1. How many kilograms are there in 3 tons?
   (A) 30  (B) 300  (C) 3000  (D) 30000

2. 8% of 500 =
   (A) $40  (B) $400  (C) $20  (D) $200

3. Which of the following letters has at least one line of symmetry?
   (A) A  (B) B  (C) F  (D) G

4. If 1600 out of 8000 do not eat fish, then the percentage that eat fish is
   (A) 20  (B) 64  (C) 80  (D) 96

5. The base ten equivalent of 3013 is
   (A) 4  (B) 31  (C) 76  (D) 81

6. If \( p * q \) means \( p^2 - pq \), then 5 * 2 is equal to
   (A) 15  (B) -21  (C) 10  (D) 39

7. \( \frac{2}{3} + \frac{4}{7} = \)
   (A) \( \frac{12}{10} \)  (B) \( \frac{5}{21} \)
   (C) \( \frac{3}{5} \)  (D) \( \frac{8}{21} \)

8. The point \( P(2, 7) \) is mapped onto \( P'(2, -7) \) by a transformation represented by the matrix \( M \). The matrix \( M \) is
   (A) \( \begin{bmatrix} 1 & -1 \\ 0 & 1 \end{bmatrix} \)  (B) \( \begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix} \)
   (C) \( \begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix} \)  (D) \( \begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix} \)

9. 301 can be written as
   (A) \( 3 \times 10^2 + 1 \)
   (B) \( 3 \times 10^3 + 1 \)
   (C) \( 3 \times 10^2 + 1 \times 10 \)
   (D) \( 3 \times 10^3 + 1 \times 10 \)

10. If \( p = (3a - q) \), then \( 6a = \)
    (A) \( 2(p + 3q) \)
    (B) \( 2(p + q) \)
    (C) \( p + 3q \)
    (D) \( p + q \)

11. Which of the following sets is equivalent to \( \{a, b, c, d\} \)?
    (A) \{4\}
    (B) \{a, b, c\}
    (C) \{p, q, r, s\}
    (D) \{1, 2, 3, 4, 5\}

12. If \( Q = \{a, b, c, d, e\} \) how many subsets can be obtained from the set \( Q \)?
    (A) \( 2 + 5 \)
    (B) \( 2 \times 5 \)
    (C) \( 5^2 \)
    (D) \( 2^5 \)

**Item 13** refers to the following Venn diagram.

13. In the Venn diagram above
    \( U = \{ \text{students who play games} \} \)
    \( H = \{ \text{students who play hockey} \} \)
    \( V = \{ \text{students who play volleyball} \} \)

    The number of students in each set is indicated.
    How many students do not play volleyball?
    (A) 2
    (B) 3
    (C) 5
    (D) 8

**Item 14** refers to the following diagram.

14. The two circles above represent sets \( P \) and \( Q \). If \( P = \{ \text{factors of 6} \} \) and \( Q = \{ \text{factors of 4} \} \), then the shaded region represents
    (A) \{ \}
    (B) \{1, 2\}
    (C) \{4, 6, 8, …\}
    (D) \{12, 24, 36, …\}

15. A woman buys a pair of shoes at a sale. She pays $45, saving $15 on the normal price. The percentage discount on the pair of shoes is
    (A) 25
    (B) 30
16. Tom bought a pen for $60 and sold it to gain 20% on his cost price. How much money did he gain? 
   (A) $12  (B) $40  (C) $72  (D) $80

17. During a sale a shop marked 20% off the marked price of clothing. What will a customer pay for a dress with a marked price of $30? 
   (A) $10  (B) $20  (C) $24  (D) $30

18. A customer buys a table on hire purchase. He makes a deposit of $306 and pays six monthly instalments of $60 each. The total cost to the customer is 
   (A) $306  (B) $366  (C) $666  (D) $966

19. A dinner in a hotel was advertised at $60 plus 18% tax. The total bill for one dinner was 
   (A) $60.00  (B) $70.80  (C) $78.00  (D) $81.60

20. The simple interest on $400 at 5% per annum for 2 years is given by 
   (A) $400 \times 5 \times 2 \times \frac{100}{100} 
   (B) $\frac{100 \times 5 \times 2}{400} 
   (C) $\frac{400 \times 2}{5 \times 100} 
   (D) $\frac{400 \times 100}{2 \times 5} 

