

Question One

The value of $1987 - 1988 + 1989 - 1990 + 1991 - 1992 + \dots - 2016 + 2017$ is:

- (A) -15 (B) -14 (C) 2002 (D) 2003 (E) 2017

Question Two

A container in the shape of a cube has edge length 20cm and contains some water. A solid gold cube, with edge length 15cm, sinks to the bottom of this container, causing the water level to rise just to the top of the solid cube. Which of the following is closest to the original depth of the water?

- (A) 5.31cm (B) 6.56cm (C) 7.50cm (D) 8.25cm (E) 11.50cm

Question Three

I have some strange dice: the faces show the numbers 1 to 6 as usual, except that the odd numbers are negative (i.e. -1, -3, -5 in place of 1, 3, 5). If I throw two such dice, which total cannot be achieved?

- (A) 3 (B) 4 (C) 7 (D) 8 (E) 10

Question Four

Sixty-four white $1 \times 1 \times 1$ cubes are used to form a $4 \times 4 \times 4$ cube, which is then painted red on each of its six faces. This large cube is then broken back up into its 64 unit cubes. Each unit cube is given a score as using the table below. What would the total score for the $4 \times 4 \times 4$ cube be?

Exact number of faces painted red:	3	2	1	0
Score for this unit cube:	5	1	0	-5

- (A) -24 (B) -16 (C) 0 (D) 16 (E) 24

Question Five

A number is 'Bepriisque' if it is the **only** natural number between a prime number and a perfect square (e.g. 10 is Bepriisque but 12 is not). The number of two-digit Bepriisque numbers (including 10) is:

- (A) 2 (B) 3 (C) 4 (D) 5 (E) 6

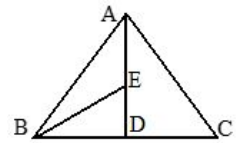
Question Six

A bag contains 20 lollies: 4 orange flavoured, 6 lime flavoured and 10 strawberry flavoured. Lollies are removed randomly from the bag and eaten. What is the minimum number of lollies that must be removed to be certain that at least two lollies of each flavour have been eaten?

- (A) 6 (B) 18 (C) 12 (D) 10 (E) 8

Question Seven

ABC is an equilateral triangle as shown, with sides of length 14cm. If E is the midpoint of AD, the length of BE to one decimal place must be:



- (A) 12.1cm (B) 9.3cm (C) 6.1cm (D) 7.6cm (E) 15.7cm

Question Eight

Gina took seven tests. The average of the first four tests was 71%. The average of test 4 through to test 7 was 84%. The fourth test score was 74%. What is the average of the seven tests (to one decimal place):

- (A) 78.0% (B) 74.3% (C) 99.1% (D) 67.4% (E) 77.1%

Question Nine

In the equation $2x + 8 = x^2 - p = 5x + 11$, what is the value of p ?

- (A) -6 (B) -1 (C) 5 (D) 6 (E) -5

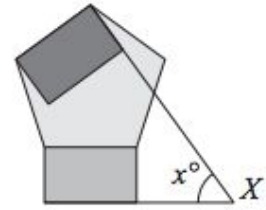
Question Ten

Brachycephalus frogs have three toes on each foot and two fingers on each 'hand', whereas the common frog has five toes on each foot and four fingers on each 'hand'. Some Brachycephalus and common frogs are in a bucket. Each frog has all its fingers and toes. Between them they have 122 toes and 92 fingers. How many frogs are in the bucket?

- (A) 15 (B) 17 (C) 19 (D) 21 (E) 23

Question Eleven

The diagram shows two rectangles and a regular pentagon. One side of each rectangle has been extended to meet at X . What is the value of x in degrees?



- (A) 52 (B) 54 (C) 56 (D) 58 (E) 60

Question Twelve

In an attempt to copy down a linear sequence of six positive integers, I wrote down five numbers:

10 24 31 36 45

After checking with the original numbers, I found that not only did I miss one of the numbers entirely, I miscopied one of the others. Which of the above numbers was not copied correctly?

- (A) 10 (B) 24 (C) 31 (D) 36 (E) 45

Question Thirteen

The largest four-digit number whose digits add to 16 is 9700. The 5th largest four-digit number whose digits have a sum of 16 is:

- (A) 9601 (B) 9502 (C) 9520 (D) 9430 (E) 9511

Question Fourteen

If $x \# y = xy - x$, what is $3 \# (5 \# 2)$ equal to:

- (A) 21 (B) 8 (C) 12 (D) 16 (E) 10

Question Fifteen

You have two large bags of marbles. In one bag the ratio of green marbles to pink marbles is 2 : 3. In the other bag the ratio of green marbles to pink marbles is 3 : 5. If you have 24 green marbles, the smallest number of pink marbles you could have is:

- (A) 36 (B) 37 (C) 38 (D) 39 (E) 40