# Math 10 C - *Exponents & Radicals Unit Review*

1. Determine whether each of the following numbers is a perfect square, a perfect cube, both, or neither. Justify your choices mathematically.

(a) 729 (b) 625

2. Identify whether the following are mixed or entire radicals, then change it to the other form.

 (a)  (b)  (c) 

 (d)  (e)  (f) 

3. Determine the exact value without using a calculator.

(a)  b)  (c)  (d)  (e) 

4. Write each expression using radicals.

(a)  (b)  (c) (d)

5. Evaluate without using a calculator. Leave each answer as a rational number.

(a)  (b)  (c) 

(d)  (e)  (f) 

6. Use the laws of exponents to simplify the following. Express your final answer using

 positive exponents only.

(a)  (b)  (c) 

(d)  (e)  (f) 

 (g)  (h)  (i) 

(j)  (k)  (l) 

(m)  (n) 

7. Use the exponent laws to simplify each expression.

(a)  (b)  (c)  (d) 

8. Simplify each expression. State the answer using positive exponents.

(a)  (b)  (c) 

(d)  (e) 

9. Express each radical as a power and simplify.

(a)  (b)  (c)  (d) 

10. The growth of 1000 bacterium cells in a lab can be modelled using the expression  where *N* is the number of bacteria after *h* hours.

(a) What does the value 4 in the expression tell you?

(b) How many bacteria are there after 40 h?

(c) How many bacteria are there after 20 h?

(d) How many bacteria were there 80 hours ago?

(e) What situation does *h =* 0 indicate?

11. Identify the following numbers as either rational or irrational.

(a)  (b)  (c)  (d) 

12. Name the sets of numbers to which each number belongs.

 (a)  (b)  (c)  (d)  (e)  (f) -3

13. Order each set of numbers from least to greatest. Describe the method you used.

(a)  (b) 

### M10C Exp & Rad Review Answer Key

1. **(a) Both (b) Perfect Square**
2. **(a) Entire;  (b) Mixed;  (c) Entire;  (d) Entire; **

**(e) Mixed;  (f) Mixed; **

1. **(a)  (b)  (c) 343 (d)  (e) **
2. **(a)  (b)  (c)  (d) **
3. **(a) 243 (b)  (c) 32 (d) 49 (e)  (f) **
4. **(a)  (b)  (c)  (d)  (e) (f) 1**

**(g)  (h)  (i)  (j)  (k) 1 (l)**

**(m)  (n) **

1. **(a)  (b)  (c)  (d) **
2. **(a)  (b)  (c)  (d)  (e) **
3. **(a)  (b)  (c)  (d) **
4. **(a) Bacteria quadruples every 40 hours (b) 4000 (c) 2000 (d) 62.5**

**(e) beginning of experiment**

1. **(a) Rational (b) Irrational (c) Rational (d) Irrational**
2. **(a) Natural, Whole, Integer, Rational, Real (b) Rational, Real (c) Irrational, Real**

**(d) Rational, Real (e) Rational, Real (f) Integer, Rational, Real**

1. **(a)  Estimating (b) Entire Radicals**