

## RIVER VALLEY HIGH SCHOOL MATH Test 1 2023

1. Draw a number line to represent whole numbers  $\geq -1$  and  $< 5$ . [2]

2. The maximum and minimum temperature of a desert recorded on a particular day is  $38^\circ\text{C}$  and  $-3.5^\circ\text{C}$  respectively. Find the temperature difference. [2]

3. The numbers 392 and 1694 are written as a product of its prime factors,

$$392 = 2^3 \times 7^2$$

$$1694 = 2 \times 7 \times 11^2$$

- Find the smallest whole number  $m$  such that  $\sqrt[3]{392 \times 1694 \times m}$  is an integer. [2]



4. A rectangular block is of length 180 cm, breadth 72 cm and height 252 cm. The block is to be divided into equal cubes.

(i) Find the largest possible length of each cube. [2]

(ii) Find the minimum number of cubes. [1]

5. Determine whether the following claim is true or false. Explain your reasoning.

(a) Claim: It is possible for  $2 \times p$  to be either a composite or prime number when  $p$  is an integer that is greater than 2. [1]



(b) It is given that  $k = -1 \times 2 \times (-3)^n$ .

Claim: When  $n$  is a positive even integer, the value of  $k$  is always a negative even number. [2]

6. Given

$$-3.15, 0, 1, \frac{2}{3}, 6$$

write down the number(s) that is/are

(a) natural number(s), [1]

(b) positive number(s), [1]

(c) even number(s), [1]

(d) composite number(s). [1]



7. (a) Find  $\sqrt{196}$  using prime factorisation. [2]

(b) Find the highest common factor of 54 and 168. [2]

(c) The lowest common multiple of 6, 15 and  $4 \times k$  is  $2^2 \times 3^2 \times 5 \times 11$ . Find the smallest value of  $k$ , leaving your answer in index notation. [1]

8. Simplify the following.

(a)  $\sqrt[3]{27} - 2^2$  [2]

(b)  $\frac{-6}{2} - 7 - 6$  [2]



(c)  $5 - 3(-8 + 2)$  [2]

(d)  $(14 - 4 \times 2) \times 2 + 6 + 12 \div 3$  [3]

**Bonus Question (Optional)**

9. The sum of 5 consecutive prime numbers is 707. List the 5 prime numbers in ascending order. *Hint: There are two pairs of twin primes.* [3]

