KEY

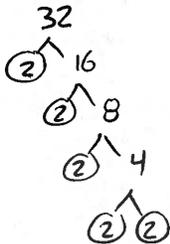## L57 – 5.1 Working with Radicals (Part 1)

Part 1 –Entire to Mixed Radicals (Square Roots)

Q1: Convert the following to Mixed Radicals:
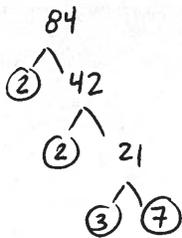
$\sqrt{32}$

$\sqrt{2^2 \cdot 2^2 \cdot 2}$

$2 \cdot 2 \sqrt{2}$

$4\sqrt{2}$

32
②⌃16
  ②⌃8
    ②⌃4
      ②②

$\sqrt{75x^5}$

$\sqrt{3 \cdot 5^2 \cdot x^2 \cdot x^2 \cdot x}$

$5 \cdot x \cdot x \sqrt{3x}$

$5x^2\sqrt{3x}$

75
③⌃25
    ⑤⑤

$\sqrt{84x^2y^7z}$

$\sqrt{2^2 \cdot 3 \cdot 7 \cdot x^2 \cdot y^2 \cdot y^2 \cdot y^2 \cdot y \cdot z}$

$2 \times yyy \sqrt{3 \cdot 7 \cdot y \cdot z}$

$2xy^3\sqrt{21yz}$

84
②⌃42
  ②⌃21
    ③⑦

$\sqrt{98x^3y^4}$

$\sqrt{2 \cdot 7^2 \cdot x^2 \cdot x \cdot y^2 \cdot y^2}$

$7 \times yy \sqrt{2x}$

$7xy^2\sqrt{2x}$

98
②⌃49
  ⑦⑦
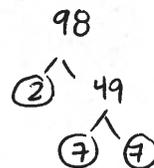
$\sqrt{24x^5y^3z^4}$

$\sqrt{2^2 \cdot 2 \cdot 3 \cdot x^2 \cdot x^2 \cdot x \cdot y^2 \cdot y \cdot z^2 \cdot z^2}$

$2 \times x \times yzz \sqrt{2 \cdot 3 \cdot x \cdot y}$

$2x^2yz^2\sqrt{6xy}$

24
②⌃12
  ②⌃6
    ②③
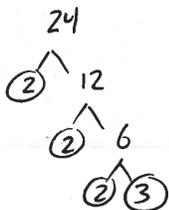
$\sqrt{18x^2y^6}$

$\sqrt{2 \cdot 3^2 \cdot x^2 \cdot y^2 \cdot y^2 \cdot y^2}$

$3 \times yyy \sqrt{2}$

$3xy^3\sqrt{2}$

18
②⌃9
  ③③

≡KEY≡

Part 2 – Entire to Mixed Radicals (Cube Roots)

Q2: Convert the following to Mixed Radicals:

$\sqrt[3]{32}$

$\sqrt[3]{2^3 \cdot 2 \cdot 2}$

$2\sqrt[3]{2 \cdot 2}$

$2\sqrt[3]{4}$

32
② 16
② 8
② 4
② ②

$\sqrt[3]{75x^5}$

$\sqrt[3]{3 \cdot 5^2 \cdot x^2 \cdot x^2 \cdot x}$

$5xx\sqrt[3]{3x}$

$5x^2\sqrt[3]{3x}$

75
③ 25
⑤ ⑤

$\sqrt[3]{84x^2y^7z}$

$\sqrt[3]{2 \cdot 2 \cdot 3 \cdot 7 \cdot x^2 \cdot y^3 \cdot y^3 \cdot y \cdot z}$

$y \cdot y \cdot \sqrt[3]{2 \cdot 2 \cdot 3 \cdot 7 \cdot x^2 \cdot y \cdot z}$

$y^2\sqrt[3]{84x^2yz}$

84
② 42
② 21
③ ⑦

$\sqrt[3]{98x^3y^4}$

$\sqrt[3]{2 \cdot 7 \cdot 7 \cdot x^3 \cdot y^3 \cdot y}$

$xy\sqrt[3]{2 \cdot 7 \cdot 7 \cdot y}$

$xy\sqrt[3]{98y}$

98
② 49
⑦ ⑦

$\sqrt[3]{24x^5y^3z^4}$

$\sqrt[3]{2^3 \cdot 3 \cdot x^3 \cdot x \cdot x \cdot y^3 \cdot z^3 \cdot z}$

$2xyz\sqrt[3]{3xxz}$

$2xyz\sqrt[3]{3x^2z}$

24
② 12
② 6
② ③

$\sqrt[3]{18x^2y^6}$

$\sqrt[3]{2 \cdot 3 \cdot 3 \cdot x^2 \cdot y^3 \cdot y^3}$

$y \cdot y \cdot \sqrt[3]{2 \cdot 3 \cdot 3 \cdot x^2}$

$y^2\sqrt[3]{18x^2}$

18
② 9
③ ③

Part 3 – Mixed to Entire Radicals

Q3: Convert the following Mixed Radicals to Entire Radicals:

$$5x^4 \sqrt[3]{3x^2}$$

$$\sqrt[3]{(5x^4)^3}$$

$$\sqrt[3]{125x^{12}} \cdot \sqrt[3]{3x^2}$$

$$\sqrt[3]{375x^{14}}$$

$$2x^7y^3 \sqrt{5x}$$

$$\sqrt{(2x^7y^3)^2} \cdot \sqrt{5x}$$

$$\sqrt{4x^{14}y^6} \cdot \sqrt{5x}$$

$$\sqrt{20x^{15}y^6}$$

$$3x \sqrt{5x}$$

$$\sqrt{(3x)^2} \cdot \sqrt{5x}$$

$$\sqrt{9x^2} \cdot \sqrt{5x}$$

$$\sqrt{45x^3}$$

$$3x^2y \sqrt[3]{5xy^2}$$

$$\sqrt[3]{(3x^2y)^3} \cdot \sqrt[3]{5xy^2}$$

$$\sqrt[3]{27x^6y^3} \cdot \sqrt[3]{5xy^2}$$

$$\sqrt[3]{135x^7y^5}$$
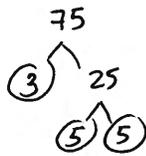
Part 4 – Back and Forth

Q4: Using $\sqrt{75x^4y^3z^2}$ ...

Convert it to a Mixed Radical	Now convert it back to an Entire Radical
75	$5x^2yz \sqrt{3y}$
$3 \quad 25$	$\sqrt{(5x^2yz)^2} \cdot \sqrt{3y}$
$5 \quad 5$	$\sqrt{25x^4y^2z^2} \cdot \sqrt{3y}$
$\sqrt{3 \cdot 5^2 \cdot x^2 \cdot x^2 \cdot y^2 \cdot y \cdot z^2}$	$\sqrt{75x^4y^3z^2}$
$5xxyz \sqrt{3y}$	
$5x^2yz \sqrt{3y}$	