Diagnostic Test #1: Number Theory and Computation – O'level Mathematics

"Trust in the Lord with all thine heart; and lean not unto thine own understanding. In all thy ways acknowledge him, and he shall direct thy paths." - Proverbs 3:5-6

INSTRUCTIONS: Attempt all questions

1. Which of the following is not a natural number?

   A) 1

   B) 2

   C) 0

   D) 5

2. What is the set of whole numbers?

   A) {1, 2, 3, ...}

   B) {0, 1, 2, 3, ...}

   C) {−1, 0, 1, 2, ...}

   D) {−2, −1, 0, 1, 2, ...}

3. Which of the following is a prime number?

   A) 4

   B) 6

   C) 9

   D) 7

4. Which of the following numbers is an irrational number?

   A) 2

   B) 3/4

   C) √3

   D) 0.5

5. What is the result of 2^4?

   A) 6

   B) 8

   C) 12

   D) 16

6. Which of the following is the highest common factor (HCF) of 12 and 18?

  A) 2

  B) 3

  C) 6

  D) 9

7. How many decimal places does the number 0.4567 have?

  A) 3

  B) 4

  C) 1

  D) 2

8. Convert 25% to a decimal number.

  A) 0.05

  B) 0.25

  C) 0.5

  D) 0.75

9. What is the least common multiple (LCM) of 40 and 56?

A) 280

B) 120

C) 240

D) 200

10. What is 3/4 of 200?

  A) 100

  B) 150

  C) 75

  D) 50

11. The place value of the digit 7 in the number 4,527 is:

   A) 7

   B) 70

   C) 700

   D) 7,000

12. What is the face value of the digit 5 in the number 5,623?

   A) 5

   B) 50

   C) 500

   D) 5,000

13. Express the fraction 3/8 as a percent.

   A) 37.5%

   B) 40%

   C) 50%

   D) 25%

14. Which is the first term in the sequence 2, 4, 6, ...?

   A) 2

   B) 4

   C) 0

   D) 1

15. What is the cube root of 27?

   A) 2

   B) 3

   C) 4

   D) 5

16. Write 0.0045 in scientific notation.

   A) 4.5 x 10^-3

   B) 45 x 10^-4

   C) 0.45 x 10^-2

   D) 4.5 x 10^-4

17. If the ratio of boys to girls is 3:2 and there are 30 boys, how many girls are there?

   A) 20

   B) 10

   C) 30

   D) 25

18. Which of the following is a composite number?

   A) 3

   B) 5

   C) 9

   D) 7

19. The decimal equivalent of the fraction 17/10 is:

   A) 17

   B) 0.017

   C) 0.17

   D) 1.7

20. What is the sum of 3.45 and 2.55?

   A) 5.00

   B) 6.00

   C) 7.00

   D) 5.10

21. Express 1.25 as a fraction in simplest form.

   A) 5/4

   B) 4/5

   C) 1/4

   D) 2/3

22. Which of the following numbers is both a square number and an even number?

   A) 9

   B) 4

   C) 15

   D) 25

23. If 3/8 of a number is 48, what is the number?

   A) 5 x 16

   B) 6 x 18

   C) 1 x 18

   D) 8 x 16

24. What is 15% of 200?

   A) 15

   B) 20

   C) 30

   D) 25

25. Which symbol correctly completes this statement: 3 □ 5? (where □ is less than or greater than)

   A) <

   B) =

   C) >

   D) ≠

26. What is the decimal representation of the fraction 1/40?

A) 0.25

B) 0.025

C) 0.0025

D) 2.5

27. If a number is multiplied by 0, what is the result?

A) The number

B) 1

C) 0

D) Undefined

28. Which of the following is an even number?

A) 11

B) 15

C) 20

D) 21

29. Order the numbers 0.125, 0.18, 1/6, and 0.3 in ascending order.

A) 0.125, 1/6, 0.18, 0.3
B) 1/6, 0.125, 0.18, 0.3
C) 0.125, 0.18, 1/6, 0.3
D) 0.18, 0.125, 0.3, 1/6

30. The LCM of 9 and 6 is:

A) 18

B) 54

C) 9

D) 3

END OF ASSESSMENT