



Mathematics 1 – 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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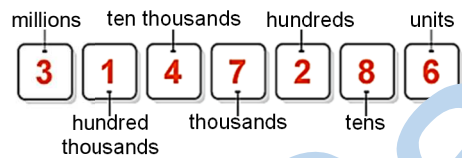
Useful tip:- When you have number sentences using different operations, apply the rule of **BODMAS**, which is the order of operations:- Firstly, calculate whatever is in **Brackets**, then **Other** (of, square roots, power of, etc.), then **Division** and **Multiplication** (from left to right as they rank equally), and lastly, **Addition** and **Subtraction** (also from left to right).

Did you know?

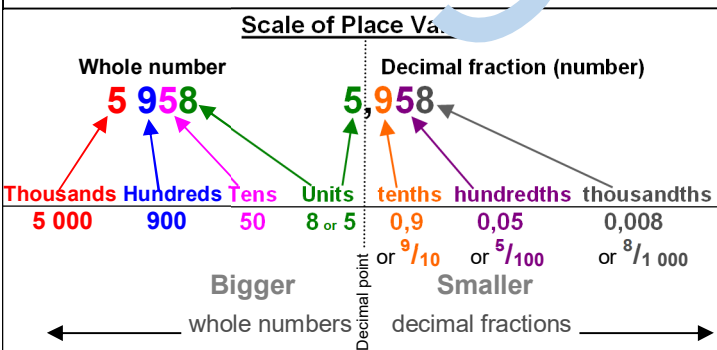
- **Factors and multiples** are DIFFERENT things. But they both involve multiplication.
- **Factors** are the numbers we can multiply together to get another number. A **factor of a whole number** is a number that divides exactly into that whole number, e.g., the factors of 12 are 1, 12, 2, 6, 3, 4 because 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** has more than 2 factors.
- **Rounding** 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:
 $3\,481 + 2\,989 = \dots? \dots$
(a) 492 (b) 5 360 (c) 6 470 (d) 6 460

2. What is the answer if you subtract 1 897 from 9 507?
(a) 7 610 (b) 8 390
(c) 11 404 (d) 8 310

3. Find the missing number in the pattern.
1; 4; 9; 16; 25; 36;
(a) 48 (b) 61 (c) 51 (d) 49

4. What is the value of the last bubble in the sequence?

(a) 4,160 (b) 4,740 (c) 4,755 (d) 4,740

5. If \square is put in the brackets to make the number sentence true.
 $32 - 8 \div \square = 4$
(a) $32 - (8 \div \square) = 4$
(b) $32 - \square \div \square = 4$
(c) $(32 - 8 \div \square) = 4$
(d) $32 - 8 \div \square = (4)$

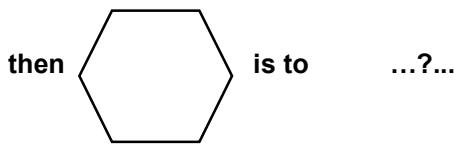
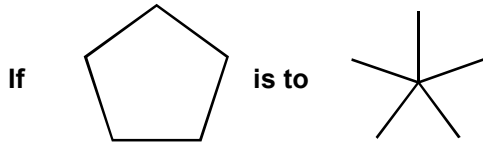
In Maths, '!' means factorial, which means to multiply all whole numbers from a chosen number, downwards. Look at the examples of 4!, 5! and 7! below.

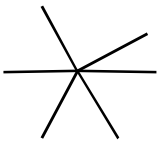
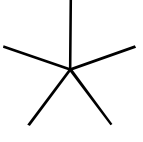
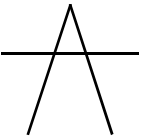
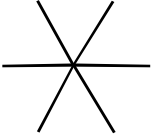
$4! = 4 \times 3 \times 2 \times 1 = 24$
 $5! = 5 \times 4 \times 3 \times 2 \times 1 = 120$
 $7! = 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 5\,040$
Etc.

We usually say 4! as "4 factorial", but some people say "4 shriek" or "4 bang".

