Do Now

Check Your Progress

1A. $3\sqrt{2} - 5\sqrt{2} + 4\sqrt{2}$

$2\sqrt{2}$

1B. $6\sqrt{11} + 2\sqrt{11} - 9\sqrt{11}$

$-\sqrt{11}$

Check Your Progress

2A. $4\sqrt{54} + 2\sqrt{24}$

$4\sqrt{9}\sqrt{6} + 2\sqrt{4}\sqrt{6}$

$4 \cdot 3\sqrt{6} + 2 \cdot 2\sqrt{6}$

$12\sqrt{6} + 4\sqrt{6}$

$16\sqrt{6}$

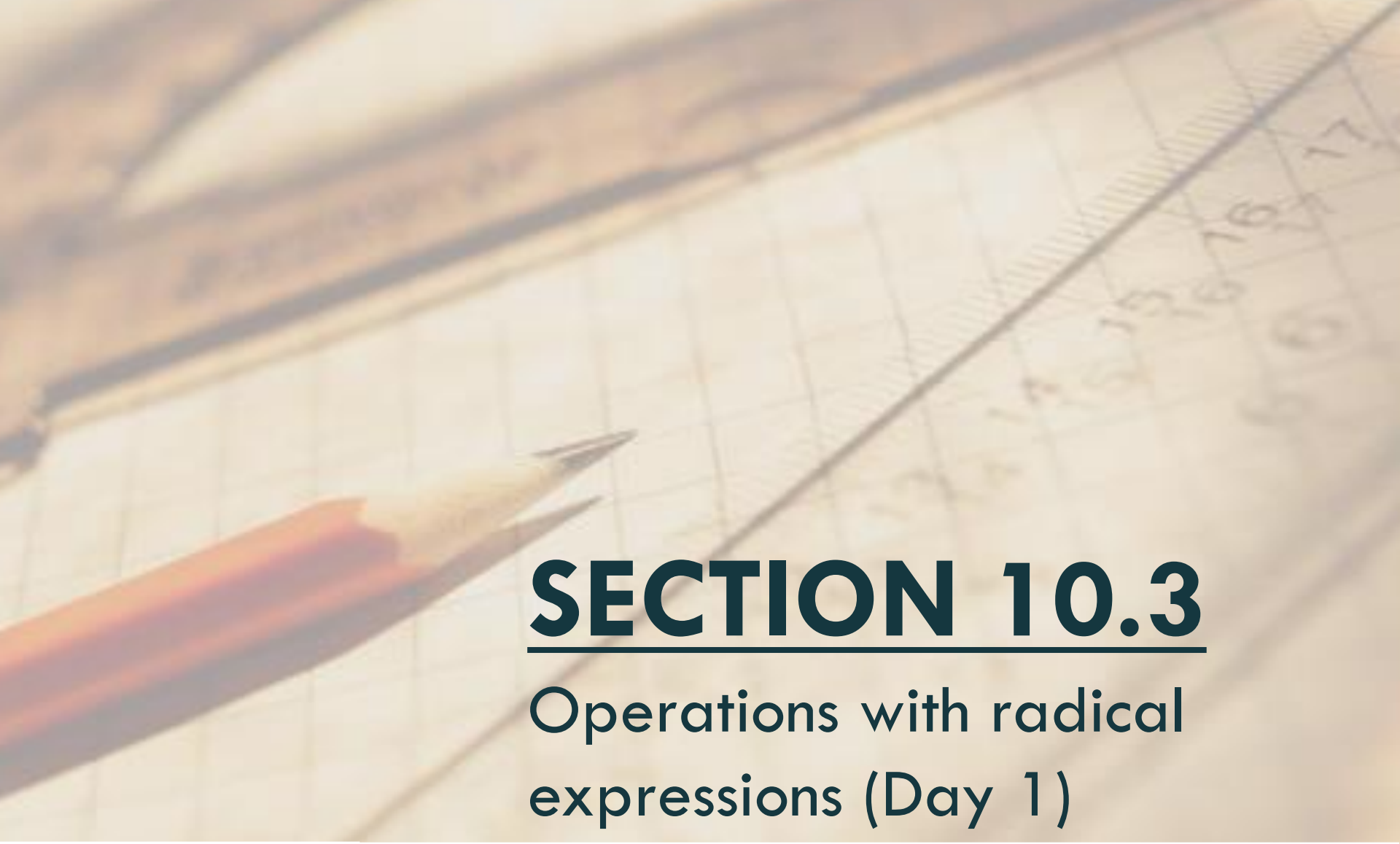
2B. $4\sqrt{12} - 6\sqrt{48}$

$4\sqrt{4}\sqrt{3} - 6\sqrt{16}\sqrt{3}$

$4 \cdot 2\sqrt{3} - 6 \cdot 4\sqrt{3}$

$8\sqrt{3} - 24\sqrt{3}$

$-16\sqrt{3}$



SECTION 10.3

Operations with radical expressions (Day 1)

SWBAT:

- Add, subtract, multiply and divide radicals.

Operations of Radicals

- ***Multiplying Radicals:***
  - multiply outer & inner terms separately!
  - make sure all radicals are simplified

ex: $2\sqrt{7} \bullet 4\sqrt{2}$

$8\sqrt{14}$

Multiplying Radicals:

Examples:

$5\sqrt{2} \cdot 4\sqrt{3}$

$20\sqrt{6}$

$3\sqrt{2} \cdot 2\sqrt{8}$

$6\sqrt{16}$

$6 \cdot 4$

24

Multiplying Radicals:

Examples:

$$2\sqrt{3} \cdot 4\sqrt{2} \cdot 10\sqrt{6}$$

$$80\sqrt{36}$$

$$80 \cdot 6$$

