Name:_____ Date:_____

Math 9 Honours Chapter 1 Review:

Topics:

Rational & Irrational Numbers	Prime Factorizations
Square Roots and Mixed Radicals	Conversion with Decimals and Fractions
Factoring Trinomials	Divisibility Rules
BEDMAS with Irrational numbers	Surface Areas & Volume with 3D Solids

Note: For the chapter test, please review all the assignments given through out the chapter. Calculators are not allowed

1. What are the properties of a rational number.

2. Provide 3 or more examples of an Irrational number

3. How do you determine that a value is a perfect square/cube from it's prime factorization

4. When given the prime factorization with a missing term, what is the value of the term required to create a perfect square/cube

   a) Given that "N" is an integer, what is the lowest value of "k" if "k" is an positive integer?

   $N = \sqrt{32k}$ $N = \sqrt{3^3 6^3 7^1 (k+1)}$ $N = \sqrt[3]{5^2 7^3 (k-1)}$

   b) Challenge: Given that "N" is a perfect square, what is the lowest integer value of "k" if $k \geq 1$. (Note: "N" needs to be a perfect square, not an integer)

   $N = \sqrt{32k}$ $N = \sqrt{3^3 6^3 7^1 (k+1)}$

   c) what is the lowest integer value of "k" if $k \geq 1$, such that "N" is a perfect cube

   $N = (30k+5)(15k+4)$

   d)

   The product of N consecutive four-digit positive integers is divisible by 2010^2. What is the least possible value of N?

   (A) 5 **(B)** 12 **(C)** 10 **(D)** 6 **(E)** 7

   If $x^2yz^3 = 7^4$ and $xy^2 = 7^5$, then xyz equals

   (A) 7 **(B)** 7^2 **(C)** 7^3 **(D)** 7^8 **(E)** 7^9

5. Solve problems involving divisibility rules:

   a) Given that $N = 2389b$ and is divisible by 12. What is the lowest value for "b"

6. Simplifying mixed radicals and solving problems involving mixed radicals:

a) $\sqrt{20}-\sqrt{125}+\sqrt{45}$ $\sqrt{48}+\sqrt{27}-\sqrt{75}$

b) Convert the following radicals to a single radical

$\sqrt{x^3}\left(\sqrt[3]{x}\right)$ $\sqrt{x}\left(\sqrt{x^4}\left(\sqrt[4]{x}\right)^2\right)$ $\sqrt{x}\left(\sqrt[3]{x}\right)\sqrt{x}\left(\sqrt[3]{x}\right)$

c) If $x+\sqrt{25}=\sqrt{36}$, then x equals

d)

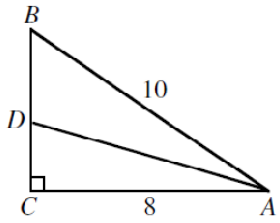
The value of $\sqrt{3^3+3^3+3^3}$ is

(A) 3 **(B)** 9 **(C)** 27 **(D)** 81 **(E)** 243

e)

Triangle ABC is right-angled with $AB=10$ and $AC=8$. If $BC=3DC$, then AD equals

(A) 9 **(B)** $\sqrt{65}$ **(C)** $\sqrt{80}$
(D) $\sqrt{73}$ **(E)** $\sqrt{68}$



7. Converting fractions to decimals (Vice versa) and simplifying expressions using BEDMAS

a) Simplify:

$$\frac{0.3\times 0.\overline{23}-0.\overline{3}}{0.\overline{857142}}$$

The value of $2\frac{1}{10}+3\frac{11}{100}+4\frac{111}{1000}$ is

(A) 9.321 **(B)** 9.111 **(C)** 9.123 **(D)** 9.111111 **(E)** 9.11081081

The value of $2\frac{1}{10}+3\frac{11}{100}$ is

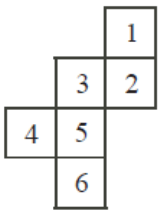
(A) 5.11 **(B)** 5.111 **(C)** 5.12 **(D)** 5.21 **(E)** 5.3

8. Solving problems involving Surface areas and volumes with 3D Solids

a)

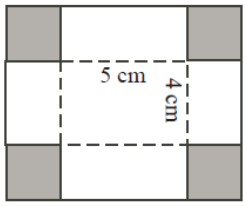
The numbered net shown is folded to form a cube. What is the product of the numbers on the four faces sharing an edge with the face numbered 1?

(A) 120 **(B)** 144 **(C)** 180
(D) 240 **(E)** 360



b)

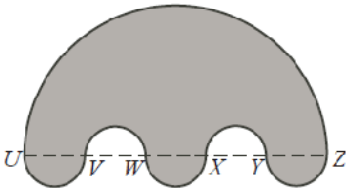
Four identical squares are cut from the corners of the rectangular sheet of cardboard shown. This sheet is then folded along the dotted lines and taped to make a box with an open top. The base of the box measures 5 cm by 4 cm. The volume of the box is 60 cm^3. What was the area of the original sheet of cardboard?



(A) 56 cm^2 **(B)** 110 cm^2 **(C)** 156 cm^2
(D) 180 cm^2 **(E)** 210 cm^2

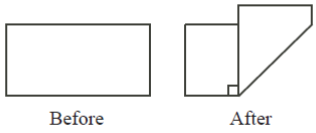
c)

In the diagram, points U, V, W, X, Y, and Z lie on a straight line with $UV = VW = WX = XY = YZ = 5$. Semicircles with diameters UZ, UV, VW, WX, XY, and YZ create the shape shown. What is the area of the shaded region?



(A) $\frac{325\pi}{4}$ **(B)** $\frac{375\pi}{4}$ **(C)** $\frac{325\pi}{2}$
(D) $\frac{625\pi}{4}$ **(E)** $\frac{625\pi}{2}$

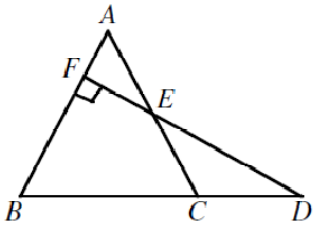
A rectangular piece of paper measures 17 cm by 8 cm. It is folded so that a right angle is formed between the two segments of the original bottom edge, as shown. What is the area of the new figure?



(A) 104 cm^2 **(B)** 81 cm^2 **(C)** 72 cm^2 **(D)** 168 cm^2 **(E)** 64 cm^2

d) Challenge:

In the diagram, ΔABC is equilateral, $BC = 2CD$, $AF = 6$, and DEF is perpendicular to AB. What is the area of quadrilateral $FBCE$?



(A) $144\sqrt{3}$ **(B)** $138\sqrt{3}$ **(C)** $126\sqrt{3}$
(D) $108\sqrt{3}$ **(E)** $66\sqrt{3}$