AMC 8 1985

1    $\frac{3\times5}{9\times11} \times \frac{7\times9\times11}{3\times5\times7} =$

   (A) 1 **(B)** 0 **(C)** 49 **(D)** $\dfrac{1}{49}$ **(E)** 50

2    $90 + 91 + 92 + 93 + 94 + 95 + 96 + 97 + 98 + 99 =$

   (A) 845 **(B)** 945 **(C)** 1005 **(D)** 1025 **(E)** 1045

3    $\frac{10^7}{5\times10^4} =$

   (A) $.002$ **(B)** $.2$ **(C)** 20 **(D)** 200 **(E)** 2000

4   The area of polygon $ABCDEF$, in square units, is
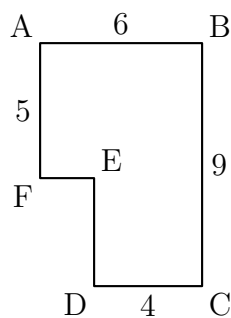
All angles in this diagram are right.

   (A) 24 **(B)** 30 **(C)** 46 **(D)** 66 **(E)** 74

5
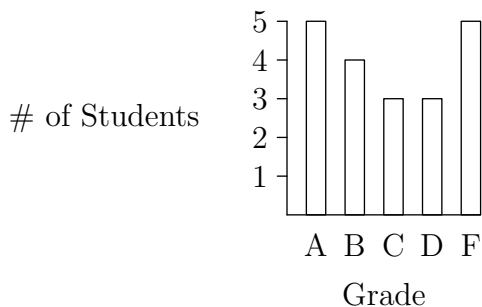
The bar graph shows the grades in a mathematics class for the last grading period. If A, B, C, and D are satisfactory grades, what fraction of the grades shown in the graph are satisfactory?

(A) $\dfrac{1}{2}$ (B) $\dfrac{2}{3}$ (C) $\dfrac{3}{4}$ (D) $\dfrac{4}{5}$ (E) $\dfrac{9}{10}$

6   A ream of paper containing 500 sheets is 5 cm thick. Approximately how many sheets of this type of paper would there be in a stack 7.5 cm high?

(A) 250 (B) 550 (C) 667 (D) 750 (E) 1250

7
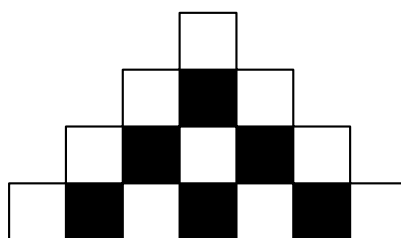
A "stair-step" figure is made up of alternating black and white squares in each row. Rows 1 through 4 are shown. All rows begin and end with a white square. The number of black squares

in the 37th row is

(A) 34 (B) 35 (C) 36 (D) 37 (E) 38

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8   If $a = -2$, the largest number in the set $\left\{-3a, 4a, \frac{24}{a}, a^2, 1\right\}$ is

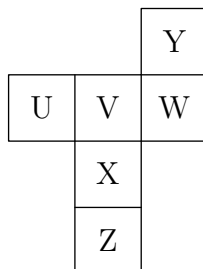(A) $-3a$ (B) $4a$ (C) $\dfrac{24}{a}$ (D) a^2 (E) 1

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9   The product of the 9 factors $\left(1 - \frac{1}{2}\right)\left(1 - \frac{1}{3}\right)\left(1 - \frac{1}{4}\right)\ldots\left(1 - \frac{1}{10}\right) =$

(A) $\dfrac{1}{10}$ (B) $\dfrac{1}{9}$ (C) $\dfrac{1}{2}$ (D) $\dfrac{10}{11}$ (E) $\dfrac{11}{2}$

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10   The fraction halfway between $\frac{1}{5}$ and $\frac{1}{3}$ (on the number line) is

(A) $\dfrac{1}{4}$ (B) $\dfrac{2}{15}$ (C) $\dfrac{4}{15}$ (D) $\dfrac{53}{200}$ (E) $\dfrac{8}{15}$

