Showdown

Simplify Radical Expressions

Set-up: Each student is given one whiteboard with a coordinate plane and dry-erase marker. Teacher has several exponential functions ready.

1. Teacher selects one student on each team to be the "Showdown Captain" for the first round.
2. The teacher gives the first exponential function and provides think time.
3. Working **alone**, all students, including the Showdown Captain, simplify the radical expression. (Emphasize to students that this is not a race.)
4. When finished, teammates signal they are ready by turning their whiteboards over.
5. When all students are finished, the Showdown Captain of each team calls, "Showdown".
6. Teammates show and discuss their answers.
7. The Showdown Captain leads the discussion.
8. If correct, the team celebrates; if not, teammates coach, then celebrate.
9. All students in the team raise their hands, signaling to the teacher they are finished. The teacher quickly checks the team's answer and gives another expression. The next person in the team becomes the Showdown Captain for the next round.

med 1. $\sqrt{54x^3y^5} = 3xy^2\sqrt{6xy}$

easy 2. $\frac{\sqrt{128}}{\sqrt{8}} = 4$

med 3. $\frac{\sqrt[3]{8}}{\sqrt[3]{6}} = \frac{2}{\sqrt[3]{6}}$ $\frac{2\sqrt[3]{36}}{6}$

hard 4. $3\sqrt[4]{4x^3} \bullet \sqrt[4]{8xy^5} = 6xy\sqrt[4]{2y}$

hard 5. $2\sqrt[3]{2x^2y} \cdot 5\sqrt[3]{6x^4y^4} = 10x^2y\sqrt[3]{12y^2}$

hard 6. $\frac{\sqrt[3]{81a^8b^5}}{\sqrt[3]{3a^2b}} = 3a^2b\sqrt[3]{b}$

hard 7. $\frac{\sqrt[3]{5}}{\sqrt[3]{x^4}} = \frac{\sqrt[3]{5x^2}}{x^2}$

med 8. $\sqrt{48} + 2\sqrt{75} + 5\sqrt{12} = 24\sqrt{3}$

easy ~~9.~~ $(5+\sqrt{3})(2-\sqrt{3}) = 7-3\sqrt{3}$

hard ~~10.~~ $\frac{6}{7+2\sqrt{3}} = \frac{42-12\sqrt{3}}{37}$

$\frac{\sqrt[3]{8}}{\sqrt[3]{6}} = \frac{2}{6^{1/3}\,6^{1/3}}$ $\frac{2\cdot 6^{2/3}}{6}$ $\frac{2\sqrt[3]{6^2}}{6}$

med 11) $\sqrt[3]{3773x^4y^{12}z^8}$

$7xy^4z^2\sqrt[3]{11xz^2}$

hard 12) $3(x-2)^6 + 4 = 2199$

$x = 5, -1$

easy 13) $7x^5 = -105$

$x = -1.72$

$\frac{2}{3^{-1/5}} = 2\cdot 3^{1/5}$

$\frac{x^{7/5}\,y^{-1/3}\,z^{1/5}}{x\,y^2\,z^{-3/4}} = \frac{x^{2/5}\,z^{19/20}}{y^{7/3}}$