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CXC MATH JUNE 2012

1. The number 3.14063 written correct to 3 decimal places is

(A) 3.140
(B) 3.141
(C) 3.146
(D) 3.150

2. Express 0.12 as a fraction in its lowest terms.

(A) $\frac{1}{9}$

(B) $\frac{3}{5}$

(C) $\frac{1}{8}$

(D) $\frac{3}{25}$

3. In scientific notation, 170.04 is written as

(A) 0.17004×10^3
(B) 1.7004×10^2
(C) 17.004×10^1
(D) 1.7004×10^{-1}

4. There are 40 students in a class. Girls make up 60% of the class. 25% of the girls wear glasses. How many girls in the class wear glasses?

(A) 6
(B) 8
(C) 10
(D) 15

5. If $560 is shared in the ratio 2 : 3 : 9, then the difference between the largest and the smallest shares is

(A) $ 80
(B) $240
(C) $280
(D) $360

6. If 60% of a number is 90, what is the number?

(A) 30
(B) 54
(C) 150
(D) 180

7. The first three common multiples of 3, 4 and 6 are:

(A) 12, 24, 36
(B) 6, 8, 12
(C) 3, 4, 6
(D) 0, 1, 2

8. The number 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) $3 \times 10^3 + 1 \times 10$

9. The value of the digit 5 in the number 537 is

(A) $\frac{5}{500}$

(B) 50

(C) 500

(D) 5000

10. By the distributive law $49 \times 17 + 49 \times 3 =$

(A) $52 + 66$
(B) 52×66
(C) $49 + 20$
(D) 49×20

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11. Which of the following sets is defined by $\{x \in Z : -2 \leq x \leq 4\}$?

(A) {0, 1, 2, 3, 4}
(B) {1, 2, 3, 4}
(C) {–1, 0, 1, 2, 3}
(D) {–2, –1, 0, 1, 2, 3, 4}

12. In a class of 32 students, 17 study Music and 20 study Art. What is the LEAST number of students who are studying BOTH Music and Art?

(A) 3
(B) 5
(C) 12
(D) 15

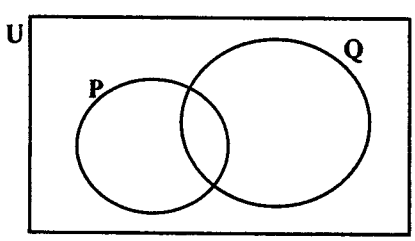
Item 13 refers to the following information.

P = {prime numbers}
Q = {odd numbers}
R = {even numbers}

13. Which of the following sets is empty?

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

Item 14 refers to the Venn diagram below.



14. In the Venn diagram, n(P) = 5, n(Q) = 9 and n(P ∪ Q) = 10. What is n(P ∩ Q)?

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

15. A dress which costs $180 is being sold at a discount of 10%. The amount of the discount is

(A) $ 1.80
(B) $ 10.00
(C) $ 18.00
(D) $170.00

16. A man's annual salary is $45 000. His tax-free allowances total $13 000. He has to pay a tax of 35% on his taxable income. The tax payable is

(A) $ 4 550.00
(B) $11 200.00
(C) $15 750.00
(D) $20 300.00

17. If TT$6.00 is equivalent to US$1.00, then TT$15.00 in U.S. dollars is

(A) $0.25
(B) $0.40
(C) $2.50
(D) $4.00

18. If $7000 is borrowed at the rate of 5% per annum for 3 years, the simple interest is

(A) $ 105
(B) $ 210
(C) $ 370
(D) $1050

19. How much does a customer pay for an article marked at $50.00 if a sales tax of 6% is charged?

(A) $44.00
(B) $47.00
(C) $53.00
(D) $56.00

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20. Tracy bought a pen for \$60 and sold it to gain 20% on her cost price. How much money did she gain?

