



## Mathematics 1 – Grade 7

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	<del>c</del>	d
----	---	---	--------------	---

Example 2:- 

4.	a	<del>b</del>	<del>c</del>	d
----	---	--------------	--------------	---

### 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** is a number that divides exactly into another 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 of multiplying a number by an integer (not a fraction).  $6 \times 2 = 12$ , so 12 is a multiple of 6 and a multiple of 2.
- 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.
- The sum of the angles in a **triangle** is  $180^\circ$ . **Acute angles** are less than  $90^\circ$ , a **right angle** is equal to  $90^\circ$  and **obtuse angles** are greater than  $90^\circ$  but less than  $180^\circ$ .
- Regular polygons** have equal angles & sides of equal length. To calculate the sum of the interior angles of a regular polygon, subtract 2 from the number of sides and multiply by  $180^\circ$ . This will give you the total value of the interior angles. To get the individual value of each interior angle, divide the total value by the number of sides in the shape.
- Minuend** is a number from which another is to be subtracted. **Subtrahend** is a number to be subtracted from another. **Difference** is a quantity by which amounts differ; the remaining amount left after subtraction of one value from another.
- Dividend** is a number to be divided by another number. **Divisor** is a number that divides into another. **Quotient** is obtained by dividing one quantity by another.
- Addend** is a mathematical term that refers to the numbers being added together in an addition problem. (1<sup>st</sup> or 2<sup>nd</sup>) **Sum** is the total amount resulting from the addition of two or more numbers, amounts, or items.
- Product** is a quantity obtained by multiplying quantities together. **Multipplier** is a quantity by which a given number (the **multiplicand**) is to be multiplied. **Multiplicand** is a quantity which is to be multiplied by another (the multiplier).

Each number below has a specific name relative to its position in its number sentence.

(Hint: 150 below is called : product.)

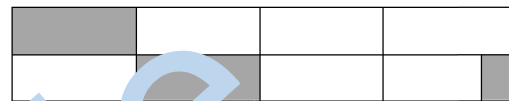
$$20 + 55 = 75 \qquad 120 - 30 = 90$$

$$15 \times 10 = 150 \qquad 120 \div 2 = 60$$

1. Using each number's specific name and value, which of the following number sentences is **false**?

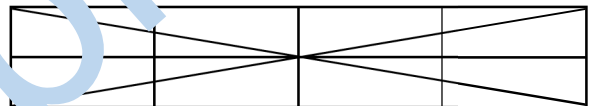
- (a) sum  $\times$  divisor = product  
(b) divisor - product = subtrahend  
(c) product - difference = quotient  
(d) multiplier  $\times$  divisor = 1st addend

2. What fraction is shaded?



- (a)  $\frac{3}{8}$  (b)  $\frac{9}{32}$  (c)  $\frac{11}{20}$  (d)  $\frac{5}{16}$

3. How many triangles in the shape below?



- (a) 4 (b) 8 (c) 24 (d) 10

4. Which number must replace the star?

$$50\,000 \div \star = 200$$

- (a) 400 (b) 40 (c) 2 500 (d) 250

A security guard works an  $8\frac{1}{2}$  hour shift, starting at 21:00. He makes a call to the Control Office every 20 minutes.

5. What time is his last call?

- (a) 5:40 am (b) 5:20 am (c) 5:10 am (d) 5:30 am

6. Jonathan writes down all the prime numbers between 0 and 50. How many numbers does he write down?

- (a) 18 (b) 17 (c) 16 (d) 15

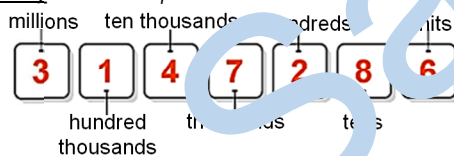
### Did you know?

- 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 mm = 1 cm; 100 cm = 1 m; 1 000 m = 1 km.
- 60 seconds = 1 minute; 60 minutes = 1 hour.



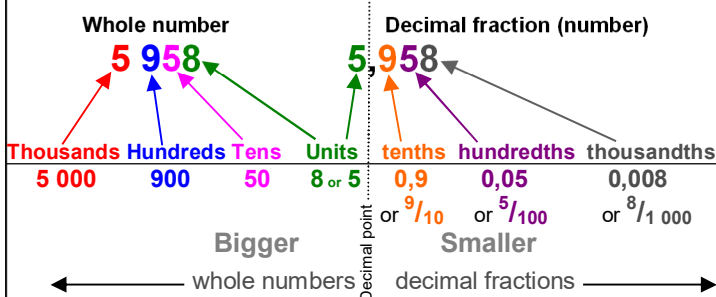
### Number values

- 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** 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.

