot be simplified f) $4\sqrt[3]{3}$

g) $3\sqrt[3]{5}$ h) Cannot be simplified

i) $5\sqrt[3]{4}$ j) $5\sqrt[3]{3}$

4.3 Mixed and Entire Radicals

12. Write each mixed radical as an entire radical.

a) $3\sqrt{2}$ b) $4\sqrt{2}$

c) $6\sqrt{5}$ d) $5\sqrt{6}$

e) $7\sqrt{7}$ f) $2\sqrt[3]{2}$

g) $3\sqrt[3]{3}$ h) $4\sqrt[3]{3}$

i) $5\sqrt[3]{2}$ j) $2\sqrt[3]{9}$

12. a) $\sqrt{18}$ b) $\sqrt{32}$

c) $\sqrt{180}$ d) $\sqrt{150}$

e) $\sqrt{343}$ f) $\sqrt[3]{16}$

g) $\sqrt[3]{81}$ h) $\sqrt[3]{192}$

i) $\sqrt[3]{250}$ j) $\sqrt[3]{72}$

4.3 Mixed and Entire Radicals

18. Write each mixed radical as an entire radical.

a) $6\sqrt[4]{3}$ b) $7\sqrt[4]{2}$

c) $3\sqrt[5]{4}$ d) $4\sqrt[5]{3}$

18. a) $\sqrt[4]{3888}$ b) $\sqrt[4]{4802}$

c) $\sqrt[3]{972}$ d) $\sqrt[3]{3072}$

4.3 Mixed and Entire Radicals

20. Here is a student's solution for writing $8\sqrt[3]{2}$ as an entire radical.

$$8\sqrt[3]{2} = 8 \cdot \sqrt[3]{2}$$
$$= \sqrt[3]{2} \cdot \sqrt[3]{2}$$
$$= \sqrt[3]{2 \cdot 2}$$
$$= \sqrt[3]{4}$$

Identify an error the student made, then write the correct solution.

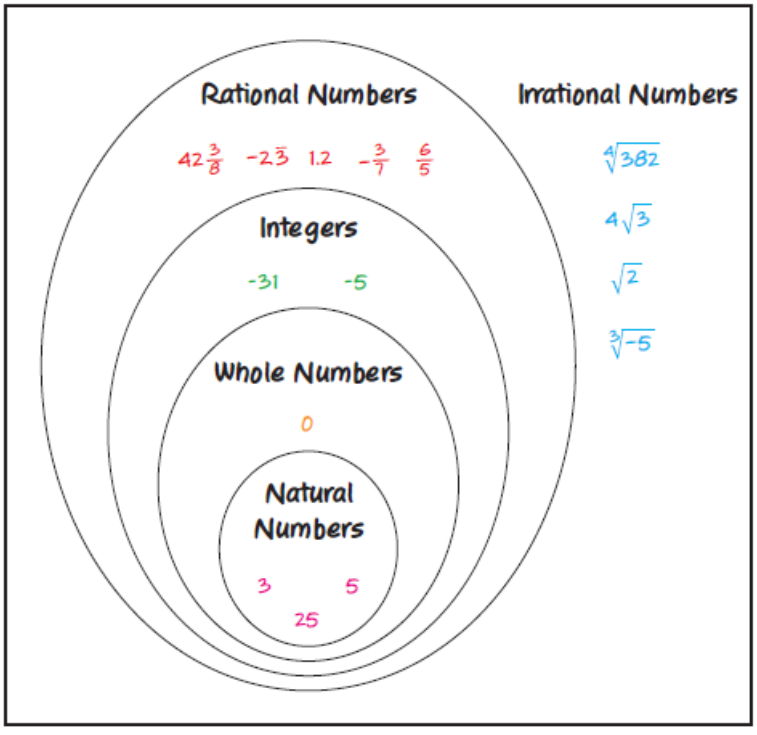
20. $\sqrt[3]{1024}$

4.3 Mixed and Entire Radicals

CHECKPOINT 1

Connections

Real Numbers



Concept Development

- **In Lesson 4.1**
  - You applied what you know about **square roots** to explore **decimal approximations of cube roots and fourth roots.**
  - You determined that **some radicals** can be represented as **rational numbers** and other radicals cannot.
- **In Lesson 4.2**
  - You defined **irrational numbers,** and represented these numbers and **rational numbers as the set of real numbers.**
  - You **identified** conditions for which a **radical** has a **rational number value,** and **estimated** the values of **radicals that are irrational.**
- **In Lesson 4.3**
  - You defined **mixed radicals** and **entire radicals,** and used factoring to simplify radicals.

