JUNIOR DIVISION

Questions 1 - 10, 3 marks each

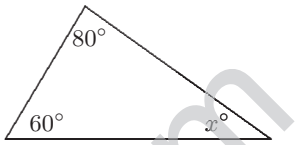
1. The value of $1 + 12 + 8 + 9$ is

(A) 20 (B) 21 (C) 29 (D) 30 (E) 31

2. How many different letters of the alphabet are used in the word 'COOTAMUNDRA', the birth place of Don Bradman?

(A) 6 (B) 7 (C) 8 (D) 9 (E) 10

3. In the diagram, the value of x is



(A) 140 (B) 40 (C) 30 (D) 50 (E) 60

4. $10^3 + 10^2 + 10 + 1$ is equal to

(A) 1001 (B) 1010 (C) 1011 (D) 1110 (E) 1111

5. 1.1×0.7 equals

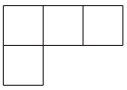
(A) 77 (B) 7.7 (C) 0.77 (D) 0.707 (E) 7.07

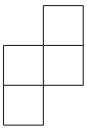
6. The price, per litre, of petrol at two different service stations is 111.4 c and 94.8 c. The difference, in cents, between the two prices is

(A) 17.4 (B) 16.6 (C) 17.6 (D) 7.6 (E) 15.6

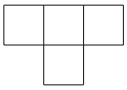
7. All of the figures below are made up from four squares of equal area. Which figure has a perimeter which is different from the others?

(A) 

(B) 

(C) 

(D) 

(E) 

J2

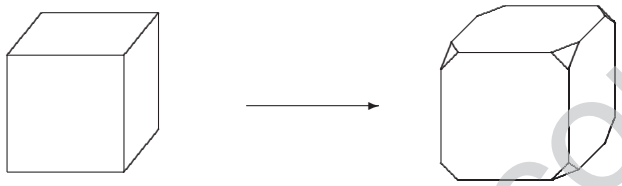
8. A radio station decides to play 4 Australian songs per hour. The number of Australian songs the radio station should play between 6 am Tuesday and 7 pm Wednesday in the same week is

(A) 144 (B) 96 (C) 100 (D) 92 (E) 148

9. Which of the following values can replace the square to make the value of $\frac{\square}{8}$ between 6 and 7?

(A) 36 (B) 40 (C) 45 (D) 50 (E) 60

10. A cube has all its corners cut off as shown.



How many edges does the new shape have?

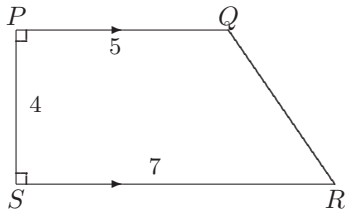
(A) 24 (B) 28 (C) 32 (D) 36 (E) 40

Questions 11 - 20, 4 marks each

11. Which of the following is midway between $\frac{1}{6}$ and $\frac{1}{10}$?

(A) $\frac{2}{15}$ (B) $\frac{7}{60}$ (C) $\frac{3}{20}$ (D) $\frac{1}{7}$ (E) $\frac{1}{12}$

12. In the diagram $PQ = 5\,\text{cm}$, $PS = 4\,\text{cm}$, $SR = 7\,\text{cm}$ and $PQ \parallel SR$. The area of $PQRS$, in square centimetres, is



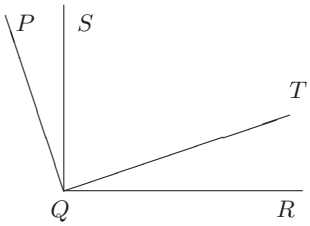
(A) 20 (B) 22 (C) 24 (D) 26 (E) 28

J3

13. A box weighs 242 kg when full and 188 kg when half full. How much does it weigh, in kilograms, when empty?

(A) 94 (B) 268 (C) 134 (D) 54 (E) 108

14. Angle PQR is equal to 138°. SQ is perpendicular to QR and QT is perpendicular PQ. The size of $\angle SQT$ is



(A) 42° (B) 64° (C) 48° (D) 24° (E) 21°

15. The winner of the 'Bridge to Bridge' speedboat race travelled 34 km in 18 minutes. The winner's average speed, in kilometres per hour, is closest to

(A) 113 (B) 96 (C) 189 (D) 120 (E) 102

16. I have a suitcase which measures 70 cm × 50 cm × 30 cm. Given that one cubic centimetre equals one millilitre, what is the volume, in litres, of my suitcase?

(A) 10.5 (B) 105 (C) 1050 (D) 10 500 (E) 105 000

17. Suppose an Australian dollar is worth 55 US cents. An Australian tourist in the USA buys an item worth $US100 and pays $A200. What should the change be in $US?

