**Review Summary-Radicals**

* You need to know:
* how to change entire radicals to mixed radicals (simplified form)
* how to change mixed radicals to entire radicals
* adding/subtracting radicals
* multiplying/dividing radicals
* rationalizing denominators
* solving radical equations (roots, extraneous roots)
* determining restrictions on variables
* Practice:

1) Change each entire radical to a mixed radical. (Simplified form) Look for the \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_ for square roots and \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ for cube roots.

a)  b)  c)  d)  e)  f)  g)  h) 

2) Change each mixed radical back to an entire radical.

a)  b)  c)  d)  e)  f)  g)  h) 

3) Add/subtract the radicals. Express the final answer in simplest form.

a)  b)  c)  d) 

e)  f) 

Radicals must be \_\_\_\_\_\_\_\_\_\_\_\_ first before you can add/subtract them. Only \_\_\_\_\_\_\_\_\_ radicals can be added.

g) Determine the perimeter of the shape below and express the answer in simplest form. Note: the “m”

 stands for metres.







4) Multiply/Divide the radical expressions. **Express final answer in simplified form.**

Multiply/divide \_\_\_\_\_\_\_\_\_\_ and coefficients and \_\_\_\_\_\_\_\_\_ and radicands 

a)  b)  c)  d)  e) 

f)  g)  h)  i)  j) 

k) Determine the area of the rectangle (A = (l)(x)) in simplest form.





5) Rationalize each denominator.

This means there CANNOT be a \_\_\_\_\_\_\_\_\_\_\_\_\_ in the denominator in the final answer.

To remove the radical from the denominator \_\_\_\_\_\_\_\_\_\_ both numerator and denominator by the \_\_\_\_\_\_\_\_ you want to get rid of. Sometimes it helps to \_\_\_\_\_\_\_\_\_\_ the radical in the denominator first (see #c ).

a)  b)  c)  d) 

6) Determining restrictions on variables in **radical equations**.

Note: Expression  Equation

The value of the radicand (under the radical sign) CANNOT be equal to \_\_\_\_\_\_\_\_\_ than \_\_\_\_\_\_

a)  so x + 8 ≥ 0 isolate “x” b)  c) 

d) 

7) Solving Radical Equations

Radical equations can have \_\_\_\_ root(solution) or an \_\_\_\_\_\_\_\_\_\_\_\_ root (not a solution). You must \_\_\_\_\_\_\_\_\_\_\_\_\_\_ your answer back into the equation to see if the answer satisfies the equation

(\_\_\_\_\_\_ \_\_\_\_\_\_ = \_\_\_\_\_\_\_ \_\_\_\_\_\_\_)

The \_\_\_\_\_\_\_\_\_\_\_\_ on the variable must be stated. They can help you see if a root is extraneous.

Always isolate the radical first.

a)  Restrictions: Verify:

Roots:

b)  Restrictions: Verify:

Roots:

c)  Restrictions: Verify:

Roots:

d)  Restrictions: Verify:

Roots:

Key:

1) perfect squares, perfect cubes a)  b)  c)  d)  e)  f)  g)  h) 

2a)  b)  c)  d)  e)  f)  g)  h) 

3a)  b)  c)  d)  e)  f)  g) 

4) coefficient, radicands a)  b)  c)  d)  e)  f)  g)  h) 2 i) 14 j)  k) 

5) radical, multiply, radical, simplify a)  b)  c)  d) 

6) less than zero, a) x ≥ -8 b) x ≥ -5 c) x ≥ 12 d) x ≥  e) x ≥ 

7) one, extraneous, substitute, left side, right side a) restriction x ≥ -8 root: x = 28 b) restriction x ≥ 3 root: x = 45

 c) restriction x ≥ -5 root: x = 12 d) restriction x ≥ 9 extraneous root: x = 13