AMC 8 1993

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by Binomial-theorem, rrusczyk

1 Which pair of numbers does NOT have a product equal to 36?

(A) $\{-4,-9\}$ (B) $\{-3,-12\}$ (C) $\left\{\frac{1}{2},-72\right\}$ (D) $\{1,36\}$ (E) $\left\{\frac{3}{2},24\right\}$

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2 When the fraction $\frac{49}{84}$ is expressed in simplest form, then the sum of the numerator and the denominator will be

(A) 11 (B) 17 (C) 19 (D) 33 (E) 133

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3 Which of the following numbers has the largest prime factor?

(A) 39 (B) 51 (C) 77 (D) 91 (E) 121

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4 $1000 \times 1993 \times 0.1993 \times 10 =$

(A) 1.993×10^3 (B) 1993.1993 (C) $(199.3)^2$ (D) $1,993,001.993$ (E) $(1993)^2$

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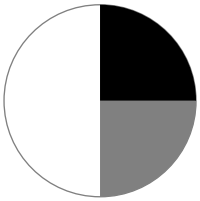
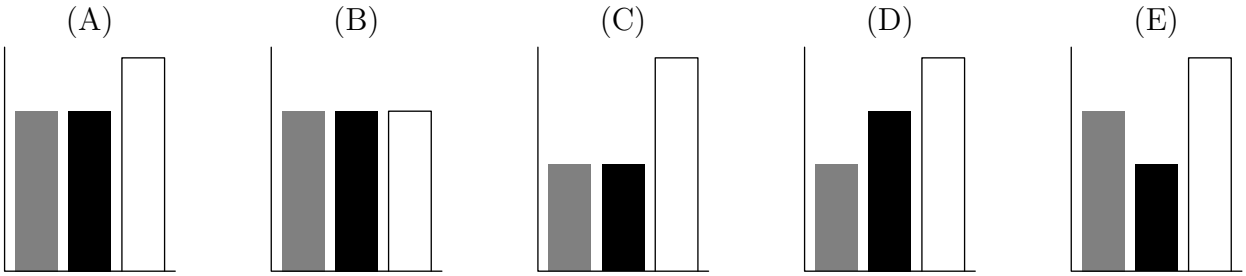
5 Which one of the following bar graphs could represent the data from the circle graph?





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6 A can of soup can feed 3 adults or 5 children. If there are 5 cans of soup and 15 children are fed, then how many adults would the remaining soup feed?

(A) 5 (B) 6 (C) 7 (D) 8 (E) 10

7 $3^3 + 3^3 + 3^3 =$

(A) 3^4 (B) 9^3 (C) 3^9 (D) 27^3 (E) 3^{27}

8 To control her blood pressure, Jill's grandmother takes one half of a pill every other day. If one supply of medicine contains 60 pills, then the supply of medicine would last approximately