(A) \$12
(B) \$40
(C) \$72
(D) \$80

21. 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

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

(A) 5%

(B) $8\frac{1}{3}\%$

(C) $16\frac{1}{3}\%$

(D) 20%

23. If $r * s = s^r$, then $3 * 2 =$

(A) 8
(B) 9
(C) 12
(D) 27

24. $\frac{4}{5x} + \frac{2}{5x} =$

(A) $\frac{6}{25x}$

(B) $\frac{8}{25x}$

(C) $\frac{6}{10x}$

(D) $\frac{6}{5x}$

25. $5(x+y) - 3(x-y) =$

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

26. If $x = -2, y = 3, t = 2$, then $\left(\frac{x}{y}\right)^t =$

(A) $-\frac{4}{9}$

(B) $\frac{4}{9}$

(C) $\frac{4}{3}$

(D) $\frac{9}{4}$

27. $3x^2 \times 2x^3 =$

(A) $6x^5$
(B) $5x^5$
(C) $5x^6$
(D) $72x^5$

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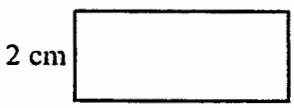
28. Given $2x + 3 \geq 9$, the range of values of x is

(A) $x > 6$
(B) $x \geq 6$
(C) $x > 3$
(D) $x \geq 3$

29. If $5x - 26 = x + 50$, then the value of x is

(A) -12
(B) -6
(C) 6
(D) 19

Item 30 refers to the following diagram.



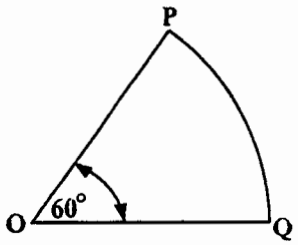
30. The area of the rectangle, in cm^2, is x^2. Which of the following equations may be used to find the value of x?

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

31. If $3 + \frac{2}{x} = 1$, then the value of x is

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

Item 32 refers to the figure below.



32. The figure above, **not drawn to scale**, shows a sector of a circle centre O. The length of the minor arc PQ is 8 cm. What would be the length of the circumference of the circle?

(A) 16 cm
(B) 24 cm
(C) 48 cm
(D) 64 cm

33. The volume of a cube whose edge is 6 cm long is

(A) 18 cm^3
(B) 36 cm^3
(C) 72 cm^3
(D) 216 cm^3

34. 2500 millimetres expressed in metres is

(A) 0.25
(B) 2.5
(C) 25
(D) 250

35. Tom leaves town P at 0600 hrs and drives to town Q, which is 595 km away. He arrives in town Q at 1300 hrs the same day. Tom's average speed was

(A) 70 km/h
(B) 75 km/h
(C) 85 km/h
(D) 90 km/h

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36. On leaving Trinidad, the time on a pilot's watch was 23:00 hrs. When he arrived at his destination, in the same time zone, on the following day his watch showed 03:00 hrs. How many hours did the flight take?

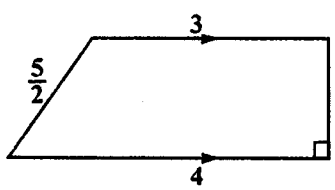
(A) 4
(B) 20
(C) 26
(D) 52

37. Fifty guests were each served 2 glasses of champagne. Each glass held 150 millilitres. How many litres of champagne were served?

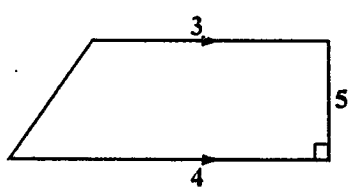
(A) 0.15
(B) 1.5
(C) 15
(D) 150

38. Which of the figures below, **not drawn to scale**, has an area equal to $\frac{1}{2}(3 + 4) \times 5$ square units?

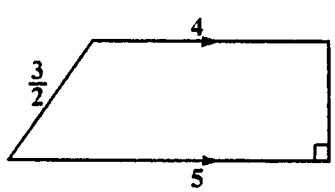
(A)



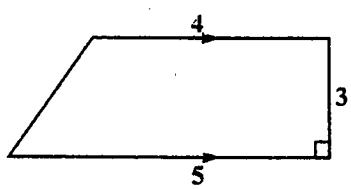
(B)



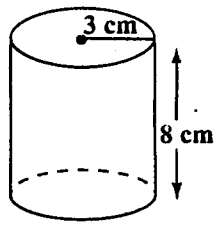
(C)



(D)



Item 39 refers to the diagram below.



