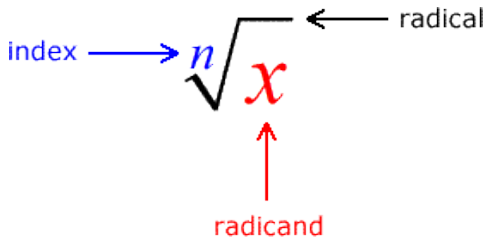
Aim: How can we simplify radicals and radical expressions with numerical radicands?

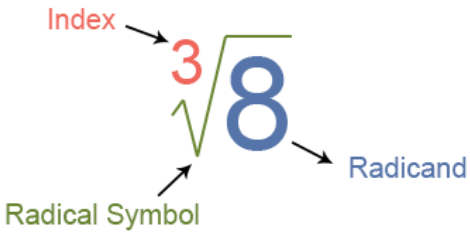
Do Now:

1) Identify the perfect square numbers : 16, 15, 146, 300, 324, 729
2) If any number (from previous question) is not a perfect square then write that number as the product of prime numbers.

Example: 196 = 2 x 2 x 7 x 7

I – What is a radical?

1- 

2- Example: 

3- Use your calculator to find roots:

$\sqrt{5}$

Radicand = _____

Index = _____

$\sqrt[3]{6}$

Radicand = _____

Index = _____

$\sqrt[4]{3}$

Radicand = _____

Index = _____

II – How do you simpify radical without the calculator?

1) $\sqrt{75}$

2) $\sqrt{16}$

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3) $\sqrt{36}$

4) $\sqrt{64}$

5) $\sqrt{80}$

6) $\sqrt{30}$

7) $\sqrt{8}$

8) $\sqrt{18}$

II – How do you simplify more complicated radicals?

Examples:

1) $\sqrt{48a^5} = \sqrt{16}\sqrt{3}\sqrt{a^4}\sqrt{a} = 4a^2\sqrt{3a}$

2) $\sqrt{x^4y^3} = \sqrt{x^4}\sqrt{y^2}\sqrt{y} = x^2y\sqrt{y}$

Exercises

Simplify.

1) $\sqrt{125n}$

2) $\sqrt{216v}$

3) $\sqrt{512k^2}$

4) $\sqrt{512m^3}$

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5) $\sqrt{216k^4}$

6) $\sqrt{100v^3}$

7) $\sqrt{80p^3}$

8) $\sqrt{45p^2}$

9) $\sqrt{147m^3n^3}$

10) $\sqrt{200m^4n}$

Homework # 4

Simplify:

1. $\sqrt{18}$
2. $\sqrt{125}$
3. $\sqrt{72}$
4. $\sqrt{180}$
5. $\sqrt{a^3}$
6. $\sqrt{b^7}$
7. $\sqrt{m^{11}}$
8. $\sqrt{75x^7y^5}$
9. $\sqrt{27a^{11}b^7}$
10. $\sqrt{32a^7b^4}$
11. $\sqrt{9a^8}$
12. $\sqrt{45a^7}$
13. $\sqrt{36x^2y^6}$
14. $\sqrt{12x^{20}y^8}$
15. $-\sqrt{200}$
16. $\sqrt{196}$
17. $\sqrt{63x^4y}$
18. $\sqrt{6x^3}$
19. $\sqrt{100x^5y}$
20. $\sqrt{80x^{100}y^{49}}$

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Answers to HW #4

Please select the correct answer number for each question. There are more answers than questions. Answers may be repeated.

1) $3\sqrt{2}$

2) $6\sqrt{2}$

3) $-10\sqrt{2}$

4) $6\sqrt{5}$

5) 14

6) $b^3\sqrt{b}$

7)$4a^3b^2\sqrt{2a}$

8)$3a^4$

9) $m^5\sqrt{m}$

10) $3a^3\sqrt{5a}$

11) $5x^3y^2\sqrt{3xy}$

12) $x\sqrt{6x}$

13) $3a^5b^3\sqrt{3ab}$

14) $10x^2\sqrt{xy}$

15) $4x^{50}y^{24}\sqrt{5y}$

16) $3x^2\sqrt{7y}$

17) $a\sqrt{a}$

18) $6xy^3$

19) $5\sqrt{5}$

20) $2x^{10}y^4\sqrt{3}$