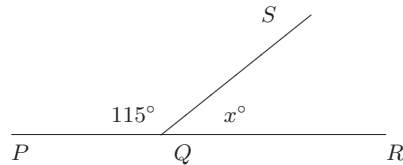


INTERMEDIATE DIVISION

Questions 1 - 10, 3 marks each

1. The value of  $\frac{2004 + 6}{100}$  is  
 (A) 30      (B) 2.1      (C) 201      (D) 20.1      (E) 2.01

2.

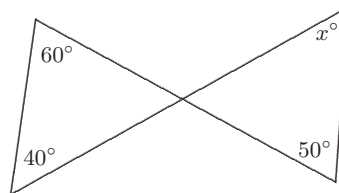


In the diagram,  $PQR$  is a straight line. The value of  $x$  is

- (A) 65      (B) 75      (C) 55      (D) 45      (E) 35
3. The value of  $\frac{4}{5}$  is closest to  
 (A) 0      (B) 1      (C) 2      (D) 3      (E) 4
4. If  $y = 3x$  and  $z = 2 - y$  then  $z$  equals  
 (A)  $3x$       (B)  $3x - 2$       (C)  $2 - x$       (D)  $3 - 2x$       (E)  $2 - 3x$
5. The temperature at Jindabyne was  $7.6^\circ\text{C}$  at 10:00 pm last night. The temperature fell by  $16.7^\circ$  between 10:00 pm last night and 5:00 am this morning. The temperature at 5:00 am this morning was  
 (A)  $-10.9^\circ\text{C}$       (B)  $-9.1^\circ\text{C}$       (C)  $0^\circ\text{C}$       (D)  $-10.1^\circ\text{C}$       (E)  $-9.9^\circ\text{C}$
6. Every chair in the school hall has 4 legs. There are 484 chair legs in the hall. The number of chairs is  
 (A) 242      (B) 480      (C) 141      (D) 212      (E) 121

7. The value of  $x$  in the diagram is

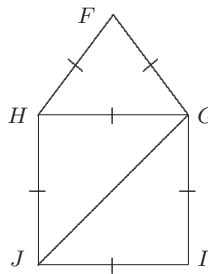
- (A) 50      (B) 100      (C) 80  
 (D) 40      (E) 70



8. Martin's weight a year ago was  $\frac{3}{4}$  of his present weight. If he put on 16 kg in this last year, what is his weight, in kilograms, now?
- (A) 28      (B) 36      (C) 42      (D) 49      (E) 64
9. A farmer buys a truckload of 30 bales of hay to feed his cattle. He intends to feed his cattle two thirds of a bale each day to supplement their diets. For how many days will this load last?
- (A) 36      (B) 39      (C) 42      (D) 45      (E) 48
10. If a person's wage rose 20% to \$360 per week, the wage before the rise was
- (A) \$288      (B) \$300      (C) \$310      (D) \$280      (E) \$320

Questions 11 - 20, 4 marks each

11. A rectangle has its length 25 times its width. What is the ratio of its perimeter to the perimeter of the square of the same area?
- (A) 13 : 5      (B) 13 : 10      (C) 5 : 1      (D) 51 : 20      (E) 51 : 10
12. The fraction  $\frac{1}{4}$  is tripled by adding the same number to both numerator and denominator. That number is
- (A) 2      (B) 3      (C) 5      (D) 8      (E) 9
13. An equilateral triangle  $FGH$  sits on top of a square  $GIJH$  as shown. The size of the angle  $FGJ$  is
- (A)  $60^\circ$       (B)  $105^\circ$       (C)  $150^\circ$   
 (D)  $90^\circ$       (E)  $75^\circ$



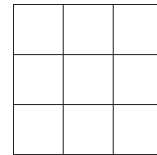
14. Which of the following is the sum of four consecutive integers?  
 (A) 2000      (B) 2001      (C) 2002      (D) 2003      (E) 2004

15. Some beads are arranged on a line as shown. Starting with the bead at the head of the arrow, how many beads must be moved from left to right so that the fraction of the beads on the left that are black is equal to the fraction of the beads on the right that are white?



- (A) 4      (B) 3      (C) 2      (D) 1      (E) 0
16. Tina has a large number of  $1 \times 2 \times 6$  rectangular blocks. She wants to make a solid cube out of the blocks. What is the smallest number of blocks she needs?
- (A) 6      (B) 12      (C) 18      (D) 36      (E) 144
17. The school canteen packs 37 lamingtons into bags of 3 or 4 so that there is no wastage. The maximum number of bags containing 4 lamingtons is

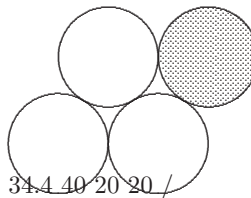
- (A) 9      (B) 4      (C) 8      (D) 5      (E) 7
18. In how many ways can an  $\times$  be placed in the cells of the grid shown so that each row and each column contains exactly two cells with an  $\times$ ?



