

1992 AMC 8

Time limit: 40 minutes

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<https://live.poshenloh.com/past-contests/amc8/1992>



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1. What is the value of the following expression?

$$\frac{10 - 9 + 8 - 7 + 6 - 5 + 4 - 3 + 2 - 1}{1 - 2 + 3 - 4 + 5 - 6 + 7 - 8 + 9}$$

A -1

B 1

C 5

D 9

E 10

2. Which of the following is **not** equal to $\frac{5}{4}$?

A $\frac{10}{8}$

B $1\frac{1}{4}$

C $1\frac{3}{12}$

D $1\frac{1}{5}$

E $1\frac{10}{40}$

3. What is the largest difference that can be formed by subtracting two numbers chosen from the set $\{-16, -4, 0, 2, 4, 12\}$?

A 10

B 12

C 16

D 28

E 48

4. During the softball season, Judy had 35 hits. Among her hits were 1 home run, 1 triple, and 5 doubles. The rest of her hits were singles. What percent of her hits were singles?

A 28%

B 35%

C 70%

D 75%

E 80%

5. A circle of diameter 1 is removed from a 2×3 rectangle. Which whole number is closest to the area of the shaded region that remains?

A 1

B 2

C 3

D 4

E 5

6. Define an operation on three numbers—a top number, a lower-left number, and a lower-right number—whose value is (top number) + (lower-left number) – (lower-right number). For example, top 5, lower-left 4, lower-right 6 gives $5 + 4 - 6 = 3$. What is the sum of the operation applied to top 1, lower-left 3, lower-right 4 and the operation applied to top 2, lower-left 5, lower-right 6?

- A -2
- B -1
- C 0
- D 1
- E 2

7. The digit-sum of 998 is $9 + 9 + 8 = 26$. How many 3-digit whole numbers, whose digit-sum is 26, are even?

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

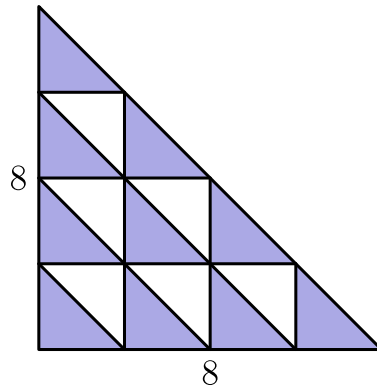
8. A store owner bought 1500 pencils at \$0.10 each. If he sells them for \$0.25 each, how many of them must he sell to make a profit of exactly \$100.00?

- A 400
- B 667
- C 1000
- D 1500
- E 1900

9. The population of a small town is 480. A bar graph of the number of females and males, with the vertical scale omitted, shows that there are twice as many females as males. How many males live in the town?

- A 120
- B 160
- C 200
- D 240
- E 360

10. An isosceles right triangle with legs of length 8 is partitioned into 16 congruent triangles as shown. The shaded area is



- A 10
- B 20
- C 32
- D 40
- E 64
11. A survey on color preferences gave these results: red 50, blue 60, brown 40, pink 60, green 40. What percent preferred blue?

- A 20%
- B 24%
- C 30%
- D 36%
- E 42%

- 12.** The five tires of a car (four road tires and a full-sized spare) were rotated so that each tire was used the same number of miles during the first 30,000 miles the car traveled. For how many miles was each tire used?

A 6000

B 7500

C 24,000

D 30,000

E 37,500

- 13.** Five test scores have a mean (average score) of 90, a median (middle score) of 91, and a mode (most frequent score) of 94. The sum of the two lowest test scores is

A 170

B 171

C 176

D 177

E not determined by the information given

14. When four gallons are added to a tank that is one-third full, the tank is then one-half full. The capacity of the tank in gallons is

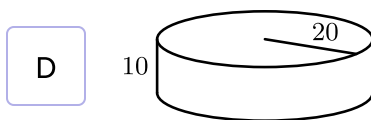
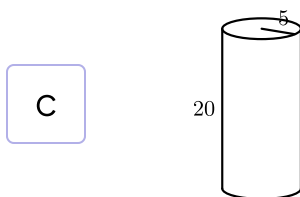
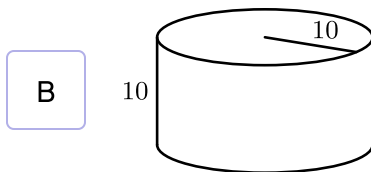
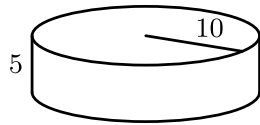
- ☐ A 8
- ☐ B 12
- ☐ C 20
- ☐ D 24
- ☐ E 48

15. What is the 1992nd letter in this sequence?

ABCDED CBA ABCDED CBA ABCDED CBA ABCDED C...