$$480$$

$$\sqrt{3}(7 + \sqrt{3})$$

$$7\sqrt{3} + \sqrt{9}$$

$$7\sqrt{3} + 3$$

Multiplying Radicals:

Examples:

$5\sqrt{2}(1+5\sqrt{3})$

$5\sqrt{2}+25\sqrt{6}$

FOIL or diff of 2 sq

$(6-\sqrt{2})(6+\sqrt{2})$

$6^2-(\sqrt{2})^2$

$36-2$

34

Rationalizing the Denominator

$$\sqrt{\frac{6y}{12}} = \frac{\sqrt{6y}}{\sqrt{12}} = \frac{\sqrt{6y}}{2\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{18y}}{2 \cdot 3}$$

$\sqrt{12}$

$\sqrt{4}\sqrt{3}$

$$= \frac{\sqrt{9}\sqrt{2y}}{6}$$

$$= \frac{3\sqrt{2y}}{6_2} = \frac{\sqrt{2y}}{2}$$

Rationalizing the Denominator

$$\sqrt{\frac{4}{y}} = \frac{\sqrt{4}}{\sqrt{y}} = \frac{2}{\sqrt{y}} \cdot \frac{\sqrt{y}}{\sqrt{y}} = \frac{2\sqrt{y}}{y}$$

Rationalizing the Denominator…

With Conjugates

$$\frac{1}{1-\sqrt{2}} \cdot \frac{1+\sqrt{2}}{1+\sqrt{2}} = \frac{1+\sqrt{2}}{1-2}$$

$$= \frac{1+\sqrt{2}}{-1}$$

$$= -1-\sqrt{2}$$

Last Example!!

$$\frac{3}{3+\sqrt{2}} \cdot \frac{3-\sqrt{2}}{3-\sqrt{2}} = \frac{9-3\sqrt{2}}{9-2}$$

$$= \frac{9-3\sqrt{2}}{7}$$

HOMEWORK

- **Worksheet – Don't do 2, 4, 5, 6**