21. If the simple interest on $800 for 3 years is $54, what is the rate of interest per annum? 
   (A) \frac{4}{9}  (B) \frac{1}{4}  (C) 5%  (D) 44%

22. A plot of land is valued at $18 000. Land tax is charged at the rate of $0.70 per $100 value. What is the total amount of tax paid for the land? 
   (A) $110.00  (B) $126.00  (C) $180.70  (D) $257.15

23. The expression ‘y is equal to the square of x’ can be written as 
   (A) y = x^2  (B) y^2 = x  (C) y = 2x  (D) y = \sqrt{x}

24. The expression –2(x – 4) is the same as 
   (A) –2x – 8  (B) –2x – 4  (C) –2x + 4  (D) –2x + 8

25. “When 7 is added to 3 times a certain number, the result is 22” 
The statement above may be represented by the equation 
   (A) 3n + 7 = 22  (B) 7n – 22 = 3  (C) 3n + 22 = 7  (D) 7n + 3 = 22

26. John had x marbles and Max had twice as many. Max gives Tom 5 of his marbles. How many marble does Max now have? 
   (A) x + 5  (B) x – 5  (C) 2x + 5  (D) 2x – 5

27. Given that p * q means p^q, the value of 1 * 2 is 
   (A) 0  (B) 2  (C) 3  (D) 5

28. The expression (2a)^3 is the same as 
   (A) 6a  (B) 8a  (C) 6a^3  (D) 8a^3

29. If 5(2x – 1) = 35, then x = 
   (A) –4  (B) \frac{1}{4}  (C) 3  (D) 4

30. The sum of x and y is 18, and their difference is which pair of equations describes the above statement? 
   (A) 2(x + y) = 18  2(x – y) = 4  (B) 2(xy) = 18  2(x – y) = 4
   (C) (x + y) = 18  (x – y) = 14  (D) (x + y) = 22  (x – y) = 14

31. If 15^2 = 225 then the square root of 0.0225 is 
   (A) 0.015  (B) 0.15  (C) 1.5  (D) 15.0
32. Which of the following diagrams illustrates a function?

(A)  

(B)  

(C)  

(D)  

33. A function $f$ is defined as $f : x \rightarrow 3x - 1$. The value of $f(-3)$ is

(A) $-12$  
(B) $-10$  
(C) $-6$  
(D) $12$

34. Given that $f(x) = x^2 - 3x + 1$, then $f(-1) =$

(A) $-3$  
(B) $3$  
(C) $5$  
(D) $6$

35. Which of the following represents the equation of a straight line?

(A) $y = \frac{4}{x}$  
(B) $y = 2x + 3$  
(C) $y = x^2 - 4$  
(D) $y = x^2 + 2x - 5$

36. From the graph above, the values of $x$ when $y = -1$ are

(A) $1$ and $-1$  
(B) $2.2$ and $-2.2$  
(C) $2.5$ and $-2.5$  
(D) $2.8$ and $-2.8$

37. The diagram above shows a graph. If $a$, $b$ and $c$ are constants and $a > b$ the equation of the graph above could be

(A) $y = ax^2 + c$  
(B) $y = c - ax^2$  
(C) $y = ax^2 + bx + c$  
(D) $y = c + bx - ax^2$

38. The distance around the edge of a circular pond is 88 m. The radius, in metres, is

(A) $88\pi$  
(B) $176\pi$  
(C) $\frac{88}{\pi}$  
(D) $\frac{88}{2\pi}$

39. Item 39 refers to the following diagram.
39. The area in cm$^2$ of the trapezium above is
(A) 21  (B) 27  (C) 33  (D) 54

Item 40 refers to the following diagram.