39. The diagram, **not drawn to scale**, shows a cylinder of radius 3 cm and height of 8 cm. The volume is

(A) $12\ \pi\ cm^3$
(B) $48\ \pi\ cm^3$
(C) $72\ \pi\ cm^3$
(D) $192\ \pi\ cm^3$

40. The area of a triangle is 30 cm^2 and its base is 10 cm. What is the perpendicular height of the triangle?

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

41. The heights, in cm, of ten students are 150, 152, 153, 155, 155, 156, 158, 160, 165, 170. The **range** is

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

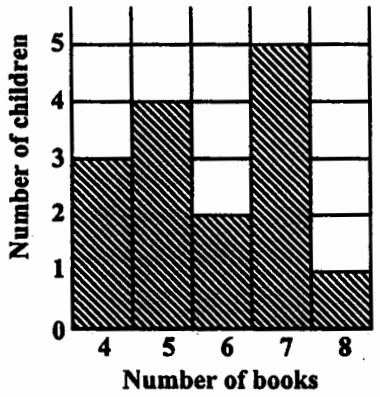
42. A bag contains 60 marbles of different colours but similar in size and mass. The probability of randomly choosing a red marble is $\frac{5}{12}$. How many red marbles does the bag contain?

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

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Item 43 refers to the following bar chart.



43. The bar chart above shows the number of books read by the children who took part in a survey.

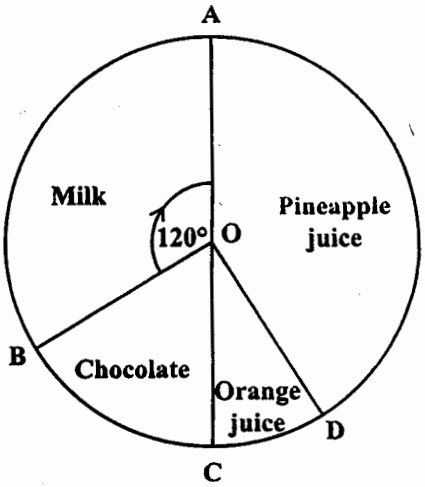
How many children took part in the survey?

(A) 5
(B) 15
(C) 75
(D) 87

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

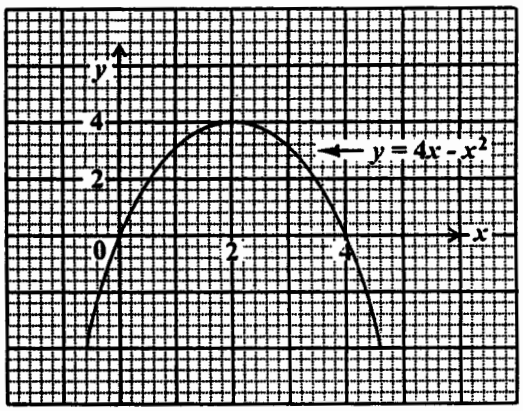
Item 45 refers to the following diagram.



45. The pie-chart above shows the preference in drinks of a group of students. If 12 students prefer chocolate, then the TOTAL number of students is

(A) 48
(B) 72
(C) 180
(D) 360

Item 46 refers to the graph below.



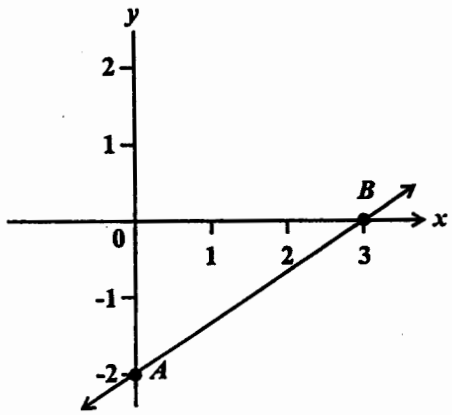
46. The maximum point of $y = 4x - x^2$ is

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

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Item 47 refers to the graph below.



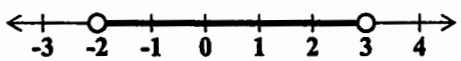
47. The straight line AB cuts the Y axis at

(A) (0, 3)
(B) (0, 2)
(C) (3, –2)
(D) (0, –2)

48. Which of the following sets is represented by the relation f: $x \rightarrow x^2 + 3$?

(A) {(0, 3), (1, 4), (2, 7), (3, 12)}
(B) {(0, 3), (1, 5), (2, 7), (3, 9)}
(C) {(0, 3), (1, 4), (2, 5), (3, 6)}
(D) {(0, 3), (1, 1), (2, 4), (3, 9)}

Item 49 refers to the diagram below.



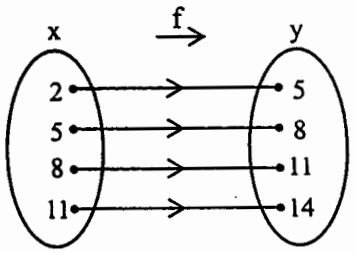
49. The inequality above is defined by

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

50. If $h(x) = \frac{3x-2}{5}$, then $h(-6) =$

(A) -4
(B) $\frac{-16}{5}$
(C) $\frac{16}{5}$
(D) 4

Item 51 refers to the arrow diagram below, which shows a function.



