

Name: _____

Date: _____

Math 9 Honours Chapter 1 Review:

Topics:

Rational & Irrational Numbers
Square Roots and Mixed Radicals
Factoring Trinomials
BEDMAS with Irrational numbers

Prime Factorizations
Conversion with Decimals and Fractions
Divisibility Rules
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 $x^2 y z^3 = 7^4$ 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

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

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

d)

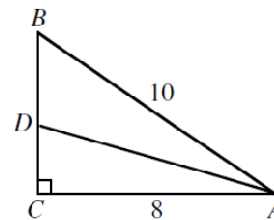
The value of $\sqrt{3^3 + 3^3 + 3^3}$ is

- (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:

$$\frac{0.3 \times 0.\overline{23} - 0.\overline{3}}{0.857142}$$

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

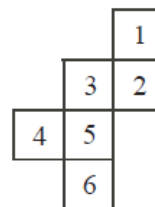
- (A) 5.11 (B) 5.111 (C) 5.12 (D) 5.21 (E) 5.3

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

a)

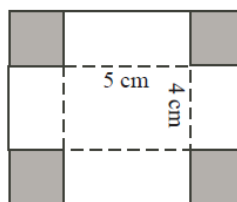
The numbered net shown is folded to form a cube. What is the product of the numbers on the four faces sharing an edge with the face numbered 1?

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



b)

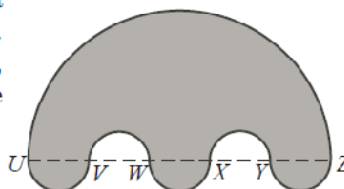
Four identical squares are cut from the corners of the rectangular sheet of cardboard shown. This sheet is then folded along the dotted lines and taped to make a box with an open top. The base of the box measures 5 cm by 4 cm. The volume of the box is 60 cm^3 . What was the area of the original sheet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



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

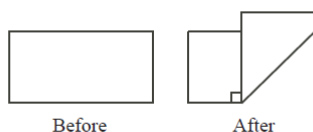
c)

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, $\triangle ABC$ 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) $66\sqrt{3}$

