Diagnostic Test

1. $(6?\,3) + 4 - (2 - 1) = 5$. To make this statement true, the question mark between 6 and 3 should be replaced by:

   (A) ÷ (B) x (C) + (D) - (E) None of these

Source: AMC 8 1999 Question 1

2. Aunt Anna is 42 years old. Caitlin is 5 years younger than Brianna, and Brianna is half as old as Aunt Anna. How old is Caitlin?

   (A)15 (B)16 (C) 17 (D) 21 (E) 37

Source: AMC 8 2000 Question 1

3. How many whole numbers lie in the interval between $\frac{5}{3}$ and 2π?

   (A) 2 (B) 3 (C) 4 (D) 5 (E) Infinitely many

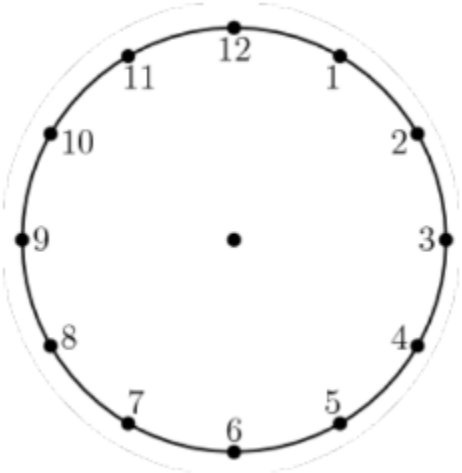
Source: AMC 8 2000 Question 3

4. Which of these numbers is less than its reciprocal?

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

Source: AMC 8 2000 Question 2

5. What is the degree measure of the smaller angle formed by the hands of a clock at 10 o'clock?



(A) 30 (B) 45 (C) 60 (D) 75 (E) 90

Source: AMC 8 1999 Question 2

6. Which triplet of numbers has a sum NOT equal to 1?

(A) $(\frac{1}{2}, \frac{1}{3}, \frac{1}{6})$ (B) $(2, -2, 1)$ (C) $(0.1, 0.3, 0.6)$

(D) $(1.1, -2.1, 1.0)$ (E) $(-\frac{3}{2}, -\frac{5}{2}, 5)$

Source: AMC 8 1999 Question 3

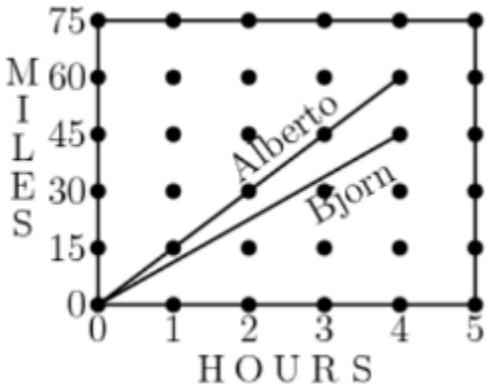
7. Which of the following equals:

$$\frac{\frac{3}{8}+\frac{7}{8}}{\frac{4}{5}}$$

(A) 1 (B) $\frac{25}{16}$ (C) 2 (D) $\frac{43}{20}$ (E) $\frac{47}{16}$

Source: AJHSME 1998 Question 3

8. The diagram shows the miles traveled by bikers Alberto and Bjorn. After four hours, about how many more miles has Alberto biked than Bjorn?



(A) 15 (B) 20 (C) 25 (D) 30 (E) 35

Source: AMC 8 1999 Question 4

9. A rectangular garden 60 feet long and 20 feet wide is enclosed by a fence. To make the garden larger, while using the same fence, its shape is changed to a square. By how many square feet does this enlarge the garden?

