Mobius Math Academy Name:_____

Math worksheet on *'Radicals - Multiplying Binomials (Values and Variables) (Level 2)'*. Part of a broader unit on *'Radicals - Multiplication Intro'*

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1 Multiply the radical expressions and simplify the answer

$$(r\sqrt{3}+\sqrt{3r})\cdot(r\sqrt{13}-\sqrt{13})$$

a $r^3\sqrt{39}-r\sqrt{39}$	**b** $2r^2-2r\sqrt{39}+r\sqrt{39r}$
c $r\sqrt{39}-r\sqrt{39}+r\sqrt{39r}-\sqrt{39r}$	**d** $5r^2\sqrt{39}-r\sqrt{39}+2r\sqrt{39r}$
e $2r^2\sqrt{39}-r\sqrt{39}+r\sqrt{39r}-\sqrt{39r}$	

2 Multiply the radical expressions and simplify the answer

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

a $x^2\sqrt{15}+3x^3\sqrt{x}+\sqrt{x}-x^4\sqrt{15}$	**b** $x\sqrt{15}-3x^5\sqrt{x}+5\sqrt{x}+x^2\sqrt{15}$
c $3x\sqrt{x}+5$	**d** $x\sqrt{15}-3x^3\sqrt{x}+5\sqrt{x}+x^2\sqrt{15}$
e $3x^3\sqrt{x}+5\sqrt{x}$	

3 Multiply the radical expressions and simplify the answer

$$(c\sqrt{11}-\sqrt{2})\cdot(c^2\sqrt{2}+c\sqrt{11})$$

a $c^3\sqrt{22}+9c^2-c\sqrt{22}$	**b** $c^3\sqrt{22}+11c^2-c^2\sqrt{2}-c\sqrt{22}$
c $2c\sqrt{22}-11c-2c^2$	**d** $c^3\sqrt{22}+11c^4-2c^2-c\sqrt{22}$
e $c^3\sqrt{22}+42c^2-c\sqrt{22}$	

4 Multiply the radical expressions and simplify the answer

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

a $2x^2+x^3\sqrt{10}+\sqrt{6}+x^2\sqrt{15}$	**b** $2x+x^3\sqrt{10}+\sqrt{6}+x^2\sqrt{15}$
c $2x+3x^3\sqrt{10}+\sqrt{6}-x^2\sqrt{15}$	**d** $2x+x^4\sqrt{10}+\sqrt{6}+x^3\sqrt{15}$
e $2x+x^3\sqrt{10}+\sqrt{6}+x^4\sqrt{15}$	

5 $$(\sqrt{2}+n\sqrt{11})\cdot(\sqrt{11n}+n\sqrt{2n})$$

Multiply the radical expressions and simplify the answer

a $\sqrt{22n}+13n\sqrt{n}+n^2\sqrt{22n}$	**b** $\sqrt{n}+13n\sqrt{n}+n^3\sqrt{22n}$	**c** $\sqrt{22n}-2n\sqrt{n}+11n^2\sqrt{n}+n^2\sqrt{22n^{-1}}$	**d** $\sqrt{22n}+2n^3\sqrt{n}-11n\sqrt{n}+n^2\sqrt{22n}$	**e** $\sqrt{22n}+2n^2+11n\sqrt{n}+n^2\sqrt{22n}$

6 $$(m\sqrt{5}-m^2\sqrt{7})\cdot(\sqrt{11m}+m\sqrt{2m})$$

Multiply the radical expressions and simplify the answer

a $m^2\sqrt{55m}+m^2\sqrt{10m}-m^2\sqrt{77m}+m^3\sqrt{14}$	**b** $m\sqrt{55m}+m^2\sqrt{10m}-m^2\sqrt{77m}-m^3\sqrt{14m}$	**c** $m\sqrt{55}+m^2\sqrt{10m}-m^3\sqrt{77m}-m^3\sqrt{14m}$	**d** $m\sqrt{55m}+m^2\sqrt{10m}-m^2\sqrt{77m}-5m^3\sqrt{14m}$	**e** $m\sqrt{55m}+m^2\sqrt{10m}+m^4\sqrt{77m}-m^4\sqrt{14m}$

7 Multiply the radical expressions and simplify the answer

$$(b\sqrt{7}+\sqrt{5})\cdot(\sqrt{3b}+\sqrt{5b})$$

a $b\sqrt{21b^{-1}}+6\sqrt{b}+b\sqrt{35b}$	**b** $b\sqrt{21b}+\sqrt{15b}+b\sqrt{35b}+5\sqrt{b}$
c $b\sqrt{21b}+\sqrt{15b}+b^{-1}\sqrt{35b}+\sqrt{b}$	**d** $b\sqrt{21b}+\sqrt{15b}+b^3\sqrt{35b}-5\sqrt{b}$
e $\sqrt{21b}-\sqrt{15b}+b\sqrt{35}+5\sqrt{b}$	