
Part A

1. If x is equal to $\frac{1}{2}$, what is the value of $\frac{1}{x+\frac{1}{x}}$?

- (A) $\frac{2}{5}$ (B) $\frac{9}{10}$ (C) $\frac{10}{9}$ (D) $\frac{5}{2}$ (E) None of these
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2. One third of the birds in a cage are blue. Forty of the 60 females are blue, while 25% of the males are blue. How many birds are in the cage?

- (A) 60 (B) 120 (C) 180 (D) 240 (E) 300
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3. Define a new arithmetic operation $a * b = b^2 - 2a$. Then $(3 * 4) * 5$ is equal to:

- (A) 5 (B) 15 (C) 23 (D) 60 (E) 90
-

4. The largest of four consecutive integers is twice as large as the smallest. The sum of these four integers is

- (A) 10 (B) 14 (C) 18 (D) 24 (E) None of these
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5. Three planets revolving in the same direction around the same star are in a straight line with the star. The first planet completes one revolution in 4 years, the second one in 6 years and the third one in 9 years. In how many years will the three planets return to their current position?

- (A) 18 (B) 24 (C) 30 (D) 36 (E) 42
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6. This year, my father's age is twice my age. Ten years ago my age was one-third the age of my father. The sum of our ages is:

- (A) 30 (B) 40 (C) 50 (D) 60 (E) 70
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7. In a test consisting of 15 multiple choice questions, four points are awarded for each correct answer, and two points are deducted for each wrong answer. Alex answered all the questions and scored 30. How many questions did he answer correctly?

- (A) 8 (B) 10 (C) 12 (D) 14 (E) 16
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8. Of the numbers below, which is the largest that could be the perimeter of some triangle of which two sides have lengths 4 and 5?

(A) 13 (B) 15 (C) 17 (D) 19 (E) 21

9. There are 15 marbles in a box. They come in three colors: green, blue and red. There are seven times as many blue marbles as red marbles. How many green marbles are in the box?

(A) 3 (B) 4 (C) 5 (D) 6 (E) 7

10. John spent almost all his money in four stores. In each of these stores, he spent half of the money that he had going in plus \$1. At the end, he was left with \$1. How much money did John have at the beginning?

(A) \$4 (B) \$10 (C) \$22 (D) \$46 (E) \$94

Part B

11. Jane has 5 chocolate bars, Karen has 3, and Amel doesn't have any. The three friends share them evenly. All the chocolate bars cost the same. Amel pays his friends a total of \$4.00 for his share. How much of the \$4.00 should go to Jane?

(A) \$2.50 (B) \$2.75 (C) \$3 (D) \$3.25 (E) \$3.50

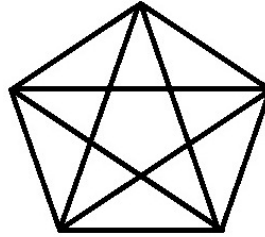
12. A rectangle is 245 cm long and 175 cm wide. The rectangle is to be cut into squares that are all the same size. The entire rectangle is to be used. What is the largest possible area, in cm^2 , of each of the squares?

(A) 5^2 (B) 7^2 (C) 15^2 (D) 25^2 (E) 35^2

13. In a fenced yard there are sheep, goats, and cows. If all these animals but four are sheep, all these animals but six are goats and all these animals but eight are cows, how many cows are there in this yard?

(A) 1 (B) 3 (C) 5 (D) 9 (E) None of these

14. How many triangles are there in the following diagram ?



- (A) 20 (B) 25 (C) 30 (D) 35 (E) None of these

15. Sports cars are driven by men and each has two women as passengers. Sedan cars are driven by women and each has three men as passengers. If there are a total of 12 cars carrying a total of 43 persons, including the drivers, how many sports cars are there ?