(A) 5 (B) 10 (C) 15 (D) 20 (E) 25

18. A survey is taken of 30 people on Cottesloe Beach to determine how safety conscious they are. It found that 20 swim between the flags, 18 wear sunscreen and 9 do both. How many of these people observed neither safety measure?

(A) 0 (B) 1 (C) 2 (D) 3 (E) 4

19. On a twenty-four-hour digital clock whose display ranges from $\boxed{00:00}$ to $\boxed{23:59}$, how many times during one day does the display show a palindrome? (A palindrome is a number that is the same forwards as backwards, for example $\boxed{02:20}$, $\boxed{23:32}$.)

(A) 12 (B) 16 (C) 17 (D) 18 (E) 20

J4

20. If you have 50 c, \$2 and \$1 coins, in how many ways can you make up \$10?

(A) 21 (B) 36 (C) 30 (D) 33 (E) 35

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

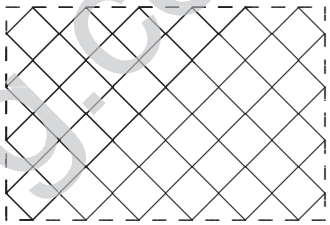
21. In this multiplication, $PQRS$ is a four digit number and P, Q, R and S stand for different digits. Which of the following statements is *not* true?

$$\begin{array}{cccccc} & P & Q & R & S \\ \times & & & & 9 \\ \hline & S & R & Q & P \end{array}$$

(A) $PQRS$ is divisible by 9 (B) $P = 1$ (C) $Q = 0$

(D) $R = 7$ (E) $S = 9$

22. We say that squares can be packed together to form a 'jagged rectangle' if they fill a rectangular box in the way shown in the diagram. The diagram shows a 6 by 4 jagged rectangle and it contains 39 squares of the same size. In a 9 by 7 jagged rectangle how many such squares would there be?



(A) 109 (B) 111 (C) 113

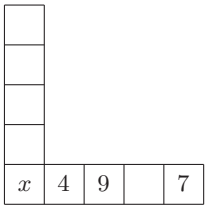
(D) 115 (E) 117

23. Given 5 consecutive positive whole numbers, which of the following is *not* always true?

(A) the middle number is the average of the second and fourth numbers
(B) the sum of all 5 numbers is divisible by 5
(C) at least one of the numbers is divisible by 3
(D) three of the numbers are divisible by 2
(E) the middle number is the average of the first and last numbers

J5

24. The numbers from 1 to 9 inclusive are to be placed one per square in the figure on the right so that the total of the five numbers in the horizontal row is the same as the total of the five numbers in the vertical column. Given that the numbers 4, 7 and 9 are in the positions shown, how many different possible values of x are there?



(A) 1 (B) 2 (C) 3 (D) 4 (E) 5

25. What are the last 5 digits of the sum

$$1 + 11 + 111 + \cdots + \underbrace{111\ldots111}_{2002\ digits}?$$

(A) 11012 (B) 54321 (C) 10101 (D) 21212 (E) 01012

26. One hundred and twenty 5 cent coins are placed in a row. Every second coin is then replaced with a 10 cent coin. Every third coin is then replaced with a 20 cent coin. Every fourth coin is then replaced with a 50 cent coin. Finally, every fifth coin is replaced with a dollar coin. The total value of the 120 coins in a row is now

(A) \$40 (B) \$44 (C) \$44.40 (D) \$46 (E) \$48

27. The smallest number of 5 cm by 30 cm rectangles which can be fitted together to make a large rectangle with sides in the ratio 5 : 4 is

(A) 30 (B) 40 (C) 60 (D) 120 (E) 24

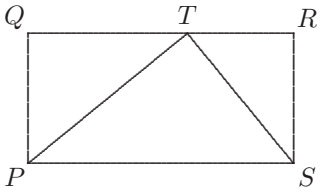
28. A 4×4 antimagic square is an arrangement in a square of the numbers from 1 to 16 so that the totals of each of the four rows and four columns and two diagonals are ten consecutive numbers in some order. The diagram shows an incomplete antimagic square. When it is completed, what number will replace the asterisk?

		$*$	14
	9	3	7
	12	13	5
10	11	6	4

(A) 1 (B) 2 (C) 8 (D) 15 (E) 16

J6

29. A rectangle $PQRS$ with $PQ = 49$ and $PS = 100$ is cut into 4900 squares of side 1. T is a point on QR such that $QT = 60$. Of these 4900 squares, how many are cut by the lines PT and TS?



(A) 192 (B) 196 (C) 198 (D) 200 (E) 202

30. Note that $1 + 2 + 3 + 45 + 6 + 78 + 9 = 144$. In how many *other* ways is it possible to make a total of 144 using only 1, 2, 3, 4, 5, 6, 7, 8, and 9 in that order and addition signs?

(A) 1 (B) 2 (C) 3 (D) 4 (E) 5