6. Using the above method, work out: $\frac{6!}{4!} = \dots? \dots$
(Hint: Simplify your answer.)
(a) 65 (b) $\frac{1}{30}$ (c) 30 (d) 0,3

7.



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

Study the pattern below.



12. What will the 17th shape in this pattern be?

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

The numbers in the pattern 2; 7; 12; 17; 22 increase by five.

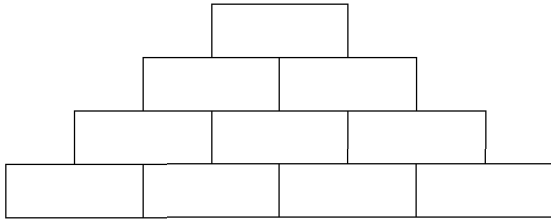
The numbers in the pattern 3; 10; 17; 24; 31 increase by seven.

The number 17 occurs in both patterns.

13. If the two patterns are continued, what is the next number that will be seen in both patterns?

- (a) 37 (b) 25 (c) 75 (d) 52

Xiluva builds a pyramid with blocks as shown below. To build this pyramid 4 blocks high, she needs 10 blocks.



8. How many blocks would form the bottom row, if the pyramid is 20 blocks high?

- (a) 22 (b) 19 (c) 20 (d) 21

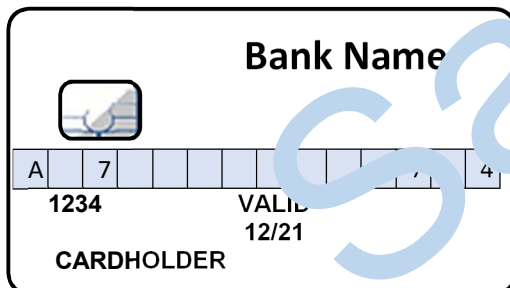
9. If $7 \nabla 3 = (9 \times 3) - (3 \times 2)$, then calculate:

$$(3 \nabla 1) \nabla 2$$

- (a) 0 (b) 6 (c) 4 (d) 3

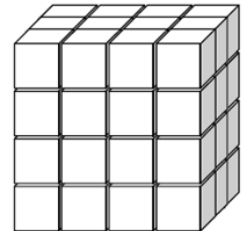
10. The 14 digits of a credit card number are written in the boxes below. If the sum of any three consecutive blocks is always 20, what is the value of A?

(Hint: Fill all blocks, starting on the right.)



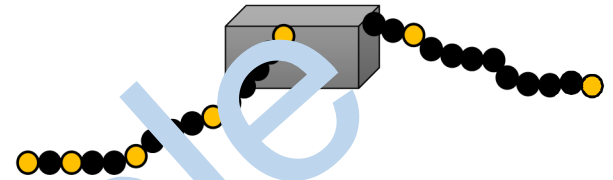
- (a) 7 (b) 4 (c) 9 (d) 8

14. If the whole structure was painted blue (on the outside), how many blocks would have 3 sides that are painted blue?



- (a) 12 (b) 8
(c) 20 (d) 14

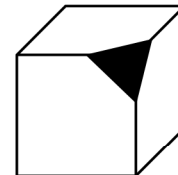
This string of beads was made according to a certain pattern. (Hint: Part of a section is inside.)







15. How many beads are hidden inside the box?

- (a) 16 (b) 17 (c) 18 (d) 19

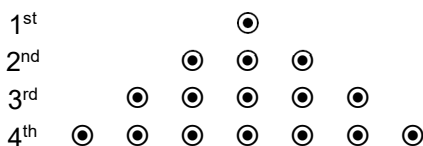
The figure shows a wooden cube with one corner cut off and shaded.



16. Which of the following drawings shows how this cube would look when viewed from directly above?

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

11. How many \odot would there be in the 10th row?



- (a) 17 (b) 19 (c) 23 (d) 20

17. Which one of these is not true?

- (a) $(1 + 1) \div (1 + 1) = 1$
(b) $2 \div 2 + 2 \div 2 = 2$
(c) $3 \times 3 - 3 + 3 = 3$
(d) $(4 - 4) \times 4 + 4 = 4$