- (A) 6      (B) 9      (C) 12  
 (D) 18      (E) 27
19. Natural fruit juice contains 80% water. In concentrating the juice, 75% of the water is removed. What is the percentage of water in the concentrated juice?
- (A) 25      (B) 40      (C) 50      (D) 60      (E) 75
20. The only information that an electronic watch displays is hours as a 2-digit number and minutes as a 2-digit number. What is the total time in minutes that the digit 2 was visible on the face of the watch from 15:00 to 16:30 during an afternoon?
- (A) 12      (B) 15      (C) 24      (D) 27      (E) 30

Questions 21 - 30, 8 marks each correct response, 0 marks each incorrect response, 3 marks each no response, 30 marks minimum

21. Four 10c coins lie on a table as shown. Keeping in contact with the other three coins, the shaded coin is rolled around the other three coins until it returns to its starting place. Through what angle does the shaded coin turn, on its axis, in rolling once around the other three coins?



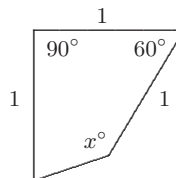
- (A)  $360^\circ$       (B)  $540^\circ$       (C)  $720^\circ$       (D)  $900^\circ$       (E)  $1080^\circ$

22. Susan and Jenny run a 200 m race which Susan wins by 10 m. Jenny suggests that they run another race, with Susan starting 10 m behind the starting line. Assuming they run at the same speeds as in the first race, the outcome of the race is

- (A) a deadheat      (B) Susan wins by 1 m      (C) Jenny wins by 1 m  
 (D) Susan wins by 0.5 m      (E) Jenny wins by 0.5 m

23. In the diagram, the value of  $x$  is

- (A) 90      (B) 120      (C) 135  
 (D) 137.5      (E) 140



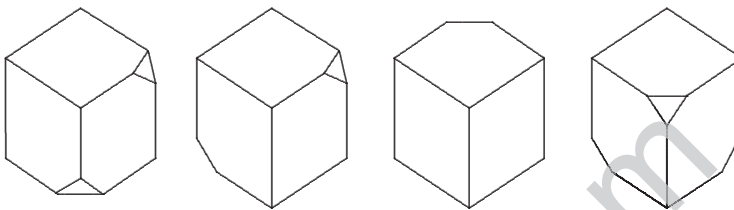
24. John tells the truth on Monday, Tuesday, Wednesday and Thursday. He lies on all other days. Dieter tells the truth on Monday, Friday, Saturday and Sunday. He lies on all other days. One day they both said, 'Yesterday I lied'. The day they said that was

- (A) Monday      (B) Wednesday      (C) Thursday  
 (D) Friday      (E) Saturday

25. Michael has a block of chocolate consisting of  $5 \times 5$  little pieces. He wants to break the whole block in order to get the 25 pieces separated. At any stage he can put several pieces one on top of the other and break them simultaneously into smaller pieces. If he organises the breaks in the most efficient way, what is the smallest number of breaks needed?

(A) 5      (B) 6      (C) 8      (D) 12      (E) 16

26. Some corners are cut off four cubes. Afterwards, only two of the solids formed are the same shape. Which two are they?



P

Q

R

S

(A) P and Q      (B) P and R      (C) Q and R  
(D) P and S      (E) Q and S

27. What is the largest possible size of an angle of a triangle formed by joining the midpoints of three edges of a cube?

(A)  $60^\circ$       (B)  $90^\circ$       (C)  $120^\circ$       (D)  $135^\circ$       (E)  $150^\circ$

28. The integers  $1, 2, 3, \dots, 100$  are written on the board. What is the smallest number of these integers that can be wiped off so that the product of the remaining integers ends in 2?

(A) 20      (B) 21      (C) 22      (D) 23      (E) 24

29. The Fibonacci numbers are

$$F_1 = 1, F_2 = 1, F_3 = 2, F_4 = 3, F_5 = 5, F_6 = 8, F_7 = 13, \dots$$

where the first two are both equal to 1, and from then on, each one is the sum of the two preceding it. Of the first 2004 Fibonacci numbers, how many have 2 as their last digit?

- (A) 131      (B) 133      (C) 135      (D) 137      (E) 139

30. Lois and Ben are playing a game with red, yellow, green and blue counters. They are making as long a line as possible while obeying the following two rules:-

- (1) No two adjacent counters can be the same colour.
- (2) If, in the sequence, any colour occurs twice, no colour between them can occur elsewhere.

Thus *rygbgg* would be banned by only the first rule, and *rbgygbrg* would be banned by only the second rule.

Lois has started her line with *ryr* and Ben has started his with *ryg*. Which of the following statements is true?

- (A) It is possible for Lois to make a longer sequence than Ben can make.
- (B) It is possible for Ben to make a longer sequence than Lois can make.
- (C) It is possible for both to make sequences of length 6, but no longer.
- (D) It is possible for both to make sequences of length 7, but no longer.
- (E) There is no limit on the length of the sequence either can make.