51. Which of the following BEST describes the function?

(A) $y = x$
(B) $x = y + 3$
(C) $f(x) = x + 3$
(D) $f(x) = y + 3$

52. A boat was travelling on a bearing of 270°. In what direction was it travelling?

(A) East
(B) West
(C) North
(D) South

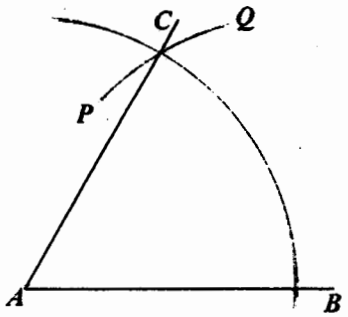
53. If the sum of the interior angles of a polygon is 4 right angles, the polygon is a

(A) triangle
(B) hexagon
(C) pentagon
(D) quadrilateral

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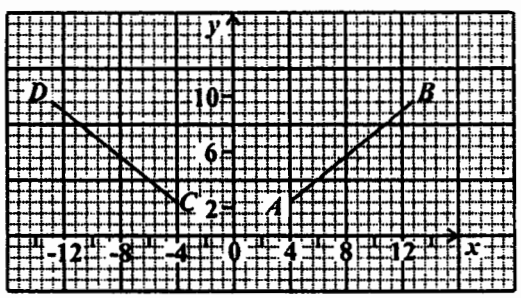
Item 54 refers to the diagram below of a construction. With centre A, an arc BC is drawn. With centre B, and the same radius, the arc PCQ is drawn.



54. What is the measure of < BAC?

(A) 30°
(B) 45°
(C) 60°
(D) 75°

Item 55 refers to the following graph.



55. In the figure above, the line *CD* is the image of *AB* after

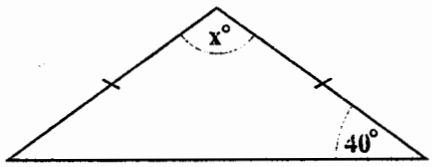
(A) a rotation through 90° centre *O*

(B) a reflection in the *y*-axis

(C) a translation by vector $\begin{pmatrix} -4 \\ -8 \end{pmatrix}$

(D) an enlargement of scale factor –1

Item 56 refers to the isosceles triangle below.



56. In the triangle, the value of x is

(A) 40°
(B) 80°
(C) 100°
(D) 140°

57. The image of a point P(–2, 3) under a translation $\begin{pmatrix} 3 \\ 4 \end{pmatrix}$ is

(A) (–6, 12)
(B) (–5, –1)
(C) (5, 1)
(D) (1, 7)

58. A ladder 5 metres long is leaning against a vertical wall. The foot of the ladder is 3 metres away from the wall. How far up the wall does the ladder reach?

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

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59. In a triangle ABC, angle A = $x°$ and angle B = $2x°$. What is the size of angle C?

(A) 45°

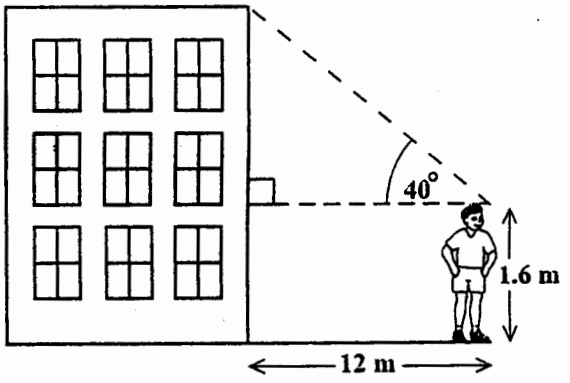
(B) 60°

(C) $\left(\frac{180}{3x}\right)^{\circ}$

(D) $(180 - 3x)°$

Item 60 refers to the diagram of a building below.

A boy stands 12 metres from the foot of the building and observes the angle of elevation of the top of the building.



60. The height of the building is approximately

(A) 12 tan 40°
(B) 1.6 + 12 sin 40°
(C) 1.6 + 12 cos 40°
(D) 1.6 + 12 tan 40°

END OF TEST

IF YOU FINISH BEFORE TIME IS CALLED, CHECK YOUR WORK ON THIS TEST.