6.2 Simplifying Radicals

① $\sqrt[2]{24x^6y^{11}}$

$\sqrt{4 \cdot 6 y^{10} \cdot y^1}$

$2x^3y^5\sqrt{6y^1}$

24

4 6

2 2 2 3

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

4
9
16
25
36
49
81
100

② $\sqrt[3]{108x^5y^{22}}$

$\sqrt[3]{27 \cdot 4 x^3 \cdot x^2 y^{21} \cdot y^1}$

$3xy^7\sqrt[3]{4x^2y^1}$

108 → 2, 54 → 2, 27 → 3, 9 → 3, 3 → 3, 1

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

8 → 2, 4 → 2, 2 → 2, 1

27 → 3, 9 → 3, 3 → 3, 1

64 → 2, 32 → 2, 16 → 2, 8 → 2, 4 → 2, 2 → 2, 1

125 → 5, 25 → 5, 5 → 5, 1

③ $3\sqrt{24x^5y^7} \cdot 4\sqrt{3x^3y^2}$

$3 \cdot 4\sqrt{24 \cdot 3 \cdot x^5 \cdot x^3 y^7 \cdot y^2}$

$12\sqrt{72x^8y^9}$ → $y^8 \cdot y^1$

$12\sqrt{36 \cdot 2}$

$12 \cdot 6x^4y^4\sqrt{2y}$

$* 72x^4y^4\sqrt{2y}$

4
9
16
25
36
49
64

(4) $\dfrac{\sqrt[5]{96x^{13}y^{32}}}{\sqrt[5]{3x^{6}y^{10}}} = \sqrt[5]{\dfrac{96x^{13}y^{32}}{3x^{6}y^{10}}}$

$\sqrt[5]{32x^{7}y^{22}} = 2xy^{4}\sqrt[5]{x^{2}y^{2}}$

6.2 Simplifying Radicals

4
9
16
25

① $\sqrt[2]{24x^6y^{11}}$

$\sqrt{4 \cdot 6 y^{10} y^1}$

$2x^3y^5\sqrt{6y^1}$

24

6 4

3 2 2 2

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

② $\sqrt[3]{108x^5y^{22}}$

$\sqrt[3]{27 \cdot 4 x^3 \cdot x^2 y^{21} \cdot y^1}$

$3x^1y^7\sqrt[3]{4x^2y^1}$

108

2 54

9 6

3 3 2 3

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

8

27

64

125

③ $3\sqrt{24x^5 \cdot y^7} \cdot 4\sqrt{3x^3 y^2}$

$3 \cdot 4\sqrt{24 \cdot 3 \cdot x^5 \cdot x^3 \cdot y^7 \cdot y^2}$

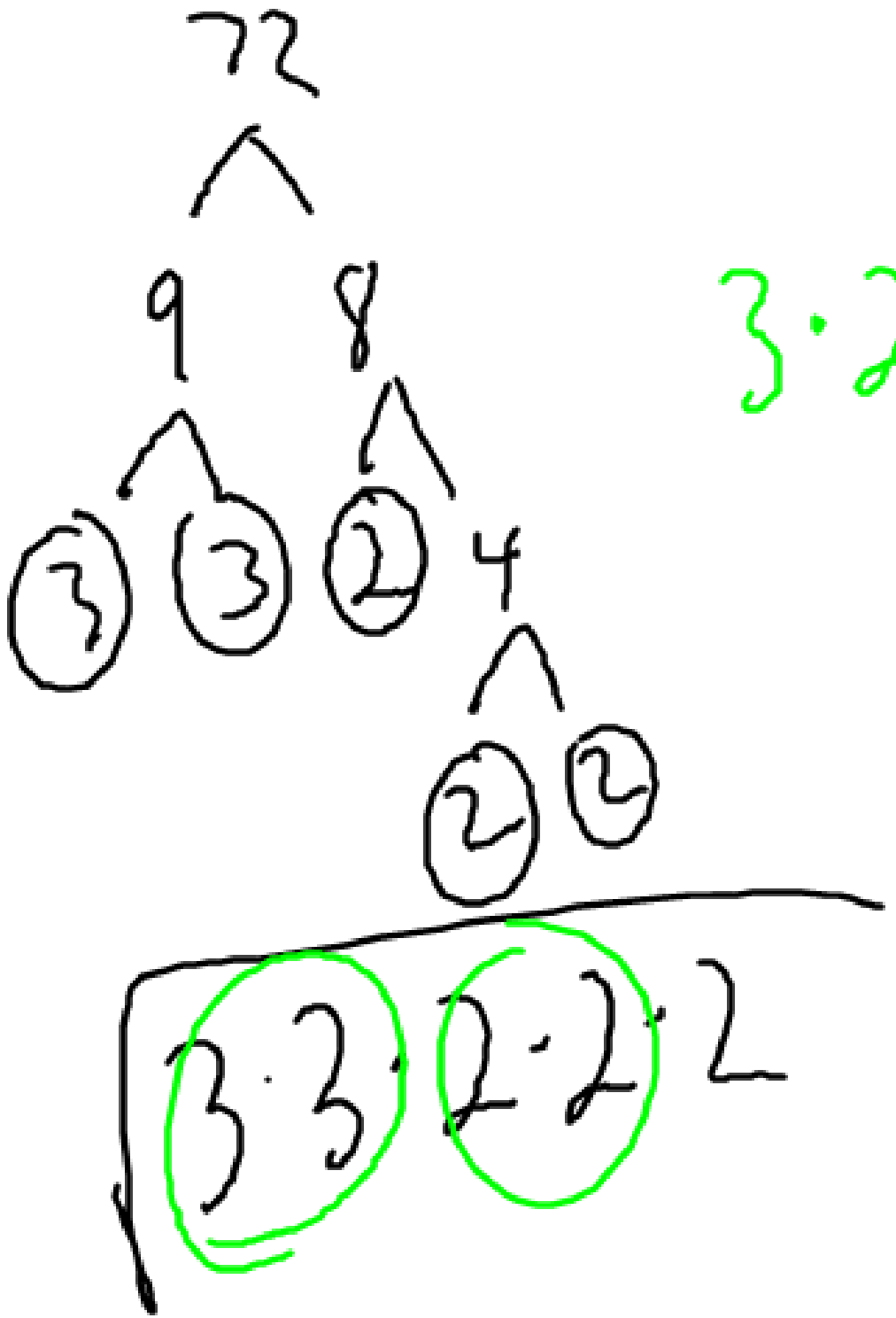
$12\sqrt{72x^8 y^9}$

$\sqrt{36 \cdot 2\, y^8 \cdot y^1}$

$12 \cdot 6\, x^4 y^4 \sqrt{2y^1}$

$= 72x^4 y^4 \sqrt{2y}$

4
9
11
25
31
44
64



$3 \cdot 2\sqrt{2}$

$6\sqrt{2}$

④ $\frac{\sqrt[5]{96x^{13}y^{32}}}{\sqrt[5]{3x^{6}y^{10}}} = \sqrt[5]{\frac{96x^{13}y^{32}}{3x^{6}y^{10}}}$

$\sqrt[5]{32x^{7}y^{22}} = 2x^{1}y^{4}\sqrt[5]{x^{2}y^{2}}$