### Scale of Place Values



**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).

7. Which of the number sentences (a) – (d) is a quick solution for the equation below?

$$0,25 \times 13 + 0,75 \times 13$$

- (a)  $2 \times 13 + (0,25 + 0,75)$
- (b)  $(0,25 + 0,75) \times (13 + 13)$
- (c)  $2 \times (0,25 + 0,75) \times 13$
- (d)  $(0,25 + 0,75) \times 13$



8. On a die (singular for dice), the numbers 1 to 6 are replaced with the letters A to F respectively. What letter will be opposite the letter C?

- (Hint: Opposite numbers on dice add up to 7.)
- (a) A
  - (b) E
  - (c) B
  - (d) D

9. Insert the numbers 4; 5; 6; 7; 8; 9 into the magic square so that the vertical, horizontal and diagonal totals all add up to the same number (15). What number would replace the x?

2		
	x	1
	3	

- (a) 9
- (b) 5
- (c) 8
- (d) 4

10. Apply the BODMAS rule for the order of operations, and calculate the following:

$$8 + 36 \div 4 \times 2 - 6 \times 0 = \dots? \dots$$

- (a) 0
- (b) 2
- (c) 26
- (d) 22

Cross off the following numbers on the grid below

0	1	2
3	4	5

- First whole number
- Third prime number
- First composite number
- First square number
- Second natural number

11. What number remains?

- (a) 2
- (b) 3
- (c) 4
- (d) 5

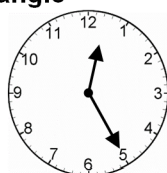
12. If you wrote down the numbers 1 to 100, how many times would you write down the number 2?

- (a) 20
- (b) 9
- (c) 19
- (d) 10

13. What is the approximate size of the angle formed by the hands on this clock?

(Hint: There are 360° in a circle.)

- (a) 100°
- (b) 120°
- (c) 90°
- (d) 140°



The date is the 10th of February and Alan says, "Only 345 600 seconds until my birthday!"

14. What day is Alan's birthday?

- (a) 14 February
- (b) 16 February
- (c) 15 February
- (d) 13 February

Each of the boxes contains a fraction of a kilogram of tea.

1	2	3	4	5	6
Tea	Tea	Tea	Tea	Tea	Tea
$\frac{1}{2}kg$	$\frac{1}{5}kg$	$\frac{1}{3}kg$	$\frac{1}{4}kg$	$\frac{4}{5}kg$	$\frac{1}{6}kg$

15. Which two boxes will give you  $\frac{7}{12} kg$ ?

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

Part of a calendar is shown below. a, b, c and d are unknown dates.

Mon	Tues	Wed	Thurs	Fri	Sat	Sun
	a		b			
	c		d			

16. Which statement is true for any calendar?

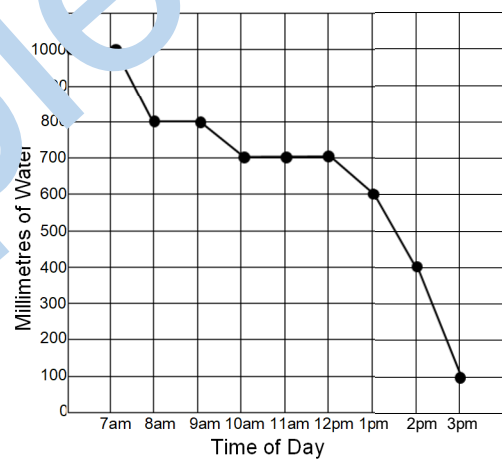
- (a)  $a + b = c + d$
- (b)  $c - b = a - d$
- (c)  $a \times d = c \times b$
- (d)  $d - c = b - a$

A family consists of the parents, two daughters and a son. The sum of their ages is 121 years. The father is 45 years of age, the mother is 40, while the three children were all born on the same date in consecutive years.

17. If the son is the youngest, what is his age?

- (a) 12
- (b) 13
- (c) 10
- (d) 11

The graph below shows the amount of water in Rover's bowl over a period of 8 hours.



18. How many times did Rover drink from the bowl?

- (a) 9
- (b) 5
- (c) 3
- (d) 8

19. What is the missing value?

$$\dots \% \text{ of } 320 + 10\% \text{ of } 540 = 214$$

- (a) 20%
- (b) 30%
- (c) 40%
- (d) 50%

20. Half of a number minus 4 equals 2. What is the number?

- (a) 8
- (b) 6
- (c) 12
- (d) 14

The **mean** of a list of numbers is the average (the total value of all the numbers divided by how many numbers there are). The **median** is the middle number in a list of numbers which have been sorted into order from smallest to biggest. The **mode** is the most popular number or thing. The **range** is the difference between highest and lowest value in a range of numbers.