(A) 1 month (B) 4 months (C) 6 months (D) 8 months (E) 1 year

9 Consider the operation $*$ defined by the following table:

*	1	2	3	4
1	1	2	3	4
2	2	4	1	3
3	3	1	4	2
4	4	3	2	1

For example, $3 * 2 = 1$. Then $(2 * 4) * (1 * 3) =$

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

10 This line graph represents the price of a trading card during the first 6 months of 1993.

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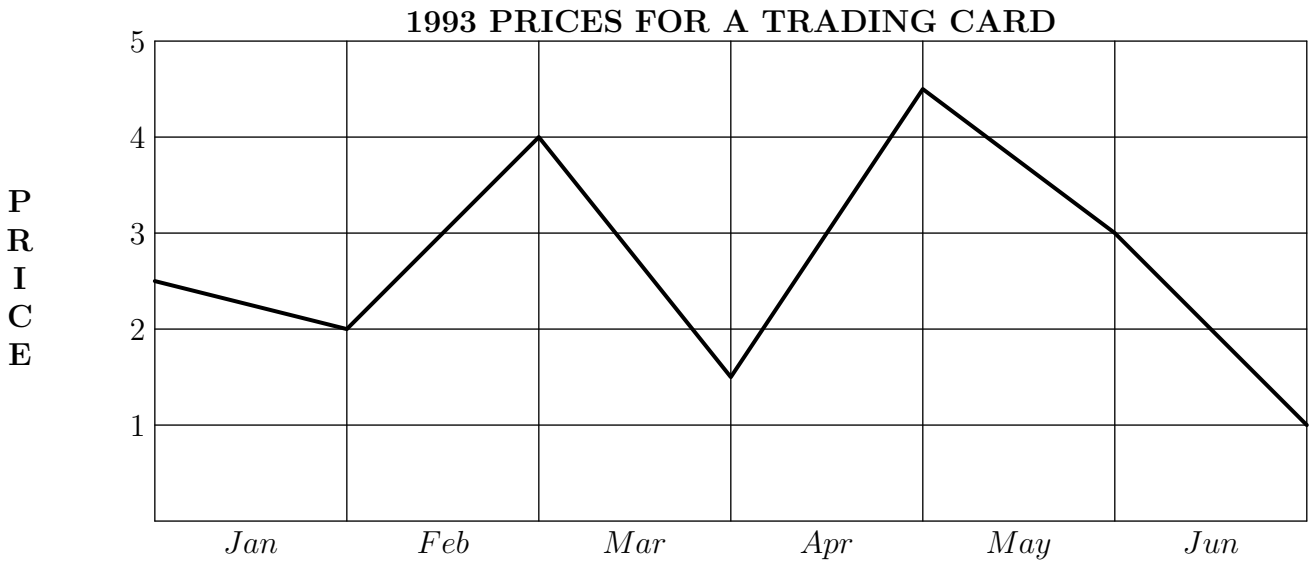

The greatest monthly drop in price occurred during

(A) January (B) March (C) April (D) May (E) June

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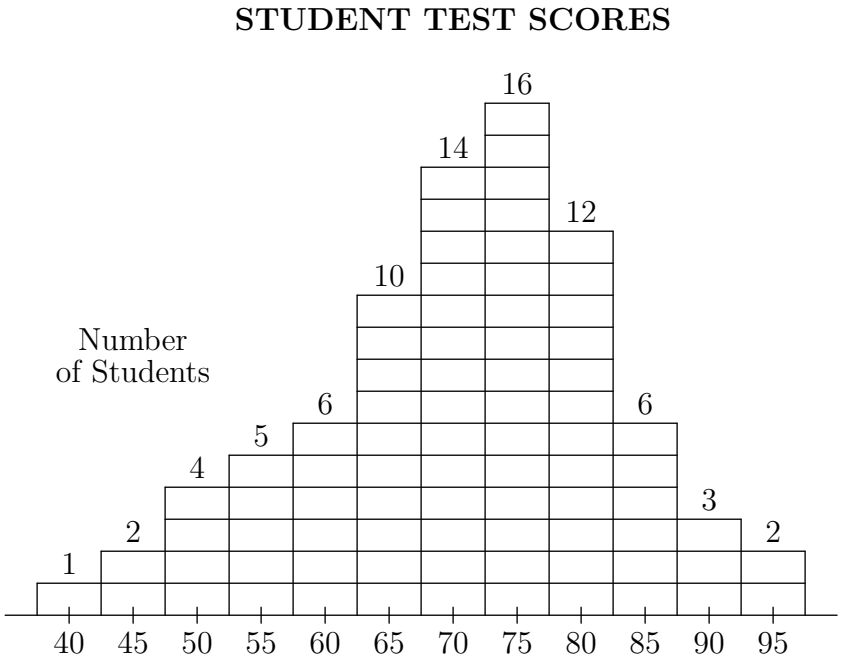
11 Consider this histogram of the scores for 81 students taking a test:



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The median is in the interval labeled

(A) 60 (B) 65 (C) 70 (D) 75 (E) 80

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12 If each of the three operation signs, $+$, $-$, $\times$, is used exactly ONCE in one of the blanks in the expression

$$5 \_\_ 4 \_\_ 6 \_\_ 3$$

then the value of the result could equal

(A) 9 (B) 10 (C) 15 (D) 16 (E) 19

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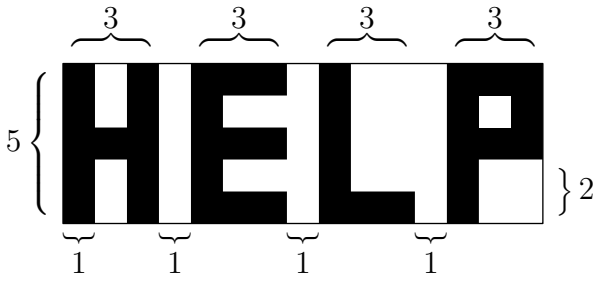
13 The word ""HELP"" in block letters is painted in black with strokes 1 unit wide on a 5 by 15 rectangular white sign with dimensions as shown. The area of the white portion of the sign, in square units, is