11

```
          +---+
          | Y |
      +---+---+---+
      | U | V | W |
      +---+---+---+
          | X |
          +---+
          | Z |
          +---+
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A piece of paper containing six joined squares labeled as shown in the diagram is folded along the edges of the squares to form a cube. The label of the face opposite the face labeled X is:

(A) Z   (B) U   (C) V   (D) W   (E) Y

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12   A square and a triangle have equal perimeters. The lengths of the three sides of the triangle are 6.2 cm, 8.3 cm, and 9.5 cm. The area of the square is

   (A) 24 cm^2 **(B)** 36 cm^2 **(C)** 48 cm^2 **(D)** 64 cm^2 **(E)** 144 cm^2

13   If you walk for 45 minutes at a rate of 4 mph and then run for 30 minutes at a rate of 10 mph, how many miles have you gone at the end of one hour and 15 minutes?

   (A) 3.5 miles   **(B)** 8 miles   **(C)** 9 miles   **(D)** $25\frac{1}{3}$ miles   **(E)** 480 miles

14   The difference between a 6.5% sales tax and a 6% sales tax on an item priced at $\$20$ before tax is

   (A) $\$.01$ **(B)** $\$.10$ **(C)** $\$.50$ **(D)** $\$1$ **(E)** $\$10$

15   How many whole numbers between 100 and 400 contain the digit 2?

   (A) 100 **(B)** 120 **(C)** 138 **(D)** 140 **(E)** 148

16   The ratio of boys to girls in Mr. Brown's math class is $2:3$. If there are 30 students in the class, how many more girls than boys are in the class?

   (A) 1 **(B)** 3 **(C)** 5 **(D)** 6 **(E)** 10

17   If your average score on your first six mathematics tests was 84 and your average score on your first seven mathematics tests was 85, then your score on the seventh test was

   (A) 86 **(B)** 88 **(C)** 90 **(D)** 91 **(E)** 92

18   Nine copies of a certain pamphlet cost less than $\$10.00$ while ten copies of the same pamphlet (at the same price) cost more than $\$11.00$. How much does one copy of this pamphlet cost?

   (A) $\$1.07$ **(B)** $\$1.08$ **(C)** $\$1.09$ **(D)** $\$1.10$ **(E)** $\$1.11$

19   If the length and width of a rectangle are each increased by 10%, then the perimeter of the rectangle is increased by

(A) 1% (B) 10% (C) 20% (D) 21% (E) 40%

20   In a certain year, January had exactly four Tuesdays and four Saturdays. On what day did January 1 fall that year?

(A) Monday   (B) Tuesday   (C) Wednesday   (D) Friday   (E) Saturday

21   Mr. Green receives a 10% raise every year. His salary after four such raises has gone up by what percent?

(A) less than 40% (B) 40% (C) 44% (D) 45% (E) More than 45%

22   Assume every 7-digit whole number is a possible telephone number except those which begin with 0 or 1. What fraction of telephone numbers begin with 9 and end with 0?

(A) $\dfrac{1}{63}$ (B) $\dfrac{1}{80}$ (C) $\dfrac{1}{81}$ (D) $\dfrac{1}{90}$ (E) $\dfrac{1}{100}$

23   King Middle School has 1200 students. Each student takes 5 classes a day. Each teacher teaches 4 classes. Each class has 30 students and 1 teacher. How many teachers are there at King Middle School?

(A) 30 (B) 32 (C) 40 (D) 45 (E) 50

24
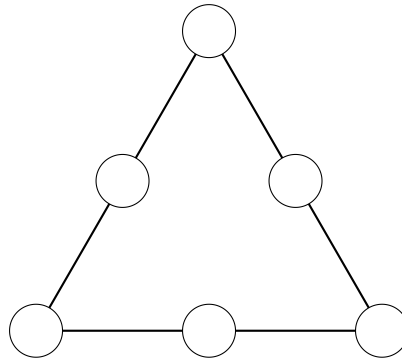
In a magic triangle, each of the six whole numbers $10 - 15$ is placed in one of the circles so that the sum, S, of the three numbers on each side of the triangle is the same. The largest possible value for S is

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

25
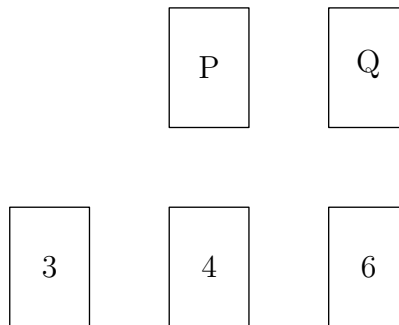
Five cards are lying on a table as shown. Each card has a letter on one side and a whole number on the other side. Jane said, "If a vowel is on one side of any card, then an even number is on the other side." Mary showed Jane was wrong by turning over one card. Which card did Mary turn over?

(A) 3 (B) 4 (C) 6 (D) P   (E) Q

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