Conquesta 2019

(International Multiple Choice Primary School Olympiads – Est. 1998)
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Mathematics 1 – Grade 9

Welcome to your Conquesta Olympiad. When you have decided which of the answers is correct, scratch out the letter in the matching square on your answer sheet. Example:- If the answer to question 4 is c, then scratch out the letter c in the square containing c next to the number 4 *(see example 1 below)*. If you've made a mistake and b should have been the answer, neatly cross out the mistake and then scratch out b *(see example 2 below)*.

Example 1:-

4.	a	b	c	d

Example 2:-

4.	a	b	c	d

*Useful tip:– When you have number sentences using different operations, apply the rule of **BODMAS**, which is the order of operations:– Firstly, calculate whatever is in **B**rackets, then **O**ther (of, square roots, power of, etc), then **D**ivision and **M**ultiplication (from left to right as they rank equally), and lastly, **A**ddition and **S**ubtraction (also from left to right).*

***Squared numbers** are numbers multiplied by themselves, e.g., 4 x 4 = 16. This can also be written as 4 to the power of 2, e.g., $4^2 = 16$. So, 4 squared is 16; and the square root of 16 = 4. The little 2 is called an exponent. The **square root** symbol is $\sqrt{\ }$.*

***Cubed numbers** are numbers multiplied three times, e.g., 4 x 4 x 4 = 64. This can also be written as 4 to the power of 3, e.g., $4^3 = 64$. So, 4 cubed is 64; and the cubed root of 64 = 4.*

*The **cubed root** symbol is $\sqrt[3]{\ }$.*

When we square a negative number, we get a positive result, e.g., $(-5)^2$ is worked out like this: (-5) x (-5) = 25. This is the same result as 5^2: 5 x 5 = 25.

*The **exponent** of a number says how many times to use the number in a multiplication. If the exponent is 1, then the number remains the same, e.g., $9^1 = 9$. If the exponent is 0, then you get 1, e.g., $9^0 = 1$*

*A **negative exponent** means how many times to divide **one** by a number, e.g., $8^{-1} = \mathbf{1} \div 8 = 0{,}125$. You can have many divides: e.g., $5^{-3} = \mathbf{1} \div 5 \div 5 \div 5 = 0{,}008$.*

It is easier to start with '1' and then multiply or divide as many times as the exponent says, then you will get the right answer, for example:

Example : Powers of 5			
	.. etc..		↑ 5x Larger
5^2	1 x 5 x 5	25	
5^1	1 x 5	5	
5^0	1	1	
5^{-1}	1 ÷ 5	0,2 or $^1/_5$	5x Smaller ↓
5^{-2}	1 ÷ 5 ÷ 5	0,04	
	.. etc..		

***Recurring Decimals** – the part that repeats can also be shown by placing dots over the first and last digits of the repeating pattern, or by a line over the pattern. E.g.,* 0.57575757... = $0.5\overline{75}$ = $0.\dot{5}\dot{7}$

1. The lowest common multiple of 54 and 72 is ……

(a) 18 (b) 216 (c) 6 (d) 108

2. What is the value of x that will make $\sqrt{4+3x}$ a prime number?

(a) 1 (b) 4 (c) 3 (d) 7

(A prime number is a whole number that is divisible by one and itself.)

3. The distance Sam travels during the holidays is 1,12 x 10^3 km. This is equivalent to ……

(a) 112 000 km (b) 0,112 km

(c) 1 120 km (d) 11 200 km

4. A clock gains 2 seconds each hour. If it is put right at 9:00 on a Monday, what time will it show at 9:00 on Saturday that week?

(a) 11:00 (b) 9:08 (c) 9:04 (d) 11:40

5. How many numbers from 11 to 68 have the ***sum* of their digits as a squared number?**

(a) 14 (b) 15 (c) 11 (d) 10

6. Calculate:-

$$\sqrt[3]{27x^3y^{18}} = \ldots\ldots$$

(a) $3y^{15}$ (b) $9xy^9$ (c) $9xy^6$ (d) $3xy^6$

7. Which of these is a rational number?

(a) $\sqrt{-4}$ (b) 0,141 141 114 …

(c) $\sqrt[3]{-8}$ (d) π

A rational number is simply any number of arithmetic: Any whole number, fraction, mixed number, or decimal; together with its negative image. A rational number can be made by dividing two integers. Integers are numbers (including negative numbers) with no fractional part.

8. A farmer buys 250 sheep. 12% of them have ***not* been vaccinated. How many sheep have been vaccinated?**

(a) 238 (b) 30 (c) 12 (d) 220

9. Simplify:-

$$2\frac{2}{5} \div 5\frac{2}{5} \times 4\frac{2}{4}$$

(a) $\frac{8}{81}$ (b) 2 (c) $40\frac{1}{5}$ (d) $40\frac{1}{2}$

When dividing with fractions, turn the second fraction upside down (it becomes a reciprocal, so you change the ÷ to x). To multiply fractions, multiply the tops (numerators), then multiply the bottoms (denominators). Then, simplify the fraction.