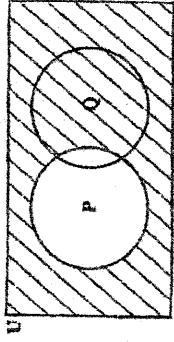


**January 2013**

- What percentage of 30 is 6?  
 (A) 5%  
 (B) 18%  
 (C) 20%  
 (D) 150%
- The exact value of  $6 \div (0.003)$  is  
 (A) 200  
 (B) 2 000  
 (C) 20 000  
 (D) 200 000
- $\sqrt{17^2 - 15^2}$   
 (A) 1  
 (B) 2  
 (C) 8  
 (D) 16
- $0.386 \times 0.06 =$   
 (A) 0.02316  
 (B) 0.2316  
 (C) 2.316  
 (D) 23.16
- Ann and Betty shared a sum of money in the ratio 2:3 respectively. Ann received \$120. What was Betty's share?  
 (A) \$ 72  
 (B) \$ 80  
 (C) \$180  
 (D) \$300
- If 60% of a number is 90, what is the number?  
 (A) 30  
 (B) 54  
 (C) 150  
 (D) 180
- If  $P = \{2, 3, 5, 7\}$ ,  $Q = \{2, 3, 6\}$  and  $S = \{2, 4, 5\}$  then  $P \cap Q \cap S =$   
 (A)  $\{2\}$   
 (B)  $\{2, 3\}$   
 (C)  $\{4, 5, 6, 7\}$   
 (D)  $\{2, 3, 4, 5, 6, 7\}$
- If  $U = \{1, 3, 5, 6, 8\}$  and  $A = \{3, 6\}$ , then the number of elements in  $A'$  is  
 (A) 2  
 (B) 3  
 (C) 4  
 (D) 8
- The number 301 can be written as  
 (A)  $3 \times 10^2 + 1$   
 (B)  $3 \times 10^3 + 1$   
 (C)  $3 \times 10^6 + 1 \times 10$   
 (D)  $3 \times 10^3 + 1 \times 10$
- What is the Highest Common Factor of the set of numbers  $\{54, 72, 90\}$ ?  
 (A) 9  
 (B) 18  
 (C) 90  
 (D) 1080
- The LARGEST prime number that is less than 100 is  
 (A) 91  
 (B) 93  
 (C) 97  
 (D) 99
- What is the LEAST number of plums that can be shared equally among either 6, 9 or 12 children?  
 (A) 27  
 (B) 36  
 (C) 54  
 (D) 72
- If  $P = \{2, 3, 5, 7\}$ ,  $Q = \{2, 3, 6\}$  and  $S = \{2, 4, 5\}$  then  $P \cap Q \cap S =$   
 (A)  $\{2\}$   
 (B)  $\{2, 3\}$   
 (C)  $\{4, 5, 6, 7\}$   
 (D)  $\{2, 3, 4, 5, 6, 7\}$

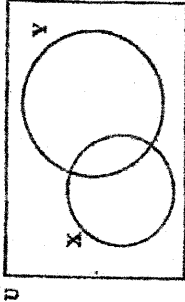
Item 13 refers to the Venn diagram below.



In the Venn diagram above, the shaded area represents

- (A)  $P'$
- (B)  $(P \cup Q)'$
- (C)  $P' \cap Q'$
- (D)  $P \cap Q'$

Item 14 refers to the Venn diagram below.



In the Venn diagram,  $n(X) = 5$ ,  $n(Y) = 9$  and  $n(X \cup Y) = 10$ .

What is  $n(X \cap Y)$ ?

- (A) 4
- (B) 6
- (C) 14
- (D) 24

16.  $3\frac{1}{4}\%$  of \$500 is

- (A) \$ 1.62
- (B) \$15.52
- (C) \$16.00
- (D) \$16.25

17. Susan bought a calculator for \$120. She paid a sales tax of 10% on the price. How much change should she receive from \$140?

- (A) \$ 8.00
- (B) \$12.00
- (C) \$28.00
- (D) \$32.00

18. The exchange rate for one United States dollar (US\$1.00) is two dollars and seventy cents in Eastern Caribbean currency (EC\$2.70). What is the value of US\$4.50 in EC currency?

- (A) \$ 1.67
- (B) \$ 6.00
- (C) \$ 7.20
- (D) \$12.15

19. A salesman is paid 5% of his sales as commission. His sales for last month were \$2 020. How much commission was he paid?

- (A) \$ 11.00
- (B) \$ 20.20
- (C) \$101.00
- (D) \$110.00

20. The cash price of a television set is \$350. When bought on hire-purchase, a deposit of \$35 is required, followed by 12 monthly payments of \$30. How much money is saved by paying cash?

