INTERMEDIATE DIVISION

Questions 1 - 10, 3 marks each

1. 1.1×0.7 equals

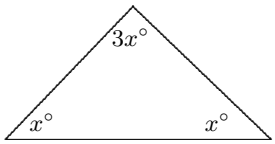
(A) 77 (B) 7.7 (C) 0.77 (D) 0.707 (E) 7.07

2. $4 \div \frac{1}{4} =$

(A) 1 (B) 0 (C) $\frac{1}{16}$ (D) 16 (E) $4\frac{1}{4}$

3. In the diagram, the value of x is

(A) 18 (B) 24 (C) 30 (D) 36 (E) 40



4. 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

5. 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

6. The number halfway between $\frac{1}{4}$ and $\frac{1}{16}$ is

(A) $\frac{5}{32}$ (B) $\frac{1}{8}$ (C) $\frac{5}{16}$ (D) $\frac{1}{12}$ (E) $\frac{7}{32}$

7. A rectangular area 20 m by 15 m is to be covered with rectangular tiles each 15 cm by 20 cm. The minimum number of tiles required will be

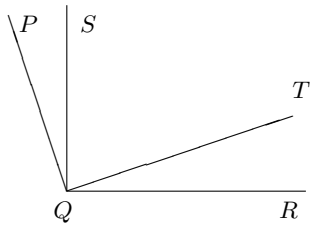
(A) 100 (B) 1000 (C) 10 000 (D) 100 000 (E) 1 000 000

8. Which of the following is the same as 2^{100}?

(A) $4^5 \times 2^{10}$ (B) a half of 2^{101} (C) $16^5 \times 2^5$

(D) $\left(2^3\right)^{97}$ (E) $2^2 + 2^{98}$

9. 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°

10. The dosage of a particular medicine for a child is 2.5 mg for each 3 kg the child weighs. The correct dose, in milligrams, for a child who weighs 16.5 kg is

(A) 11.5 (B) 13.75 (C) 14.25 (D) 13.5 (E) 18.75

Questions 11 - 20, 4 marks each

11. Between Harden and Temora workers are repairing a section of the road 5 km long. As a result the speed limit along this section has been reduced from 100 km/h to 75 km/h. How many minutes does this add to the journey?

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

12. A ball bounces back to half the height of its previous bounce. It is dropped from a height of 32 m. It is caught at the top after the fifth bounce. How many metres has it travelled since being dropped?

(A) 63 (B) 93 (C) 94 (D) 125 (E) 126

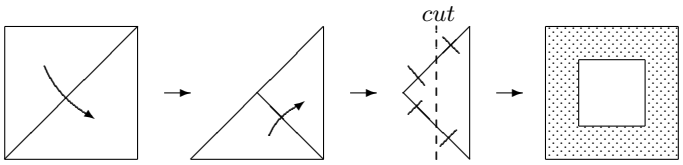
13. Suppose an Australian dollar is worth 55 US cents. An Australian tourist in the USA buys an item worth $US100 and pays $A200. What should the change be in $US?

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

14. How many different rectangles with whole number side lengths can be made with perimeter 36 units?

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

15. A square piece of paper 10 cm by 10 cm is folded, cut and unfolded as shown.



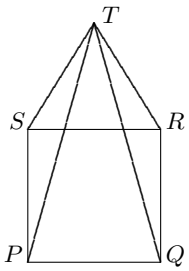
The area of the inner square (unshaded), in square centimetres, is

(A) 50 (B) 25 (C) 75 (D) 12.5 (E) 40

16. 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

17. In the diagram, $PQRS$ is a square and STR is an equilateral triangle in the same plane. Find $\angle PTQ$.

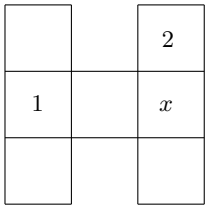


(A) 16° (B) 22°30′ (C) 30°
(D) 36° (E) 40°

18. Tickets to a concert cost \$4.50 for an adult and \$3 for a child. If a total of 120 adults and children attended the concert and \$420 was collected, the number of children attending must have been

(A) 40 (B) 50 (C) 60 (D) 70 (E) 80

19. The numbers from 1 to 7 inclusive are to be placed one per square in the figure on the right so that the total of the three numbers in the horizontal row is the same as the totals of the three numbers in each vertical column. Given that numbers 1 and 2 are in the positions shown, how many different possible values of x are there?



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

20. An art gallery has allocated a certain amount of money for 1st, 2nd and 3rd prizes in an exhibition. The money is divided in the ratio of 5 : 4 where the larger amount is for the 1st prize and the smaller amount is divided again in the ratio of 5 : 4 for the 2nd and 3rd prizes respectively. It becomes known that the third prize is \$290 less than the first prize. How much is the second prize?

(A) \$100 (B) \$200 (C) \$300 (D) \$400 (E) \$500

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. At 3:00 pm, the angle between the big hand and the small hand on a clock is exactly 90°. Ten minutes later, the acute angle between the hands will be

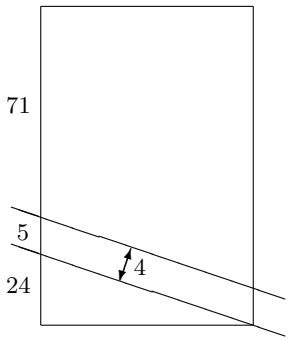
(A) 45° (B) 30° (C) 35° (D) 17.5° (E) 70°

23. 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

24. Farmer Taylor of Burra Creek is very annoyed. A 4 m wide road has been put through one of his rectangular paddocks, splitting it into two. As a result, he has lost some of his land. If all dimensions in the figure are in metres, how much land, in square metres, has he lost?



(A) 120 (B) 150 (C) 160 (D) 200 (E) 250

25. 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

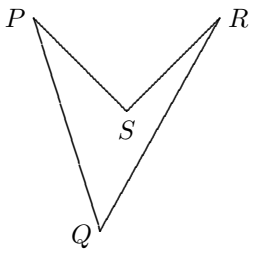
(A) \$40 (B) \$44 (C) \$44.40 (D) \$46 (E) \$48

26. 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

27. The walls of a castle form a quadrilateral $PQRS$ as shown so that $PQ = 40$ m, $QR = 45$ m, $RS = 20$ m, $SP = 20$ m and $\angle PSR = 90°$. A guard must walk outside the walls so that he is always 2 m from the nearest part of the walls. The guard started walking around the castle clockwise and finally arrived at the starting point.



The length, in metres, of his walk was

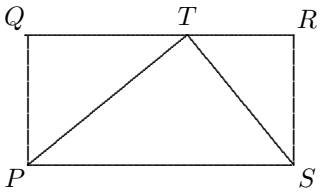
(A) $125 + 4\pi$ (B) $121 + 5\pi$ (C) $125 + 5\pi$ (D) $121 + 6\pi$ (E) $125 + 6\pi$

28. P is a 2002 digit number divisible by 18. Let Q be the sum of the digits of P, let R be the sum of the digits of Q and S be the sum of the digits of R. The value of S is

(A) 9 (B) 18 (C) 180

(D) 2002 (E) The sum is not uniquely determined

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