Welcome Back MYP Math 9!

	Assignment Effort Grade (Circle One)	Comments (What was interesting or challenging?)
Monday Date: 12/11 Topic: Unit 3 test Friday - no HW!	0 1 2	
Tuesday Date: 12/12 Topic: 5AB Radicals	0 1 2	
Wednesday Date: _____ Topic:_____	0 1 2	
Thursday Date: _____ Topic:_____	0 1 2	
Friday Date: _____ Topic:_____	0 1 2	

Class Plan:

1. Warm-up

2. Examples

4. Practice

B SIMPLIFYING RADICALS

Warm-up

Simplify: Try not to use decimals!!

$$\sqrt{3} \cdot \sqrt{7} =$$

$$-2\sqrt{5} \cdot 4\sqrt{2} =$$

$$\frac{\sqrt{90}}{\sqrt{10}} =$$

B Examples **SIMPLIFYING RADICALS**

Properties: Recall from yesterday

- $\sqrt{a}\sqrt{a} = (\sqrt{a})^2 = a$

$$\sqrt{278} \cdot \sqrt{278} = 278$$

- $\sqrt{a}\sqrt{b} = \sqrt{ab}$

$$\sqrt{8}\sqrt{32} = \sqrt{256} = 16$$

- $\dfrac{\sqrt{a}}{\sqrt{b}} = \sqrt{\dfrac{a}{b}}$

$$\frac{\sqrt{100}}{\sqrt{4}} = \sqrt{\frac{100}{4}} = \sqrt{25} = 5$$

Example 1: Simplify the radicals.

- $\sqrt{a}\sqrt{a} = (\sqrt{a})^2 = a$

a	b	c
$(\sqrt{2})^2$	$(\sqrt{2})^3$	$\left(\frac{4}{\sqrt{2}}\right)^2$

a

$$\begin{aligned}(\sqrt{2})^2 &= \sqrt{2} \times \sqrt{2} \\ &= 2\end{aligned}$$

b

$$\begin{aligned}(\sqrt{2})^3 &= \sqrt{2} \times \sqrt{2} \times \sqrt{2} \\ &= 2\sqrt{2}\end{aligned}$$

c

$$\begin{aligned}\left(\frac{4}{\sqrt{2}}\right)^2 &= \frac{4^2}{(\sqrt{2})^2} \\ &= \frac{16}{2} \\ &= 8\end{aligned}$$

Example 2: Simplify the radicals.

a $(3\sqrt{2})^2$

b $3\sqrt{3} \times (-2\sqrt{3})$

a

$$\begin{aligned}&\left(3\sqrt{2}\right)^2\\&= 3\sqrt{2} \times 3\sqrt{2}\\&= 9 \times 2\\&= 18\end{aligned}$$

b

$$\begin{aligned}&3\sqrt{3} \times \left(-2\sqrt{3}\right)\\&= 3 \times -2 \times \sqrt{3} \times \sqrt{3}\\&= -6 \times 3\\&= -18\end{aligned}$$

Example 3: Simplify the radicals.

- $\sqrt{a}\sqrt{b} = \sqrt{ab}$

Write in simplest form:

a $\sqrt{2} \times \sqrt{5}$

b $3\sqrt{2} \times 4\sqrt{11}$

a

$$\begin{aligned}&\sqrt{2} \times \sqrt{5}\\ &= \sqrt{2 \times 5}\\ &= \sqrt{10}\end{aligned}$$

b

$$\begin{aligned}&3\sqrt{2} \times 4\sqrt{11}\\ &= 3 \times 4 \times \sqrt{2} \times \sqrt{11}\\ &= 12 \times \sqrt{2 \times 11}\\ &= 12\sqrt{22}\end{aligned}$$

Example 4:

Simplify the radicals.

- $\dfrac{\sqrt{a}}{\sqrt{b}} = \sqrt{\dfrac{a}{b}}$

Simplify: **a** $\dfrac{\sqrt{75}}{\sqrt{3}}$ **b** $\sqrt{\dfrac{9}{49}}$

a

$$\frac{\sqrt{75}}{\sqrt{3}}$$
$$= \sqrt{\frac{75}{3}}$$
$$= \sqrt{25}$$
$$= 5$$

b

$$\sqrt{\frac{9}{49}}$$
$$= \frac{\sqrt{9}}{\sqrt{49}}$$
$$= \frac{3}{7}$$

Exercises:

5B Radical and Surd Review Name_____

1) Simplify:

e $(\sqrt{7})^2$ f $(\sqrt{7})^3$ g $\left(\frac{1}{\sqrt{7}}\right)^2$ h $\left(\frac{3}{\sqrt{7}}\right)^2$

i $(\sqrt{5})^2$ j $(\sqrt{5})^4$ k $\left(\frac{5}{\sqrt{5}}\right)^2$ l $\left(\frac{10}{\sqrt{5}}\right)^2$

2) Simplify:

g $\left(2\sqrt{7}\right)^2$ **h** $\left(2\sqrt{10}\right)^2$ **i** $\left(7\sqrt{10}\right)^2$

3) Simplify:

g $\left(-2\sqrt{3}\right) \times \left(-5\sqrt{3}\right)$ **h** $\left(-2\sqrt{7}\right) \times 3\sqrt{7}$ **i** $\sqrt{11} \times \left(-2\sqrt{11}\right)$

4 Simplify:

a $\sqrt{2} \times \sqrt{3}$ **b** $\sqrt{2} \times \sqrt{7}$ **c** $\sqrt{2} \times \sqrt{17}$

d $\sqrt{7} \times \sqrt{3}$ **e** $2\sqrt{2} \times 5\sqrt{3}$ **f** $\left(4\sqrt{3}\right)^2$

g $5\sqrt{2} \times \sqrt{7}$ **h** $2\sqrt{6} \times 3\sqrt{5}$ **i** $-5\sqrt{2} \times 2\sqrt{7}$

Solutions

EXERCISE 5B

1	**a** 3	**b** $3\sqrt{3}$	**c** $9\sqrt{3}$	**d** $\frac{1}{3}$	**e** 7	**f** $7\sqrt{7}$
	g $\frac{1}{7}$	**h** $\frac{9}{7}$	**i** 5	**j** 25	**k** 5	**l** 20
2	**a** 8	**b** 32	**c** 12	**d** 27	**e** 20	**f** 45
	g 28	**h** 40	**i** 490			
3	**a** 24	**b** 30	**c** 70	**d** 32	**e** 147	**f** -6
	g 30	**h** -42	**i** -22			

4	**a** $\sqrt{6}$	**b** $\sqrt{14}$	**c** $\sqrt{34}$	**d** $\sqrt{21}$
	e $10\sqrt{6}$	**f** 48	**g** $5\sqrt{14}$	**h** $6\sqrt{30}$
	i $-10\sqrt{14}$	**j** $2\sqrt{21}$	**k** $24\sqrt{5}$	**l** $80\sqrt{6}$