



Mathematics 2 – Grade 6

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
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Example 2:-

4.	a	b	c	d
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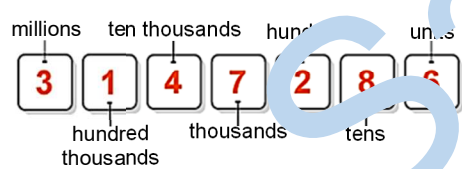
Useful tip:- When you have number sentences using different operations, apply the rule of **BODMAS**, which is the order of operations:- Firstly, calculate whatever is in **Brackets**, then **Other** (of, square roots, power of, etc.), then **Division** and **Multiplication** (from left to right as they rank equally), and lastly, **Addition** and **Subtraction** (also from left to right).

Did you know?

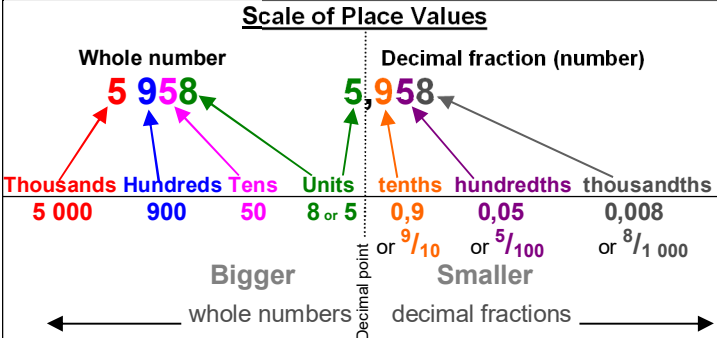
- Factors and multiples** are DIFFERENT things. But they both involve multiplication.
- Factors** are the numbers we can multiply together to get another number. A **factor of a whole number** is a number that divides exactly into that whole number, e.g., the factors of 12 are 1, 12, 2, 6, 3, 4 because they all divide exactly into 12.
- A **multiple** is the **result** (product) of multiplying a number by an integer (not a fraction). $6 \times 2 = 12$; $3 \times 4 = 12$ and $1 \times 12 = 12$, so 12 is a multiple of 6, 2, 3, 4, 1 and 12.
- A **Prime number** has only 2 factors (1 and itself) and can only be divided by 1 and itself. E.g., 7 is a prime number because it only has 2 factors; 1 and 7. 1 is not a prime number as it only has 1 factor. 0 is not as it is not divisible by itself.
- Prime factorization** is finding which prime numbers multiply together to make the original number, e.g., $1 \times 2 \times 3 = 6$.
- A **Composite number** can be made by multiplying other whole numbers above 1 together.
- Rounding off** means making a number simpler, but keeping its value close to what it was. You can round down or round up. **Rounding to the nearest 10:-** The numbers 81, 82, 83 and 84 will all **round down** to 80. The numbers 85, 86, 87, 88 and 89 will all **round up** to 90.
- $10 \text{ mm} = 1 \text{ cm}$; $100 \text{ cm} = 1 \text{ m}$; $1\,000 \text{ m} = 1 \text{ km}$.
- $60 \text{ seconds} = 1 \text{ minute}$; $60 \text{ minutes} = 1 \text{ hour}$.

Number values

- By splitting each number into clusters of 3, you are able to read the number easily. For example, **65432** can be easily read when written this way: **65 432**.
- Remember that each **digit** in a **number** is important and has its own **value (worth)**. See example below.



In the above number, the digit 1 is bigger than the digit 8. This is because the **digit 1** is actually **worth 100 000** and the **digit 8** is worth just **80**. You need to learn the place value of numbers so that you can put the digits in their correct places. Look at the chart below, which includes decimal fractions. When adding or subtracting with decimal numbers, **always have the decimal points above one another**.



1. Calculate:
 $7\,481 + 989 = \dots? \dots$
(a) 6 492 (b) 8 369 (c) 8 470 (d) 8 468

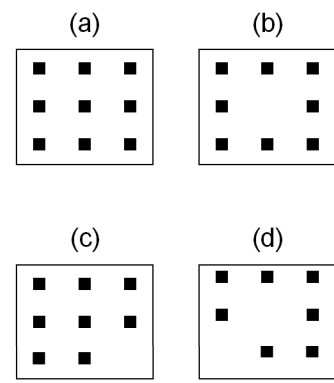
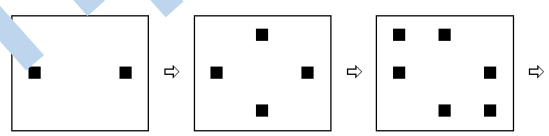
2. Complete the next four images in the pattern.
◆□◆◆□□◆◆◆□◆◆◆◆□□◆◆◆
(a) ◆◆◆□ (b) ◆◆□□
(c) ◆◆□◆ (d) ◆□□◆

3. Work out the number that the equation represents.
 $(3 \times 10) + (9 \times 100\,000) + (4 \times 1\,000) + (9 \times 10\,000\,000) + (2 \times 1)$
(a) 900 904 032 (b) 90 904 032
(c) 90 940 032 (d) 900 432

