JUNIOR DIVISION - 2000

Questions 1 - 10, 3 marks each

1. $1004 - 405$ equals

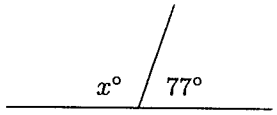
(A) 699 (B) 599 (C) 509 (D) 601 (E) 609

2. $0.4 \times (0.6 + 0.4)$ equals

(A) 0.4 (B) 0.04 (C) 0.84 (D) 0.44 (E) 0.82

3. In the diagram, x has the value

(A) 113 (B) 93 (C) 103 (D) 123 (E) 67



4. $\frac{3}{4} - \frac{1}{2}$ equals

(A) $\frac{1}{3}$ (B) 0 (C) $\frac{1}{2}$ (D) $\frac{1}{4}$ (E) $\frac{2}{3}$

5. There are 270 students at a school going on a bus trip. Each bus can take 45 students. How many buses are needed?

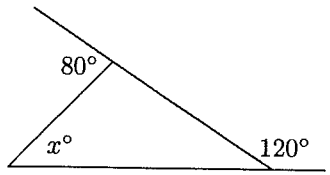
(A) 4 (B) 5 (C) 6 (D) 7 (E) 8

6. The train from Antville to Zebraville departs at 12:40. The journey takes $1\frac{3}{4}$ hours. Its arrival time in Zebraville is

(A) 13:55 (B) 14:25 (C) 14:35 (D) 14:55 (E) 15:55

7. In the diagram, the value of x is

(A) 10 (B) 20 (C) 30 (D) 40 (E) 50



8. How many times does the digit 9 appear in the answer when 10 101 is subtracted from 1 000 000 000?

(A) 5 (B) 6 (C) 7 (D) 8 (E) 9

9. The value of $\frac{1}{0.05}$ is

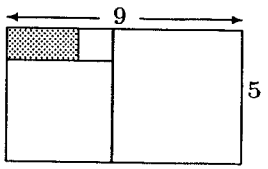
(A) 200 (B) 20 (C) 5 (D) $\frac{1}{20}$ (E) 500

10. Which of the following is *not* equal to $\frac{3}{4}$?

(A) $\frac{3+3}{4+4}$ (B) $\frac{3 \times 2}{4 \times 2}$ (C) $\frac{3 \div 2}{4 \div 2}$ (D) $\frac{3^2}{4^2}$ (E) $\frac{15}{20}$

Questions 11 - 20, 4 marks each

11. Find the area, in square centimetres, of the shaded rectangle if all other shapes in the large 9 cm by 5 cm rectangle are squares.



(A) 4 (B) 3 (C) 2 (D) 1.5 (E) 3.5

12. 3% of 81 is the same as 9% of

(A) 27 (B) 54 (C) 72 (D) 90 (E) 243

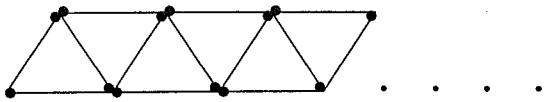
13. The average minimum temperature for a week in Graz is 4°. The minimum temperatures for the first six days were 7°, 6°, 2°, 7°, 3°, 0°. The minimum temperature on the seventh day was

(A) −1° (B) 0° (C) 3° (D) 4° (E) 7°

14. How many of the first ten positive whole numbers can be expressed as the sum of two different primes? (Note that 1 is not a prime.)

(A) 10 (B) 9 (C) 7 (D) 5 (E) 4

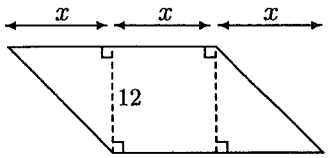
15. A pattern of triangles is made from matches, as shown below.



If there are 87 matches used, how many triangles have been formed?

(A) 29 (B) 43 (C) 58 (D) 86 (E) 87

16. The dimensions of the figure are as shown, with all lengths in centimetres. The area of the figure is 408 square centimetres. The value of x is



(A) 8 (B) 7 (C) 12 (D) 17 (E) 18

17. In a block of 100 flats, a painter is kept employed by painting one flat each month from January to November. The flats are painted in the same order and he takes a holiday every December. If my flat is painted in August 2000, it will next be painted in

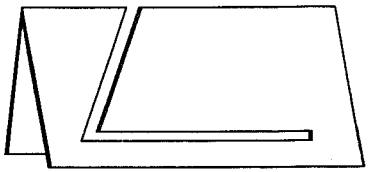
(A) July 2008 (B) September 2009 (C) September 2001

(D) October 2011 (E) November 2012

18. An ant sits at a vertex of a cube with edge length 1 m. The ant moves along the edges of the cube and comes back to the original vertex without visiting any other point twice. The length of the longest such journey, in metres, is

(A) 4 (B) 6 (C) 7 (D) 8 (E) 10

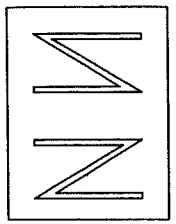
19. A rectangular sheet of paper is folded in half and then folded in half again. A piece is cut out of the paper, while folded, as shown.



