# Revision Term 1

**1.** **a)** Fill in the missing factors of 63: $F_{63}$ = {1; ; ; ; ; 63}

Now use ONLY numbers from $F_{63}$ to list:

**b)** all the prime factors of 63

**c)** perfect squares

**d)** multiples of 7 smaller than 30

**e)** identity element for multiplication

**2.** **a)** Write 63 as a product of its prime factors.

**b)** Write 18 as a product of its prime factors.

**c)** The highest common factor (HCF) of 63 and 18 =

The lowest common multiple (LCM) of 63 and 18 =

Do your calculations here:

**3.** Simplify each side first and then fill in > or <.

**a)** 32 – (+16) 21 + (–16)

**b)** –18 + (–13) –35 – (+8)

**c)** (–9) × (+11) (+12) × (+8)

**d)** (–36)(–10) (25)(–30)

**4.** Calculate. (Show all the steps.)

**a)** $\sqrt{81} \times \sqrt{49} + \sqrt[3]{-64}$

**b)** $\sqrt{1^3 + (-4)^2 + 2^3 + \sqrt{121}}$

**c)** $\sqrt[3]{27p^9q^6} + \sqrt{16p^6q^4}$

**5.** Show that:

**a)** $\sqrt{144} + \sqrt{25} \neq \sqrt{144 + 25}$

Left–hand side =

Right–hand side =

$\therefore$

**b)** $2^5 \times 2^3 \neq 4^8$

Left–hand side =

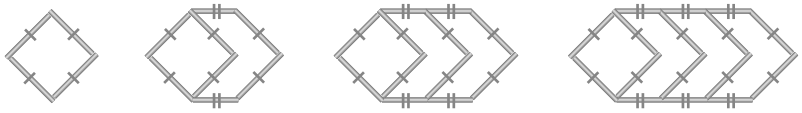
Right–hand side =

$\therefore$

**6.** **a)** Write the following number in ordinary notation: $4{,}38 \times 10^5$

**b)** Round off the above answer to the nearest ten thousand.

**7.** Kimberlin used two different lengths of drinking straws for a pattern that begins with a rhombus:



1 2 3 4

Complete the table.

| Pattern number | 1 | 2 | 3 | 4 | | | $n$ |
|---|---|---|---|---|---|---|---|
| Number of longer straws | 4 | | 8 | | 22 | | |
| Number of shorter straws | 0 | 2 | | | | 68 | |

**8.** **a)** Find the values of $p$ and $q$ if $p$ and $q$ are output values of the function.

$\{-5; 7\} \rightarrow \boxed{2a - 3} \rightarrow \{p; q\}$

**b)** Find the values of $r$ and $s$ if $r$ and $s$ are input values of the function.

$\{r; s\} \rightarrow \boxed{-3x + 5} \rightarrow \{17; 5\}$

**9.** Given $17 - 8(z + 9) + 9z^2 \div 4y - (-15z^3)$

True or false? If false, give the correct answers.

**a)** There are five terms in the expression.

**b)** The exponent of $z$ in the third term is 9.

**c)** The coefficient of $z$ in the last term is –15.

**d)** The expression has two variables.

**e)** The first term is a constant term.

**10.** Simplify the following algebraic expressions.

**a)** $10bac - 4 \times a \times b \times c + (c)(b)(a)$

**b)** $6m - 3m \div 3 + 4m \div (3m + m)$

**c)** $6x^3y - 4xy^2 + 2x^2y + 9xy^2 - 8x^3y$ (Write your answer in descending powers of $x$.)

**11.** Write down the equations and solve by inspection.

**a)** The sum of the square root of 100 and a certain number is equal to the cube of 5.

**b)** Mr Jeti is three times as old as his son. How old is his son if Mr Jeti is 51 years old?