Assess Your Understanding

4.1 221

1. Evaluate each radical. How did you use the index of the radical in your work?

a) $\sqrt{81}$ b) $\sqrt[3]{-125}$ c) $\sqrt[4]{256}$ d) $\sqrt[5]{243}$

9 −5 4 3

3. Does the decimal representation of $\sqrt[4]{60}$ repeat, terminate, or neither? Justify your answer.

neither

4.2

4. Tell whether each number is rational or irrational. Justify your answers.

a) $\sqrt{11}$ b) $\sqrt[3]{16}$ c) $\sqrt[3]{-16}$ d) $\sqrt{121}$ e) $\sqrt{\frac{121}{16}}$ f) $\sqrt{12.1}$

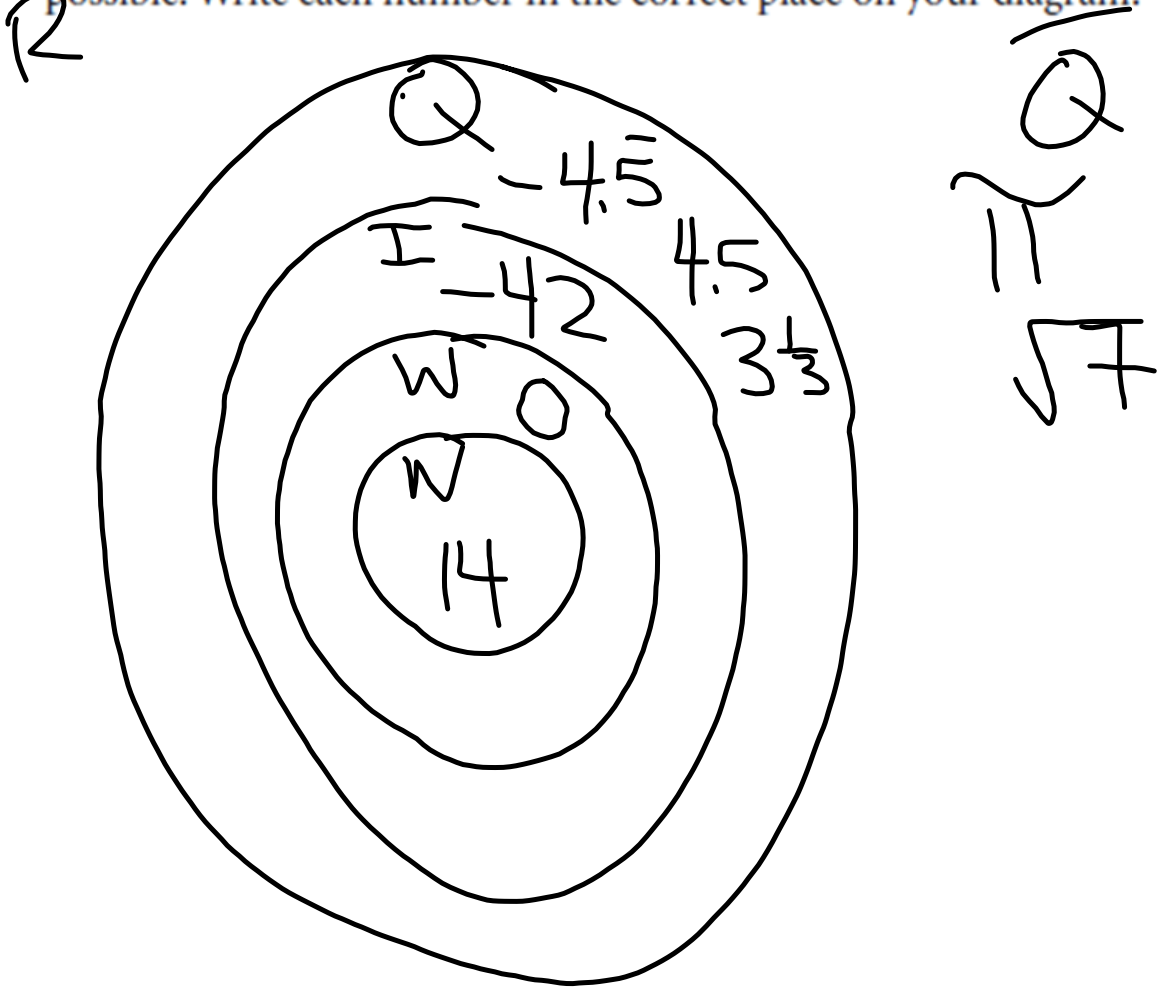
$\overline{Q}$, $\overline{Q}$, $\overline{Q}$, Q, Q, $\overline{Q}$

6. a) Draw a diagram to illustrate the real number system.
Write the numbers below in the appropriate places on your diagram.

i) $3\frac{1}{3}$ ii) -42 iii) 4.5 iv) $-4.\overline{5}$

v) 0 vi) 14 vii) $\sqrt{7}$ viii) π

b) Choose 1 more number for each section of your diagram, where possible. Write each number in the correct place on your diagram.



7. a) Sketch a number line and mark each number on it.

i) $\sqrt{32}$ ii) $\sqrt[3]{72}$ iii) $\sqrt[4]{100}$ iv) $\sqrt[3]{50}$ v) $\sqrt{65}$ vi) $\sqrt[4]{60}$

b) Order the numbers in part a from greatest to least.