4. Which temperature is the warmest?
(a) -7°C (b) -8°C
(c) -9°C (d) -10°C



5. Which block comes next in the pattern?



6. Find the missing number in the pattern.
123; 321; 456; 654; ; 987
(a) 798 (b) 852 (c) 198 (d) 789

7. Find the 11th number in the sequence.

12; 19; 26; 33;

- (a) 68
- (b) 75
- (c) 82
- (d) 89



Useful Basic Algebra Rules

Usually, your goal in an algebra problem is to figure out what the **variable** is, think of it as a 'mystery number' that you're trying to discover. (A variable is a letter representing a value.) If a variable appears more than once, **simplify** the variables. E.g., $2y + 1y = 9$. In this case, we can add $2y$ and $1y$ together to get $3y = 9$. Since $3 \times 3 = 9$, we know that $y = 3$. You can **only add the same variables** together. In the equation $2n + 1y = 9$, we can't combine $2n$ and $1y$ because they are two different variables.

8. Which number in the place of the X will make this number sentence true?

$$\text{X} \times \text{X} \times \text{X} = 64$$

- (a) 8
- (b) 4
- (c) 6
- (d) 3

14. Round each number off to the nearest 100 first, then calculate the sum of the results.

5 861 and 749

- (a) 7 000
- (b) 6 610
- (c) 6 500
- (d) 6 600

9. Solve for x :

$$x + 6 = 15$$

- (a) 9
- (b) 11
- (c) 24
- (d) 2

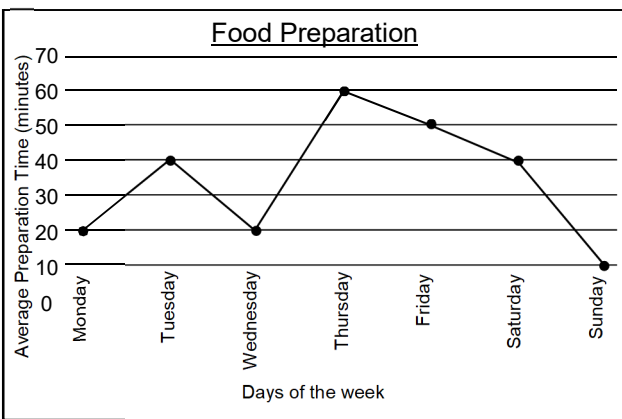
15. Express the following number as a product of its prime factors.

$$324 = \dots? \dots$$

- (a) $2 \times 2 \times 9$
- (b) $2 \times 2 \times 3 \times 3 \times 3 \times 3$
- (c) $4 \times 9 \times 9$
- (d) $2 \times 3 \times 2 \times 3 \times 2 \times 3$



Study the graph below and answer the question.



10. The average food preparation time on Friday is

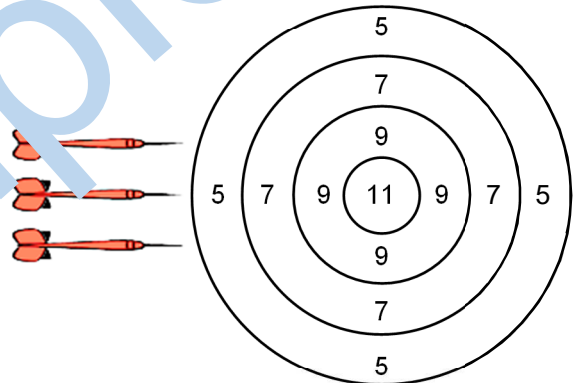
- (a) 40 minutes.
- (b) 50 minutes.
- (c) 10 minutes.
- (d) 30 minutes.

16. Calculate:

$$60 \div 6 + 4 \times 3 = \dots? \dots$$

- (a) 42
- (b) 12
- (c) 18
- (d) 2

On a dart board, you can score 5, 7, 9 or 11 with each dart. A boy hits the board with three darts.



11. When rounding off to the nearest thousand, which number below does **not** round off to 99 000?

- (a) 99 374
- (b) 98 567
- (c) 98 833
- (d) 99 500

12. Add the largest two-digit number to 2 965.

- (a) 3 085
- (b) 3 084
- (c) 2 974
- (d) 2 074

Nelson Mandela arrived on Robben Island and was given the number 46664. He was given this number as he was the 466th prisoner to arrive in the year 1964.



46664

13. Which selection below will divide into the number 46664 without leaving a remainder?

- (a) 2, 4 and 8
- (b) 2, 3 and 4
- (c) 2, 4, 6 and 8
- (d) Only 2 and 4

17. Which of the following total scores is **impossible** to obtain?

- (a) 29
- (b) 33
- (c) 25
- (d) 22

Joe thought of a two-digit number. The product of the digits of the number is equal to double the sum of the digits of the number.

Hint: $A \times B = (A + B) \times 2$

18. Which of the following could be the numbers Joe thought of?

- (a) 2 and 1
- (b) 2 and 4
- (c) 3 and 6
- (d) 4 and 3

19. Calculate the value of x :

$$5 \times (8 + 7) = (x \times 8) + (x \times 7)$$

- (a) 7
- (b) 5
- (c) 8
- (d) 40