- (A) 3 (B) 5 (C) 7 (D) 9 (E) None of these

16. A cyclist is traveling along a path consisting of three sections of the same length. In the first section, pedaling against the wind, he goes at 10 km/h. In the second section, going up a hill, he goes at 5 km/h. In the third section, he bikes downhill at 30 km/h. What is the average speed of this cyclist on the whole path ?

- (A) 5 km/h (B) 9 km/h (C) 10 km/h (D) 15 km/h (E) 20 km/h

17. Daryl leaves Fredericton by car and drives at constant speed. At noon, his distance traveled, in kilometers, is a two digit number. At 1 PM, the distance traveled is the same two digits, reversed. At 2 PM, the distance traveled is the same two digits as at noon, but separated by a zero. At what speed is Daryl driving ?

- (A) 45 km/h (B) 50 km/h (C) 55 km/h (D) 61 km/h (E) 106 km/h

18. Mark and Tom are playing with two six sided coloured dice. On each die the faces are painted blue or red. They throw both dice at once and Mark wins if the upper faces of the dice are of the same colour, while Tom wins if they are different colours. Each player has exactly the same chance to win. If the first die has one blue face and five red faces, how many red faces are there on the second die ?

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

19. The government decides to use new coins so that only 3 cent and 7 cent coins are used. Some amounts, like 5 cents, cannot be made exactly using the new coins. Which is the largest amount that cannot be made exactly with the new coins?

(A) 8 cents (B) 9 cents (C) 10 cents (D) 11 cents (E) 12 cents

20. Albert, Bob and Carl are digging identical holes in a field. When Albert works with Bob, they dig a hole in four hours. When Albert works with Carl, they dig a hole in three hours. When Bob works with Carl, they dig a hole in two hours. How many hours does it take Albert to dig a hole when he works alone?

(A) 9 hours (B) 12 hours (C) 24 hours (D) 36 hours (E) 40 hours

Part C

21. The ones digit of $3^{2011} - 1$ is

(A) 0 (B) 2 (C) 4 (D) 6 (E) 8

22. If $x^2 + x - 1 = 0$, then $x^3 + 2x^2 + 2011$ is equal to

(A) 2009 (B) 2010 (C) 2011 (D) 2012 (E) 2013

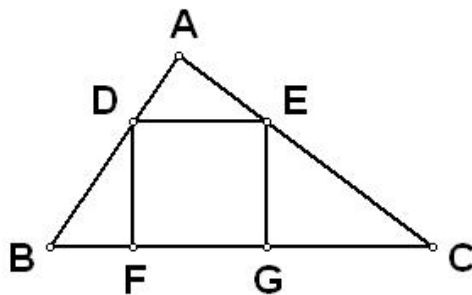
23. In a village there are 100 houses. There is a dog in 90 houses, a cat in 80 houses, a rabbit in 75 houses and a turtle in 65 houses. Among those 100 houses, how many, at least, have a dog, a cat, a rabbit and a turtle?

(A) 5 (B) 10 (C) 15 (D) 20 (E) None of these

24. A woman minister is receiving guests. Half of the guests are women the other half are men. Each guest gives a flower to the minister and moreover, each woman guest receives a flower from every other guest. In all, 78 flowers have been given. How many guests does the minister receive?

(A) 10 (B) 12 (C) 14 (D) 16 (E) None of these

25. Let ABC be a triangle with area equal to one. If $\overline{BD} = 2\overline{DA}$ and $\overline{EC} = 2\overline{AE}$, then the area of the rectangle $DEGF$ is equal to



- (A) $\frac{1}{3}$ (B) $\frac{4}{9}$ (C) $\frac{1}{2}$ (D) $\frac{5}{9}$ (E) $\frac{2}{3}$

26. Two cyclists ride along a circular path whose circumference is 10 km. The two cyclists start at the same time, from diametrically opposite positions. The first cyclist goes at a constant speed of 30 km/h in the clockwise direction, while the second goes at a constant speed of 20 km/h in the counter clockwise direction. They both cycle for 1 hour. How many times do they meet?

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