$\sqrt{65}, \sqrt{32}, \sqrt[3]{72}, \sqrt[3]{50}$,

$\sqrt[4]{100}, \sqrt[4]{60}$

4.3

can't

can't simplify

9. Write each radical in simplest form, if possible.

a) $\sqrt{45}$ b) $\sqrt[3]{96}$ c) $\sqrt{17}$ d) $\sqrt[4]{48}$ e) $\sqrt[3]{80}$ f) $\sqrt[4]{50}$

$\sqrt{9 \cdot 5}$ $\sqrt[3]{8 \times 12}$ $\sqrt[4]{16 \cdot 3}$ $\sqrt[3]{8 \cdot 10}$

$\sqrt{9} \cdot \sqrt{5}$ $\sqrt[3]{8}\ \sqrt[3]{12}$ $2\sqrt[4]{3}$ $2\sqrt[3]{10}$

$3\sqrt{5}$ $2\sqrt[3]{12}$

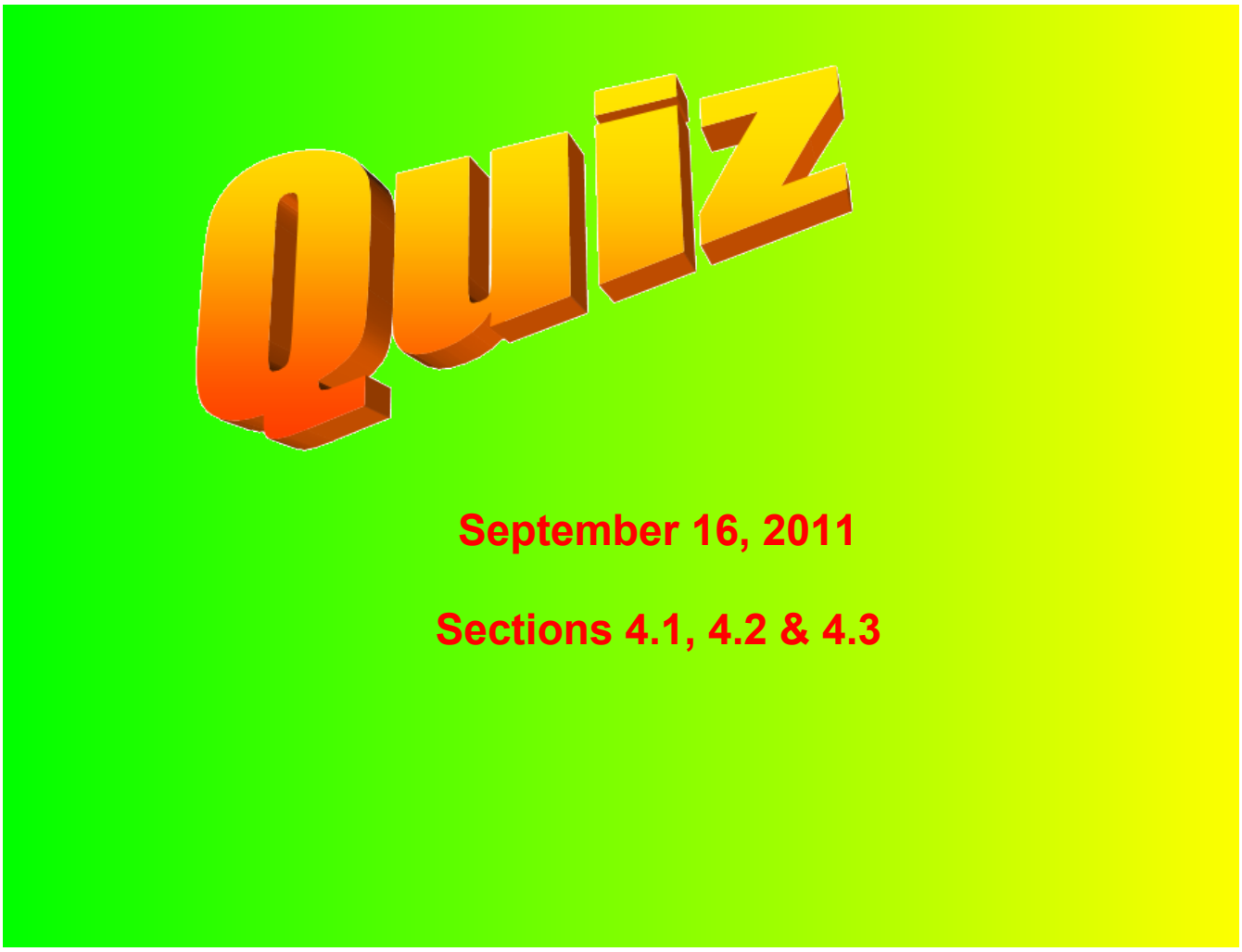
$3\sqrt{240}$

11. Rewrite each mixed radical as an entire radical.

a) $3\sqrt{7}$ **b)** $2\sqrt[3]{4}$ **c)** $7\sqrt{3}$ **d)** $2\sqrt[4]{12}$ **e)** $3\sqrt[3]{10}$ **f)** $6\sqrt{11}$

$\sqrt{3^2 \cdot 7}$ $\sqrt{2^3 \cdot 4}$ $\sqrt{147}$ $\sqrt[4]{192}$ $\sqrt{396}$

$\sqrt{63}$ $\sqrt[3]{32}$


Quiz
September 16, 2011
Sections 4.1, 4.2 & 4.3