- (A) \$10
- (B) \$25
- (C) \$40
- (D) \$45

33. The volume of a cube of edge 10 cm is
- (A) 30 cm<sup>3</sup>  
 (B) 100 cm<sup>3</sup>  
 (C) 300 cm<sup>3</sup>  
 (D) 1000 cm<sup>3</sup>

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

35. 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)  $\frac{88}{2\pi}$

36. The lengths of the sides of a triangle are  $x$ ,  $2x$  and  $2x$  centimetres. If the perimeter is 20 centimetres, what is the value of  $x$ ?
- (A) 4  
 (B) 5  
 (C) 8  
 (D) 10

30. Given that  $3 * 6 = 12$  and  $2 * 5 = 9$ , then  $a * b$  may be defined as

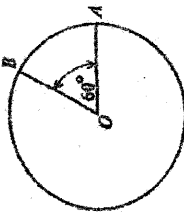
- (A)  $4(b - a)$   
 (B)  $a^2 - b$   
 (C)  $6a - b$   
 (D)  $2a + b$

31. The sum of two numbers,  $x$  and  $y$ , is 18, and their difference is 14.

Which pair of equations below describes the above statement?

- (A)  $x + y = 18$   
 $x - y = 14$   
 (B)  $x + y = 32$   
 $x - y = 4$   
 (C)  $2x + 2y = 18$   
 $2x - 2y = 14$   
 (D)  $xy = 18$   
 $x - y = 14$

Item 32 refers to the figure below.



32. In the circle above, with centre  $O$ , the circumference is 20 cm. The length of the minor arc  $AB$ , in centimetres, is

- (A)  $\frac{1}{60} \times 20$   
 (B)  $\frac{60}{360} \times 20$   
 (C)  $\left(\frac{360-60}{360}\right) \times 20$   
 (D)  $60 \times 20$

26.  $5(x + y) - 3(x - y) =$

- (A)  $2x$   
 (B)  $2x + 2y$   
 (C)  $2x + 8y$   
 (D)  $8x + 8y$

27. If  $m * n = \sqrt{mn - n^2}$  then  $5 * 3 =$

- (A)  $\sqrt{6}$   
 (B) 3  
 (C)  $\sqrt{15}$   
 (D) 6

28. When 6 is added to a number and the sum is divided by three, the result is four. This statement written in mathematical symbols is

- (A)  $\frac{6}{3} + x = 4$   
 (B)  $\frac{6+x}{3} = 4$   
 (C)  $\frac{6+x}{3} = \frac{4}{3}$   
 (D)  $6 + \frac{x}{3} = 4$

29. Given that  $3(x - 1) - 2(x - 1) = 7$ , the value of  $x$  is

- (A) 6  
 (B) 7  
 (C) 8  
 (D) 9

21. A man pays 60 cents for every 200 m<sup>3</sup> of gas used, plus a fixed charge of \$13.75. How much does he pay when he uses 55 000 m<sup>3</sup> of gas?

- (A) \$178.75  
 (B) \$175.25  
 (C) \$165.00  
 (D) \$151.25

22. A loan of \$8 000 was paid back in 2 years in monthly payments of \$400.00. The percentage profit on the loan was

- (A) 5%  
 (B)  $8\frac{1}{3}\%$   
 (C)  $16\frac{2}{3}\%$   
 (D) 20%

23.  $(x - 2)(3x + 4) =$

- (A)  $3x^2 - 6x - 8$   
 (B)  $3x^2 - 2x - 8$   
 (C)  $3x^2 + 10x + 8$   
 (D)  $3x^2 - 10x + 8$

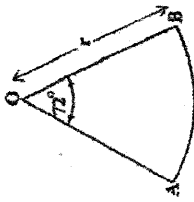
24. Althea saves \$ $x$  each month; but in June she saved \$4 more than twice her usual amount. In June Althea saved

- (A) \$  $4x$   
 (B) \$  $6x$   
 (C) \$  $(x + 4)$   
 (D) \$  $(2x + 4)$

25. The expression  $-2(x - 4)$  is the same as

- (A)  $-2x - 4$   
 (B)  $-2x + 4$   
 (C)  $-2x + 8$   
 (D)  $-2x - 8$

Item 37 refers to the following diagram.



37.  $\angle AOB$  is a sector of a circle such that angle  $\angle AOB = 72^\circ$  and  $OB$  is  $r$  units long. The area of  $\angle AOB$  is

- (A)  $\frac{1}{5}\pi r$
- (B)  $\frac{2}{5}\pi r$
- (C)  $\frac{1}{5}\pi r^2$
- (D)  $\frac{2}{5}\pi r^2$

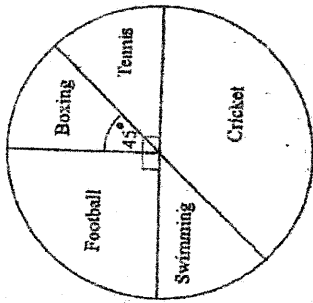
38. The area of a triangle is  $30 \text{ cm}^2$  and its base is  $10 \text{ cm}$ . What is the perpendicular height, in  $\text{cm}$ , of the triangle?

