Radicals - Engaging Resources

NL SO3 - Radicals Review: Sorting Activity

(Download: Radical Sorting Set #1, Radical Sorting Set #2)

This sorting activity may be used to review approximation and evaluation of radicals as well as conversion between mixed and entire radicals. Students may sort each set of cards individually or as a group. Having students represent each card and then stand in order of least to greatest may be a nice way of generating some energy in the classroom.

$\sqrt{2}$	1.9	$\sqrt[3]{9}$
$\sqrt{8}$	$\sqrt[3]{27}$	4.9
$\sqrt{26}$		

$\sqrt{5}$	$2\sqrt{3}$	3.9
$2\sqrt{7}$	$3\sqrt{5}$	6
$\sqrt{51}$		

NL SO3 - Discovery Activities: Operations on Radicals

(Download: Add&Subtract.docx, Multiplication.docx, Division.docx)

M20-2 Discovery Activity - Adding and Subtracting Radicals

If these are true ..... and these are false.

$3\sqrt{5}+6\sqrt{5}=9\sqrt{5}$ $\quad$ $3\sqrt{5}+6\sqrt{5}=9\sqrt{10}$

$8\sqrt{7}-3\sqrt{7}=5\sqrt{7}$ $\quad$ $8\sqrt{7}-3\sqrt{7}=5\sqrt{0}$

$\sqrt{13}+5\sqrt{13}=6\sqrt{13}$ $\quad$ $\sqrt{13}+5\sqrt{13}=5\sqrt{13}$

$\sqrt{8}+3\sqrt{2}=2\sqrt{2}+3\sqrt{2}=5\sqrt{2}$ $\quad$ $\sqrt{8}+3\sqrt{2}=4\sqrt{10}$

$\sqrt{27}+\sqrt{12}=3\sqrt{3}+2\sqrt{3}=5\sqrt{3}$ $\quad$ $\sqrt{27}+\sqrt{12}=9\sqrt{3}+4\sqrt{3}=13\sqrt{3}$

then find the answer to these:

$4\sqrt{11}+\sqrt{11}=$ $\quad$ $20\sqrt{13}-10\sqrt{13}=$

$\sqrt{8}+\sqrt{18}=$ $\quad$ $2\sqrt{12}+\sqrt{48}=$

(Hint: Think about addition & subtraction of polynomials.)

... and now see if you can do these!

$3\sqrt{27}-5\sqrt{12}+\sqrt{75}=$ $\quad$ $7\sqrt{5}+\sqrt{5}=$

$4\sqrt{x}+3\sqrt{x}-5\sqrt{x}=$ $\quad$ $3\sqrt{x^2}+x\sqrt{x}+\sqrt{3}=$

M20 Principles C3 - Discovery Activity Multiplying Radicals

If these are true ..... and these are false.

$(\sqrt{3})(\sqrt{7})=\sqrt{21}$ $\quad$ $(\sqrt{3})(\sqrt{7})=\sqrt{10}$

$(3\sqrt{2})(4\sqrt{5})=12\sqrt{10}$ $\quad$ $(3\sqrt{2})(4\sqrt{5})=7\sqrt{10}$

$(\sqrt{5})(\sqrt{5})=\sqrt{25}=5$ $\quad$ $(\sqrt{5})(\sqrt{5})=\sqrt{25}=\sqrt{5}$

$(\sqrt{3})(\sqrt{3})=3$ $\quad$ $(\sqrt{3})(\sqrt{3})=9$

$(2\sqrt{2})(\sqrt{6})=2\sqrt{12}=4\sqrt{3}$ $\quad$ $(2\sqrt{2})(\sqrt{6})=2\sqrt{12}=24$

then find the answer to these:

$(\sqrt{2})(\sqrt{11})=$ $\quad$ $(3\sqrt{5})(2\sqrt{2})=$

$(\sqrt{8})(\sqrt{8})=$ $\quad$ $(5\sqrt{6})(3\sqrt{3})=$

(Hint: Think about multiplication of polynomials.)

... and now see if you can do these!

$(2\sqrt{3})(3\sqrt{7}-8\sqrt{8})=$ $\quad$ $(2\sqrt{x})(5\sqrt{x})=$

$(x\sqrt{2x^3})(5\sqrt{x^4})=$ $\quad$ $(4\sqrt{x})(7\sqrt{x^3})=$

M20 Principles C3 - Discovery Activity Dividing Radicals

If these are true ..... and these are false.