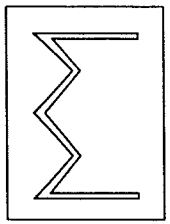
The sheet is then smoothed out to its original size again.

Given that the pattern which appears is one of the following, which is it?

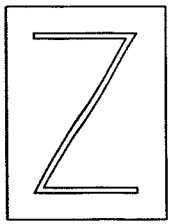
(A)



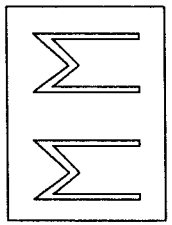
(B)



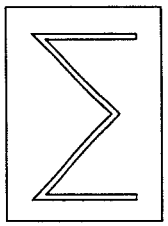
(C)



(D)



(E)



20. At a sale, Sarah spent \$143 on some shirts and shorts. The shirts cost \$15 each and the shorts cost \$17 each. The total number of shirts and shorts that Sarah bought was

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

Questions 21 - 30, 5 marks each

21. Sixteen football teams play in a tournament. They are first divided into four groups, each of four teams. In each group each team plays each other once. The best two teams from each group then play in a knockout tournament (when a team loses a game it is eliminated) to decide the overall winner. How many matches must be played?

(A) 15 (B) 16 (C) 25 (D) 31 (E) 32

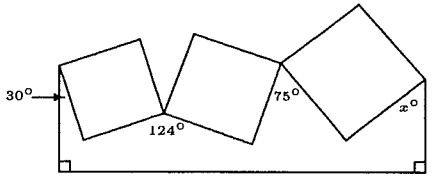
22. The number of positive integers whose square is a factor of 2000 is

(A) 3 (B) 6 (C) 10 (D) 12 (E) 20

23. A hardware store sells numerals for house numbers. It has large quantities of the numerals 3, 5 and 8 but no other numerals. How many different house numbers, with no more than three digits, can be made from these numerals?

(A) 33 (B) 21 (C) 27 (D) 36 (E) 39

24. Three squares are strung together at the corners on two vertical poles as shown. Find the value of x when other angles are given as shown.



(A) 39 (B) 41 (C) 43 (D) 44 (E) 46

25. As a reward for a week of good behaviour, Tommy was given \$7 to spend at the school canteen. By the time Tommy got to the canteen, there were only chocolate bars, meat pies and pizza pieces left. The prices of a chocolate bar, a meat pie and a pizza piece were 75 c, \$1.05 and \$1.65 respectively. What is the largest amount Tommy could spend?

(A) \$6.50 (B) \$6.75 (C) \$6.90 (D) \$6.95 (E) \$7

26. Three old clocks, whose hour hands are missing, have minute hands which all run fast. Clocks P, Q and R gain 2, 6 and 12 minutes per hour respectively. They start at midday with all three minute hands pointing to 12. The number of hours later when all three hands show the same number of minutes is

(A) 22 (B) 24 (C) 26 (D) 28 (E) 30

27. When 2000 is divided by a positive integer N, the remainder is 5. The number of all possible values of N is

(A) 2 (B) 6 (C) 8 (D) 13 (E) 16

28. A class of students had some money to distribute among themselves. They tried taking \$7 each and found that the last student received only \$5. When they took \$6 each, \$21 was left over. The amount of money (in dollars) was

(A) 156 (B) 157 (C) 158 (D) 159 (E) 163

29. My cat gets on to the roof of our house by jumping first on to the fence, then on to the water-tank, then on to the roof of the shed, then on to the pergola and finally on to the roof. However, coming down, she can omit as many of the intermediate steps as she wishes. How many routes can she take coming down?

(A) 5 (B) 16 (C) 15 (D) 8 (E) 4

30. Mike has five boxes. The first contains two squares and eight triangles, the second three squares and two triangles, the third three squares and four triangles, the fourth four squares and three triangles and the fifth five squares and four triangles. The side lengths of all the squares and triangles in all the boxes are the same. Mike wishes to make a few polyhedra by glueing together squares and triangles along their edges. Using all the pieces from one box for each polyhedron, for how many boxes can he succeed?

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

AMC CORRECT RESPONSES—JUNIOR DIVISION—1997-2001

QUESTION	1997	1998	1999	2000	2001
1	D	E	B	B	A
2	B	D	C	A	A
3	E	E	D	C	B
4	D	C	D	D	B
5	A	B	E	C	E
6	B	C	C	B	B
7	B	D	D	B	E
8	D	B	C	C	B
9	E	D	D	B	A
10	D	A	A	D	C
11	A	B	E	B	C
12	C	C	A	A	E
13	B	C	E	C	A
14	A	D	B	D	D
15	B	D	D	B	C
16	C	A	A	D	C
17	A	C	A	B	A
18	C	C	C	D	D
19	C	A	C	D	C
20	D	C	E	B	D
21	C	E	D	D	D
22	D	A	B	B	B
23	E	B	D	E	A
24	D	C	C	B	A
25	B	E	E	C	D
26	C	D	A	E	C
27	C	B	E	D	B
28	A	B	A	D	B
29	E	E	D	B	D
30	D	D	A	D	E