AMC8
Mock Test 2010

INSTRUCTIONS

1. **DO NOT OPEN THIS BOOKLET UNTIL YOUR PROCTOR TELLS YOU.**
2. This is a twenty-five question multiple choice test. Each question is followed by answers marked **A, B, C, D** and **E**. Only one of these is correct.
3. The answers to the problems are to be marked on the AMC 8 Answer Form with a #2 pencil. Check the blackened circles for accuracy and erase errors and stray marks completely. Only answers properly marked on the answer form will be graded.
4. There is no penalty for guessing. Your score on this test is the number of correct answers.
5. **Please do not write anything on the question booklet, as the booklets will be reused.**
6. No aids are permitted other than scratch paper, graph paper, rulers, and erasers. Calculators are NOT allowed as no problems on the test will require the use of a calculator.
7. Figures are not necessarily drawn to scale.
8. Before beginning the test, your proctor will ask you to record certain information on the answer form.
9. When your proctor gives the signal, begin working on the problems. You will have **40 minutes** to complete the test.
10. When you finish the exam, please sign your name in the space provided on the Answer Form and return the question booklet and the answer form to the proctor.
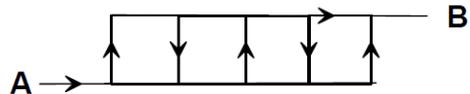
1. Which of the following numbers is a prime number?
   (A) $99^2 - 97^2$ (B) $99^2 - 98^2$ (C) $99^2 + 98^2$ (D) $98^2 + 96^2$ (E) $99^2 + 97^2$

2. Number of integers between π^{-2} and π^2 is :
   (A) 5   (B) 6   (C) 7   (D) 8   (E) 9

3. In a sports club 32 do not play soccer, 50 do not play volleyball and 40 play volleyball. How many play soccer?
   (A) 8   (B) 32   (C) 40   (D) 50   (E) 58

4. This map shows a grid of one-way streets. How many different routes are there from A to B?
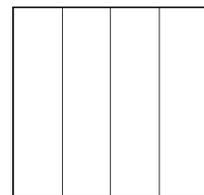   (A) 10   (B) 8   (C) 7   (D) 5   (E) 3

5. The desks in a classroom are lined up in straight rows. Victor's desk is in the third row from the front and the fourth row from the back of the class room. His desk is also the fourth from the left and the sixth from the right. The total number of desks in the classroom is:
   (A) 24   (B) 70   (C) 40   (D) 72   (E) 54

6. A square is divided into 4 identical rectangles as shown in the diagram. The perimeter of each of the four rectangles is 30 units. What is the perimeter of the square?
   (A) 36   (B) 40   (C) 44   (D) 48   (E) 52

7. On a particular day, 100 airplanes depart from the International Airport at Dulles. Ten of the planes are delayed by an hour each. Of the remaining planes, one third are on time, one third are delayed by 10 minutes and the rest of them are delayed by 20 minutes. The average flight delay in minutes is
   (A) 15   (B) 16   (C) 18   (D) 20   (E) 30

8. $(1 - 1/2) (1 - 1/3) (1 - 1/4) (1 - 1/5) \ldots\ldots (1 - 1/2010)$ is equal to

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(A) 1/2010   (B) 1/1005   (C) 1/670   (D) 1/201   (E) 1/10

9. Of the 28 T–shirts in a drawer, six are red, five are blue, and the rest are white. If Bob selects T–shirts at random whilst packing for a holiday, what is the least number he must remove from the drawer to be sure that he has three T–shirts of the same color?

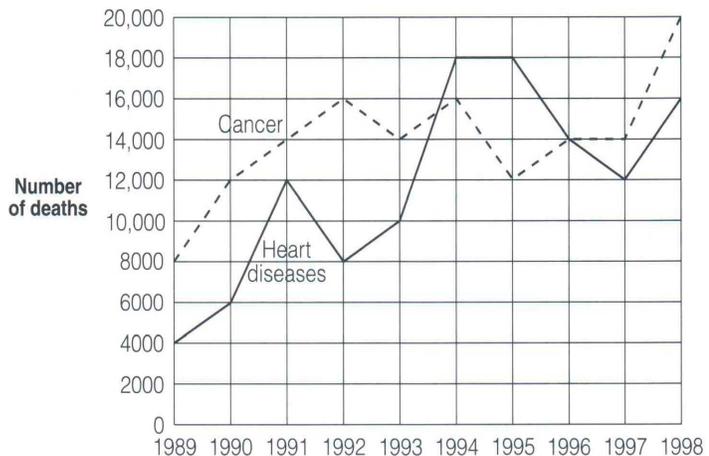(A) 4   (B) 13   (C) 9   (D) 19   (E) 7

10. What is the units digit of $(2009^{2010} + 2011^{2010})$?

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

11. The areas of the faces of the rectangular box are A, B and C. If the volume of the box is V, then $A \cdot B \cdot C$ is equal to

(A) V   (B) $2V^2$ (C) V^2
(D) $\sqrt{V}$ (E) $V^{1/3}$
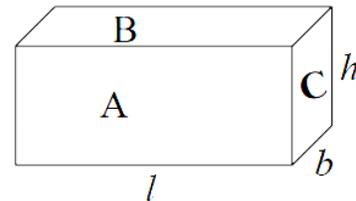
12. If the sum of the interior angles of a particular polygon is 9000°, how many sides does the polygon have?