- (A) 6
- (B) 12
- (C) 13
- (D) 17

39. An aircraft leaves  $A$  at 16:00 hrs and arrives at  $B$  at 19:30 hrs, travelling at an average speed of 550 kilometres per hour.  $A$  and  $B$  are in the same time zone. The distance from  $A$  to  $B$ , in kilometres, is

- (A) 907.5
- (B) 962.5
- (C) 1815
- (D) 1925

Items 40–41 refer to the diagram below which shows the sport chosen by 160 boys who participated in a games evening at their school.



40. The number of boys who chose football is

- (A) 40
- (B) 90
- (C) 110
- (D) 150

41. How many boys participated in cricket?

- (A) 54
- (B) 60
- (C) 110
- (D) 120

42. A bag contains 60 marbles of different colours. The probability of randomly selecting a red marble is  $\frac{5}{12}$ .

How many red marbles does the bag contain?

- (A) 5
- (B) 12
- (C) 17
- (D) 25

43. The heights, in  $\text{cm}$ , of ten students are 150, 152, 155, 153, 170, 160, 156, 165, 158, 155. The range is

- (A) 5
- (B) 20
- (C) 150
- (D) 155

44. If the mean of the four numbers 4, 8,  $x$  and 12 is 10, then  $x$  is

- (A) 4
- (B) 10
- (C) 12
- (D) 16

45. Each of the letters of the word 'CHANCE' is written on a slip of paper similar in size and shape. The slips of paper are then placed in a bag and thoroughly shaken. What is the probability of drawing a letter 'C'?

- (A)  $\frac{1}{6}$
- (B)  $\frac{1}{5}$
- (C)  $\frac{1}{3}$
- (D)  $\frac{2}{3}$

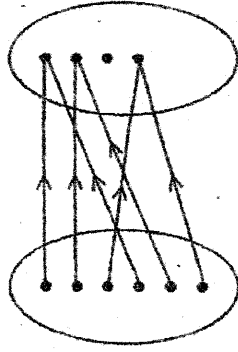
Item 46 refers to the diagram below.



46. The graph of the inequality in the diagram is defined by

- (A)  $-2 < x \leq 3$
- (B)  $-2 \leq x < 3$
- (C)  $-2 \leq x \leq 3$
- (D)  $-2 < x < 3$

Item 47 refers to the diagram below.



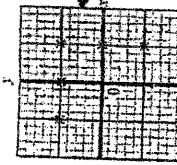
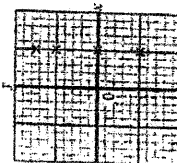
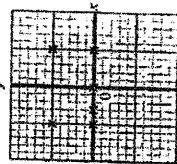
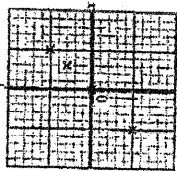
47. The relationship that BEST describes the mapping in the diagram is

- (A) one-to-one
- (B) one-to-many
- (C) many-to-one
- (D) many-to-many

48. Which of the following points lies on the line  $y = 2x - 3$ ?

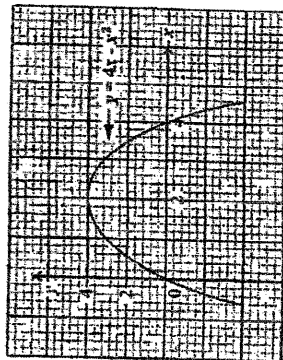
- (A) (2, 3)
- (B) (-2, -1)
- (C) (4, 1)
- (D) (0, -3)

49. Which of the following represents the graph of a function?



- (A) I  
(B) II  
(C) III  
(D) IV

Items 50-51 refer to the following graph.



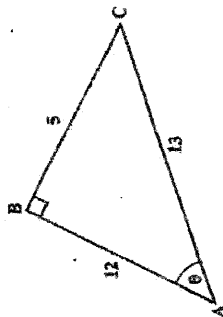
50. The maximum point of  $y = 4x - x^2$  is

- (A) (0, 0)  
(B) (0, 4)  
(C) (2, 4)  
(D) (4, 2)

51. The values of  $x$  at the points where  $y = 4x - x^2$  intersects  $y = 0$  are

- (A)  $x = 0$  and  $x = 4$   
(B)  $x = 0$  and  $x = 2$   
(C)  $x = 0$  and  $x = -4$   
(D)  $x = 2$  and  $x = 4$

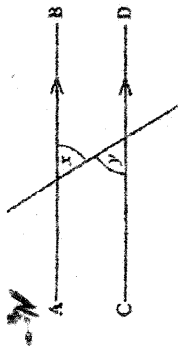
Item 52 refers to the right-angled triangle below.