(A) 30 (B) 32 (C) 34 (D) 36 (E) 38

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14 The nine squares in the table shown are to be filled so that every row and every column contains each of the numbers $1, 2, 3$. Then $A + B =$

1		
	2	A
		B

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

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15 The arithmetic mean (average) of four numbers is 85. If the largest of these numbers is 97, then the mean of the remaining three numbers is

(A) 81.0 (B) 82.7 (C) 83.0 (D) 84.0 (E) 84.3

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16 $\dfrac{1}{1+\dfrac{1}{2+\dfrac{1}{3}}} =$

(A) $\frac{1}{6}$ (B) $\frac{3}{10}$ (C) $\frac{7}{10}$ (D) $\frac{5}{6}$ (E) $\frac{10}{3}$

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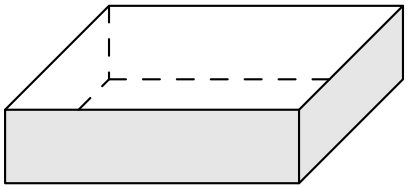
17 Square corners, 5 units on a side, are removed from a 20 unit by 30 unit rectangular sheet of cardboard. The sides are then folded to form an open box. The surface area, in square units, of the interior of the box is



(A) 300 (B) 500 (C) 550 (D) 600 (E) 1000

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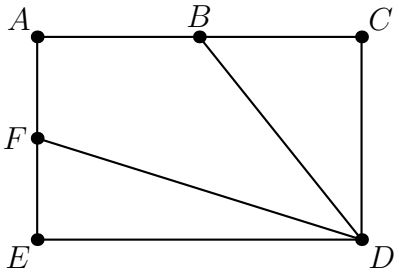
18 The rectangle shown has length $AC = 32$, width $AE = 20$, and B and F are midpoints of $\overline{AC}$ and $\overline{AE}$, respectively. The area of quadrilateral $ABDF$ is



(A) 320 (B) 325 (C) 330 (D) 335 (E) 340

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19 $(1901 + 1902 + 1903 + \cdots + 1993) - (101 + 102 + 103 + \cdots + 193) =$

(A) $167,400$ (B) $172,050$ (C) $181,071$ (D) $199,300$ (E) $362,142$

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20 When $10^{93} - 93$ is expressed as a single whole number, the sum of the digits is

(A) 10 (B) 93 (C) 819 (D) 826 (E) 833

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21 If the length of a rectangle is increased by 20% and its width is increased by 50%, then the area is increased by

(A) 10% (B) 30% (C) 70% (D) 80% (E) 100%

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22 Pat Peano has plenty of 0's, 1's, 3's, 4's, 5's, 6's, 7's, 8's and 9's, but he has only twenty-two 2's. How far can he number the pages of his scrapbook with these digits?

(A) 22 (B) 99 (C) 112 (D) 119 (E) 199

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23 Five runners, P, Q, R, S, T, have a race, and P beats Q, P beats R, Q beats S, and T finishes after P and before Q. Who could NOT have finished third in the race?

(A) P and Q (B) P and R (C) P and S (D) P and T (E) P, S and T

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24 What number is directly above 142 in this array of numbers?

$$\begin{array}{ccccccc} & & & 1 & & & \\ & & 2 & 3 & 4 & & \\ & 5 & 6 & 7 & 8 & 9 & \\ 10 & 11 & 12 & \cdots & & & \end{array}$$

(A) 99 **(B)** 119 **(C)** 120 **(D)** 121 **(E)** 122

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25 A checkerboard consists of one-inch squares. A square card, 1.5 inches on a side, is placed on the board so that it covers part or all of the area of each of n squares. The maximum possible value of n is

(A) 4 or 5 (B) 6 or 7 (C) 8 or 9 (D) 10 or 11 (E) 12 or more

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