$\frac{\sqrt{10}}{\sqrt{2}}=\sqrt{5}$ $\quad$ $\frac{\sqrt{10}}{\sqrt{2}}=\sqrt{8}$

$\frac{12\sqrt{6}}{3\sqrt{3}}=4\sqrt{2}$ $\quad$ $\frac{12\sqrt{6}}{3\sqrt{3}}=9\sqrt{3}$

$\frac{\sqrt{24}}{2\sqrt{3}}=\frac{\sqrt{8}}{2}=\frac{2\sqrt{2}}{2}=\sqrt{2}$ $\quad$ $\frac{\sqrt{24}}{2\sqrt{3}}=2\sqrt{8}$

$\frac{3\sqrt{14}}{6\sqrt{2}}=\frac{\sqrt{7}}{2}$ $\quad$ $\frac{3\sqrt{14}}{6\sqrt{2}}=2\sqrt{7}$

$\frac{\sqrt{5}}{\sqrt{5}}=1$ $\quad$ $\frac{\sqrt{5}}{\sqrt{5}}=0$

then find the answer to these:

$\frac{\sqrt{30}}{\sqrt{5}}=$ $\quad$ $\frac{8\sqrt{40}}{4\sqrt{2}}=$

$\frac{8\sqrt{6}}{6\sqrt{6}}=$ $\quad$ $\frac{6\sqrt{42}}{9\sqrt{7}}=$

(Hint: Think about division of polynomials.)

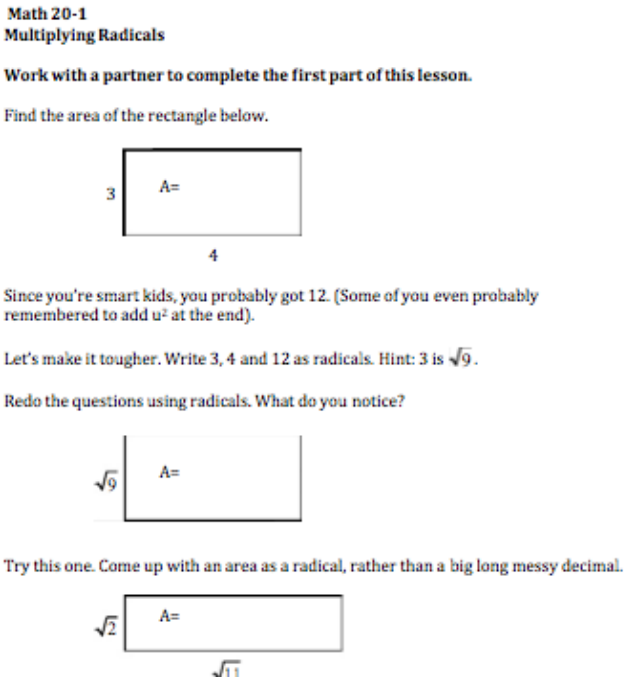
... and now see if you can do these!

$\frac{\sqrt{18}}{3\sqrt{2}}=$ $\quad$ $\frac{3\sqrt{12}+7\sqrt{6}}{\sqrt{3}}=$ $\quad$ $\frac{\sqrt{2}}{\sqrt{10}}=$

NL SO3 - Discovery Activities: Zero Knowledge -- Two by Four -- Discovery Based Activity to Multiply Radicals

(Link: Zero Knowledge -- Two by Four -- Discovery Based activity to Multiplying Radicals)

John Scammell describes a method of embedding assessment for learning into a classroom of multiply radicals using one of Dylan Wiliam's 5 key strategies; activating students as instructional resources for one another.



Math 20-1
Multiplying Radicals

Work with a partner to complete the first part of this lesson.

Find the area of the rectangle below.

3 | A= |
4

Since you're smart kids, you probably got 12. (Some of you even probably remembered to add u^2 at the end).

Let's make it tougher. Write 3, 4 and 12 as radicals. Hint: 3 is $\sqrt{9}$.

Redo the questions using radicals. What do you notice?

$\sqrt{9}$ | A= |

Try this one. Come up with an area as a radical, rather than a big long messy decimal.

$\sqrt{2}$ | A= |
$\sqrt{11}$

NL SO3 - Discovery Activities: Radical Ruler

(Link: Zero Knowledge -- John Scammell)

The link above describes an activity on simplifying radicals using a Geoboard. This was introduced by S. Sookochoff and extended by John Scammell.