52. In the right-angled triangle,  $\tan \theta$  is

- (A)  $\frac{5}{13}$   
(B)  $\frac{5}{12}$   
(C)  $\frac{12}{5}$   
(D)  $\frac{13}{5}$

Item 53 refers to the following diagram.



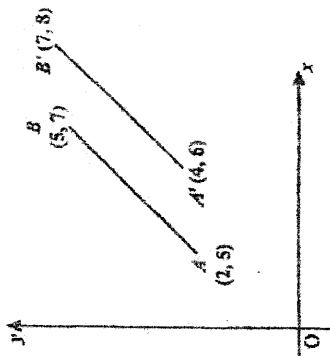
53. In the diagram  $AB$  and  $CD$  are parallel. Which of the following BEST describes the relation between  $x$  and  $y$ ?

- (A)  $x + y < 2x$   
(B)  $x = y$   
(C)  $x + y > 2x$   
(D)  $x > y$

54. Which of the following BEST describes the properties of an equilateral triangle?

- I. All sides are equal.  
II. All angles are equal.  
III. Only two sides are equal.  
IV. Only two angles are equal.
- (A) I and II only  
(B) II and III only  
(C) III only  
(D) IV only

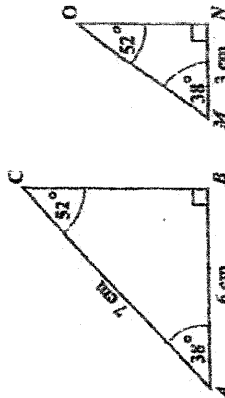
Item 55 refers to the diagram below.



55. In the diagram, the translation by which  $AB$  is mapped onto  $A'B'$  is represented by

- (A)  $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$   
(B)  $\begin{pmatrix} 2 \\ 1 \end{pmatrix}$   
(C)  $\begin{pmatrix} 3 \\ 2 \end{pmatrix}$   
(D)  $\begin{pmatrix} 5 \\ 3 \end{pmatrix}$

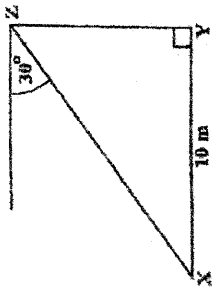
Item 56 refers to the following pair of similar triangles.



56. The length of  $MO$ , in centimetres, is

- (A) 3  
(B) 3.5  
(C) 6  
(D) 7

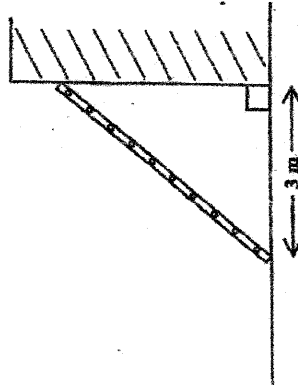
Item 57 refers to the diagram below.



57. The diagram, not drawn to scale, shows the angle of depression of a point X from Z is  $30^\circ$ . If X is 10 metres from Y, the height of YZ, in metres, is

- (A)  $10 \cos 30^\circ$
- (B)  $10 \cos 60^\circ$
- (C)  $10 \sin 30^\circ$
- (D)  $10 \tan 30^\circ$

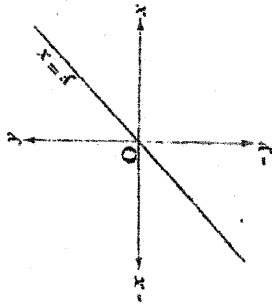
Item 58 refers to the diagram below which shows a ladder 5 metres long leaning against a vertical wall. The foot of the ladder is 3 metres away from the wall.



58. How far up the wall does the ladder reach?

- (A) 4 m
- (B) 6 m
- (C) 8 m
- (D) 15 m

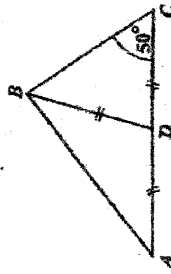
Item 59 refers to the following diagram.



59. In the diagram, if the line  $y = x$  is rotated anti-clockwise about O through  $90^\circ$ , what is its image?

- (A)  $y = 0$
- (B)  $x = 0$
- (C)  $y = -x$
- (D)  $y = x$

Item 60 refers to the following diagram.



60. In the diagram, ABC is a triangle in which  $AD = BD = CD$ .

The angle  $\angle BAC$  is

- (A)  $40^\circ$
- (B)  $50^\circ$
- (C)  $80^\circ$
- (D)  $90^\circ$