- ☐ A *A*
- ☐ B *B*
- ☐ C *C*
- ☐ D *D*
- ☐ E *E*

16. Which cylinder has twice the volume of the cylinder shown at right?



E None of the above

17. The sides of a triangle have lengths 6.5, 10, and s , where s is a whole number. What is the smallest possible value of s ?

A 3

B 4

C 5

D 6

E 7

18. On a trip, a car traveled 80 miles in an hour and a half, then was stopped in traffic for 30 minutes, then traveled 100 miles during the next 2 hours. What was the car's average speed in miles per hour for the 4-hour trip?

A 45

B 50

C 60

D 75

E 90

19. The distance between the 5th and 26th exits on an interstate highway is 118 miles. If any two exits are at least 5 miles apart, then what is the largest number of miles there can be between two consecutive exits that are between the 5th and 26th exits?

A 8

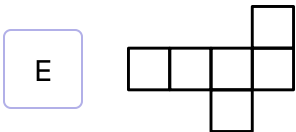
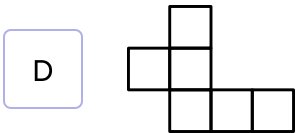
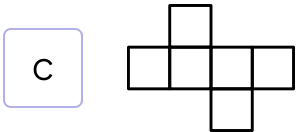
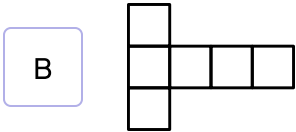
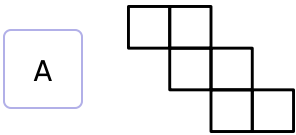
B 13

C 18

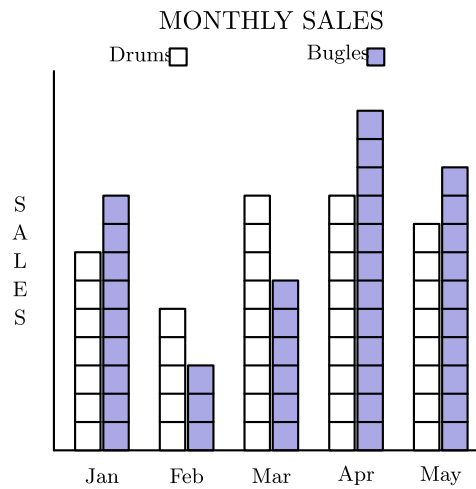
D 47

E 98

20. Which pattern of identical squares could **not** be folded along the lines shown to form a cube?



21. Northside's Drum and Bugle Corps raised money for a trip. The drummers and bugle players kept separate sales records. According to the double bar graph of monthly sales below, in what month did one group's sales exceed the other's by the greatest percent?



A Jan

B Feb

C Mar

D Apr

E May

22. Eight 1×1 square tiles are arranged so their outside edges form a polygon with a perimeter of 14 units. Two additional tiles of the same size are added to the figure so that at least one side of each added tile is shared with a side of one of the original squares. Which of the following could be the perimeter of the new figure?

A 15

B 17

C 18

D 19

E 20

23. If two dice are tossed, the probability that the product of the numbers showing on the tops of the dice is greater than 10 is

A $\frac{3}{7}$

B $\frac{17}{36}$

C $\frac{1}{2}$

D $\frac{5}{8}$

E $\frac{11}{12}$

24. Four circles of radius 3 are arranged so that their centers are the vertices of a square and each circle is tangent to its two neighbors. The shaded region is the part of the square that lies outside all four circles. The area of the shaded region is closest to

A 7.7

B 12.1

C 17.2

D 18

E 27

25. One half of the water is poured out of a full container. Then one third of the remainder is poured out. Continue the process: one fourth of the remainder for the third pouring, one fifth of the remainder for the fourth pouring, and so on. After how many pourings does exactly one tenth of the original water remain?

A 6

B 7

C 8

D 9

E 10

Solutions: <https://live.poshenloh.com/past-contests/amc8/1992/solutions>