40. The figure above, consists of a triangle resting on a square of side 5 cm. The height of the triangle is 4 cm. What is the total area of the figure?
(A) 35 cm$^2$  (B) 45 cm$^2$
(C) 50 cm$^2$  (D) 100 cm$^2$

41. The area of a rectangle is 53.6 cm$^2$. If the length is multiplied by 4 and the width is halved, the area would then be
(A) 26.8 cm$^2$  (B) 53.6 cm$^2$
(C) 107.2 cm$^2$  (D) 214.4 cm$^2$

42. $AOB$ is a sector of a circle such that angle $AOB = 72^\circ$ and $OB$ is $r$ units long. The area of $AOB$ is
(A) $\frac{1}{5} \pi r^2$
(B) $\frac{2}{5} \pi r^2$
(C) $\frac{1}{5} \pi r^2$

43. How many millimetres are there in 1 metre
(A) 10  (B) 100  (C) 1000  (D) 10000

44. If it took a speed-boat 9 hours to travel a distance of 1080 km, what was its average speed in km/h?
(A) 12 km/h  (B) 102 km/h
(C) 120 km/h  (D) 1200 km/h

45. A man started a journey at 09:30 hrs and arrived at his destination in the same time zone at 13:30 hrs the same day. If his average speed was 30 km/h, then the distance in km for the journey was
(A) 120  (B) 133  (C) 400  (D) 430

Item 36 refers to the following diagram.

46. The pie chart above represents the mass of ingredients in a cake. The total mass is 288g. What is the combined mass, in grams, of fat and sugar?
(A) 93  (B) 132  (C) 165  (D) 195

47. The pie chart (drawn to scale) shows how a student used 12 hours in studying English (E), Mathematics (M), French (F) and Geography (G).

The amount of time spent studying Mathematics is approximately
(A) 1 hr  (B) 2 hrs
(C) 3 hrs  (D) 4 hrs
**Item 48** refers to the scores below.

10, 15, 4, 7, 8, 8, 1, 4

48. The median of the eight scores presented above is
   (A) 4
   (B) 7.25
   (C) 7.5
   (D) 8

**Item 49** refers to the following information.

2 5 9 18 18 27

49. The mode of the numbers is
   (A) 7   (B) 16   (C) 18   (D) 25

50. Of 120 students writing an exam, 100 are expected to pass. The estimated probability of a student failing the exam is
   (A) \( \frac{1}{6} \)   (B) \( \frac{1}{5} \)   (C) \( \frac{1}{2} \)   (D) \( \frac{5}{6} \)

51. When three coins are tossed simultaneously the possible outcomes are \{HHH, HHT, HTH, HTT, THH, THT, TTH, TTT\}, where H represent a head and T represents a tail. What is the probability of obtaining at least two heads?
   (A) \( \frac{1}{4} \)
   (B) \( \frac{3}{8} \)
   (C) \( \frac{1}{2} \)
   (D) \( \frac{2}{3} \)

52. In the figure above \( AB \) and \( CD \) are parallel. Which of the following best describes the relationship between \( x \) and \( y \)?
   (A) \( x + y < 2x \)
   (B) \( x = y \)
   (C) \( x + y > 2x \)
   (D) \( x < y \)

53. From the diagram above, \( \sin \beta \) is
   (A) \( \frac{3}{5} \)
   (B) \( \frac{3}{4} \)
   (C) \( \frac{4}{5} \)
   (D) \( \frac{5}{3} \)

54. \( A'B'C' \) is the image of \( ABC \) under an enlargement by a scale factor 2. The area in square units, of \( A'B'C' \) is
   (A) 2   (B) 4   (C) 8   (D) 12

55. In the figure above the line \( CD \) is the image of \( AB \) after a
   (A) Rotation through 90° centre \( O \)
   (B) A reflection in the \( y \)-axis
   (C) A translation by the vector \( \begin{pmatrix} -4 \\ -8 \end{pmatrix} \)
   (D) An enlargement of scale factor \(-1\)
56. In the right angled triangle above, which trigonometric ratio is equal to $\frac{4}{8}$?
   (A) $\tan y$
   (B) $\cos x$
   (C) $\sin x$
   (D) $\tan x$

57. A rectangle has rotational symmetry of order
   (A) 1
   (B) 2
   (C) 3
   (D) 4

58. If the sum of the interior angles of a polygon is 4 right angles, then the polygon is a
   (A) triangle
   (B) hexagon
   (C) pentagon
   (D) quadrilateral

59. How many triangles congruent to $ADE$ would be needed to cover the square $ABCD$ entirely?
   (A) 2
   (B) 4
   (C) 6
   (D) 8

60. In the figure above, $ABC$ is a triangle in which $AD = BD = CD$.
   the angle $ABC$ is
   (A) 40°
   (B) 50°
   (C) 80°
   (D) 90°