

1. Which property is illustrated by the equation  $m(a+b) = ma + mb$ ?
- A. closure    B. commutative    C. associative    D. distributive
2.  $4 + 5x^0 \times 2$  is equal to
- A. 18    B. 1    C. 6    D. 14
3. The **period** of the function  $y = \tan \theta$  is
- A.  $360^\circ$     B.  $270^\circ$     C.  $190^\circ$     D.  $180^\circ$
4. The probability of getting 2 heads and 1 tail when 3 coins are tossed is
- A. 1    B.  $\frac{1}{8}$     C.  $\frac{2}{8}$     D.  $\frac{3}{8}$
5. The range of the relation  $x^2 + y^2 = 4$  is
- A.  $-4 \leq y \leq 4$     B.  $0 \leq y \leq 2$     C. Real numbers    D.  $-2 \leq y \leq 2$
6. For which value of  $x$  is  $\frac{x-1}{x-2}$  undefined?
- A. 4    B. 3    C. 2    D. 1
7. Which of the following is the factorised form of  $2p^2 - 32$ ?
- A.  $(2p - 32)(2p + 32)$     B.  $2p(p - 16)$     C.  $2(p - 4)(p + 4)$     D.  $2(p - 16)(p + 16)$
8. Find the sum of the first 200 positive odd numbers
- A. 10 000    B. 20 000    C. 40 000    D. 50 000
9. A circle has perimeter  $x$  cm. Its area in  $\text{cm}^2$  is
- A.  $\pi x^2$     B.  $\frac{x^2}{\pi}$     C.  $\frac{x^2}{4\pi}$     D.  $\frac{x^2}{4}$
10. What is the length of a longest rod which will fit in a  $3\text{cm} \times 4\text{cm} \times 12\text{cm}$  box?
- A. 5 cm    B. 12 cm    C. 13 cm    D. 19 cm

11. The graph of  $y = (x + 5)^2 - 2$  is symmetrical about the line  
A.  $x = 0$       B.  $x = -5$       C.  $x = -2$       D.  $x = 5$
12. The mid-point of  $(x, 4)$  and  $(3, y)$  is  $(4, 2)$ . What is the value of  $x + y$ ?  
A. 0      B. 5      C. 6      D. 7
13. A line through the points  $(0, 1)$  and  $(1, 3)$  also passes through  $(3, y)$ . The value of  $y$  is  
A. 8      B. 7      C. 6      D. 5
14. The range of the relation  $y = -(x - 2)^2 + 1$  is  
A.  $y \geq 1$       B.  $y \leq 1$       C.  $y \leq -1$       D. Real numbers
15. If each edge of a cube is increased by 60%, the percentage increase in surface area is  
A. 36      B. 156      C. 256      D. 1536
16. The distance of  $(-7, 24)$  from the origin is  
A. 25      B. 24      C. 17      D. 7
17. A car 3.5 m long is travelling at 70km/h and overtakes a 16.5 m long truck in 7.2 s.  
What is the speed of the truck?  
A. 60km/h      B. 65km/h      C. 69km/h      D. 80km/h
18. How many integers between 1 and 2002 are divisible by 3?  
A. 667      B. 666      C. 665      D. 567
19.  $250 - 249 + 248 - 247 + 246 - \dots + 2 - 1 =$   
A. 125      B. 225      C. 250      D. 255
20. The turning point of  $y = (x + 3)(x - 2)^2$  which lies on the  $x$ -axis is at  
A.  $(2, 0)$       B.  $(-2, 0)$       C.  $(-3, 0)$       D.  $(3, 0)$

21. Five positive numbers have a mean of 5, a median of 5 and just one mode of 8. The range is

- A. 4                      B. 5                      C. 6                      D. 7

22. Which of the following line represents the asymptote of  $y = 2^x$ ?

- A.  $x = 2$                       B.  $y = 2$                       C.  $x = 0$                       D.  $y = 0$

23. When we subtract  $3a - 4b$  from  $2a + 5b$  the answer is

- A.  $5a + b$                       B.  $b - a$                       C.  $a - 9b$                       D.  $9b - a$

24. Successive discounts of 10%, 20% and 50% are equivalent to a single discount of

- A.  $26\frac{2}{3}\%$                       B. 36%                      C. 40%                      D. 64%

25. Two 10 cent coins, two 20 cent coins and two 50 cent coins are to be placed side by side.  
In how many ways can this be done?

- A. 720                      B. 120                      C. 100                      D. 90

26. A cube of edge length 3 units is painted. It is then cut into 27 one-unit cubes.  
How many faces of the one-unit cubes are not painted?

- A. 27                      B. 54                      C. 108                      D. 162

27. An aeroplane takes 2 hours and 15 minutes to fly from Island A to Island B. If it were to decrease its speed by 10%, how long would the trip take?

- A. 135 min                      B. 1h 50 min                      C. 2h 30 min                      D. 2h 35 min

28. Deepa has 450g of salt and flour mix. How many grams of flour should she add to reduce the percentage of salt in the mixture to 90% of what it was?

- A. 10                      B. 30                      C. 50                      D. 60

29. The 5 tyres of a car ( 4 road tyres and a spare) were each used equally on a car that had travelled 25 000km. The number of kilometres of use of each tyre was

- A. 5 000                      B. 6250                      C. 20 000                      D. 25 000

30. The distance,  $s$  metres, of a boat from a port after  $t$  seconds is given by

$$s = -0.1(t - 100)^2 + 1000$$

At what time is the boat at a maximum distance from the port?

- A. 0.1 s                      B. 20 s                      C. 100 s                      D. 1 000 s