(A) 25   (B) 27   (C) 48   (D) 50   (E) 52

13. How many numbers between 100 and 500 are divisible by both 6 and 9 ?

(A) 19   (B) 20   (C) 21   (D) 22   (E) 23

14. The line graph shows the number of people who died from Cancer and Heart Diseases between 1989 and 1998. in the United States. The total number of who people died from Cancer as a fraction of the total number of people who died from Heart disease between 1989 and 1990 is

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

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15. The chicken on Farmer Joe's farm gains weight at the rate of 20% per week. Farmer Joe wants them to double their weight before he sells them. The minimum number of weeks he needs to keep them is
    (A) 3   (B) 4   (C) 5   (D) 6   (E) 7

16. Triangles ABE, ABD and BDC in this figure are isosceles right triangles. The length of BC is 4 units. What is the number of units in the perimeter of pentagon AEBCD?
   (A) $2 + 2\sqrt{2}$
    (B) $2 + 4\sqrt{2}$
    (C) $4 + 2\sqrt{2}$
    (D) $6 + 4\sqrt{2}$
    (E) $8 + 2\sqrt{2}$
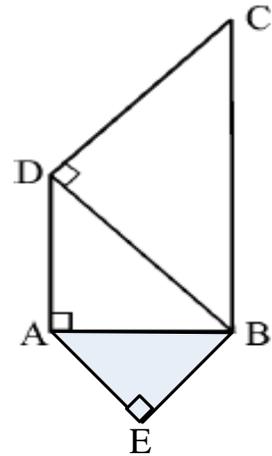
17. A meal made with four eggs and 60 g cheese contains 560 calories. Another meal made with six eggs and 20 g cheese also contains 560 calories. How many calories does one egg contain?
    (A) 60   (B) 70   (C) 80   (D) 90   (E) 100

18. Isosceles triangles have been drawn between AB and AC with angle BAC= 9°. What is the size of the largest angle in the shaded triangle?
    (A) 72° (B) 81°
    (C) 90° (D) 126°
   (E) 144°
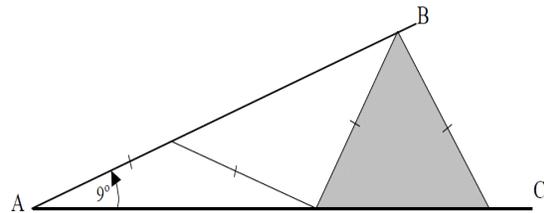
19. Twenty-seven identical white cubes are assembled into a single cube, the outside of which is painted black. The cube is then disassembled and the smaller cubes thoroughly shuffled in a bag. A blindfolded man (who cannot feel the paint) randomly selects a small cube from the bag, the probability that the cube has at least two of its faces painted black is
    (A) 4/9   (B) 5/9   (C) 10/27   (D) 25/27   (E) 20/27

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20. A card board with some patterns was given, as shown in the adjacent picture. Which of the following cubes can not be folded out of it?

A)   B)   C)

D)   E)
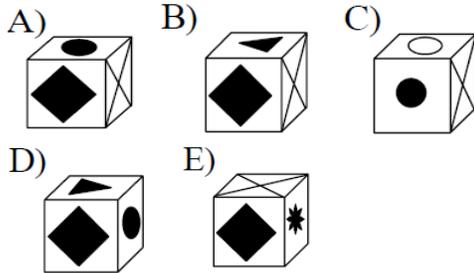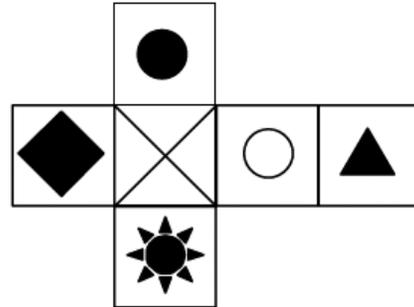
21. If (a ♣ b) = (a + b)/| a – b | when a and b are not equal, What is the value of ((5 ♣ 3) ♣ 6) – ((4 ♣ 2) ♣ 5) ?
(A) 1   (B) 2   (C) 4   (D) 5   (E) 6

22. ABC is a three-digit number such that

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    ABC
    ABC
+   ABC
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    CCC
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where A, B and C stand for different digits. Then the sum of the digits A, B and C is:
(A) 13   (B) 14   (C) 15   (D) 16   (E) 17

23. Triangle AHI is equilateral. We know BC , DE and FG are all parallel to HI and AB = BD = DF = FH. What is the ratio of the area of trapezoid FGIH to the area of triangle AHI? Express your answer as a common fraction.
(A) 3/4   (B) 5/8   (C) 7/16
(D) 9/16   (E) 8/27
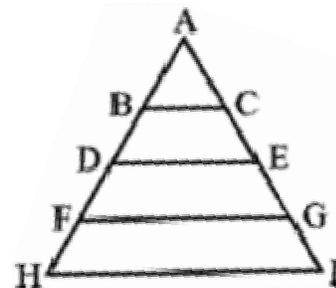
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24. Linda has three types of toys: teddy bears, cars and jets.
    All her toys except 21 are jets.
    All her toys except 23 are teddy bears.
    All her toys except 26 are cars.
    The number of jets she has is:
    (A) 14   (B) 13   (C) 12   (D) 11   (E) 10

25. Pirate Pete shares his treasure with Pirate Paul in an interesting way. Pete first says, "One for me, one for you," giving himself one coin and starting Paul's pile with one coin. Then Pete says, "Two for me, and two for you," giving him self two more coins but making Paul's pile two coins in total. Next Pete says, "Three for me, three for you" while giving himself three more coins and making Paul's pile three coins in total. This pattern continues until Pete gives himself x more coins but makes Paul's pile x coins in total. At this point all of the coins have been distributed, and Pirate Pete has exactly ten times as many coins as Pirate Paul. How many gold coins do they have in total?
    (A) 100   (B) 119   (C) 209   (D) 269   (E) 324