(A) 100 (B) 200 (C) 300 (D) 400 (E) 500

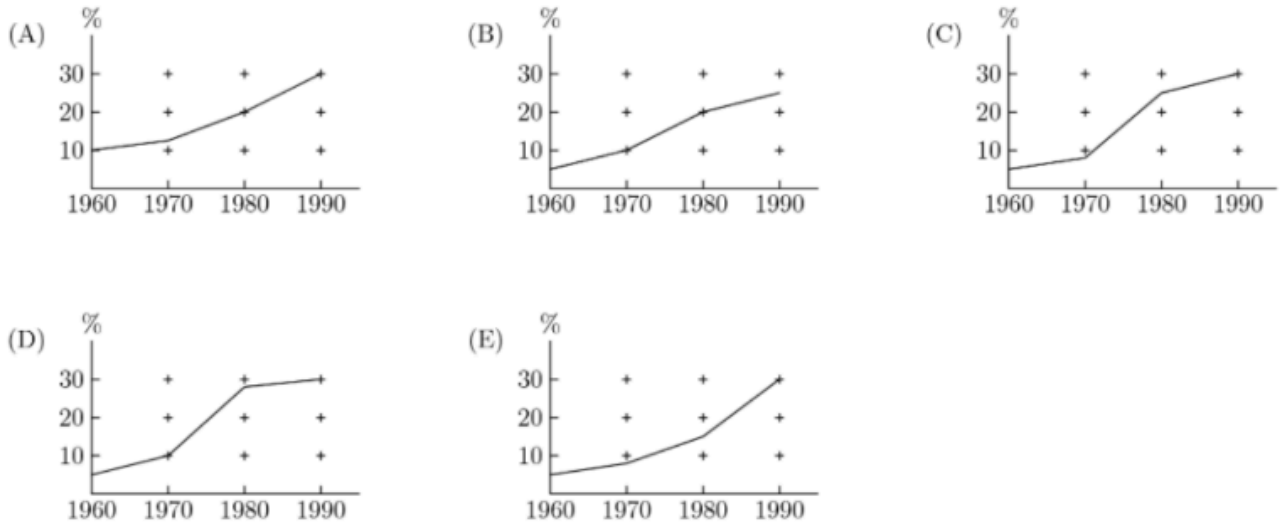
Source: AMC 8 1999 Question 5

10. Bo, Coe, Flo, Joe, and Moe have different amounts of money. Neither Joe nor Bo has as much money as Flo. Both Bo and Coe have more than Moe. Joe has more than Moe, but less than Bo. Who has the least amount of money?

(A) Bo (B) Coe (C) Flo (D) Joe (E) Moe

Source: AMC 8 1999 Question 6

11. In 1960 only 5% of the working adults in Carlin City worked at home. By 1970 the "at-home" work force increased to 8%. In 1980 there were approximately 15% working at home, and in 1990 there were 30%. The graph that best illustrates this is:



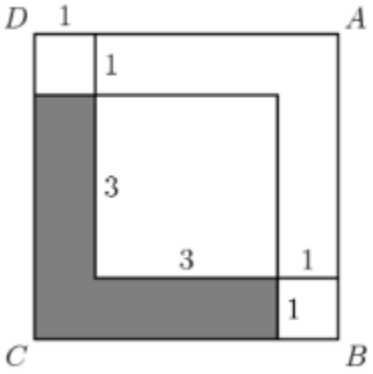
Source: AMC 8 2000 Question 4

12. Each principal of Lincoln High School serves exactly one 3-year term. What is the maximum number of principals this school could have during an 8-year period?

(A) 2 (B) 3 (C) 4 (D) 5 (E) 8

Source: AMC 8 2000 Question 5

13. Figure $ABCD$ is a square. Inside this square three smaller squares are drawn with the side lengths as labeled. The area of the shaded L-shaped region is:



(A) 7 (B) 10 (C) 12.5 (D) 14 (E) 15

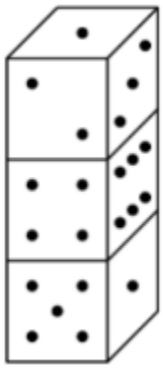
Source: AMC 8 2000 Question 6

14. What is the minimum possible product of the three different numbers of the set $\{-8, -6, -4, 0, 3, 5, 7\}$?

(A) -336 (B) -280 (C) -210 (D) -192 (E) 0

Source: AMC 8 2000 Question 7

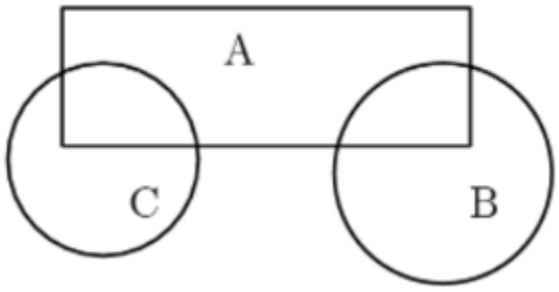
15. Three dice with faces numbered 1 through 6 are stacked as shown. Seven of the eighteen faces are visible, leaving eleven faces hidden (back, bottom, between). The total number of dots NOT visible in this view is:



(A) 21 (B) 22 (C) 31 (D) 41 (E) 53

Source: AMC 8 2000 Question 8

16. Three flower beds overlap as shown. Bed A has 500 plants, bed B has 450 plants, and bed C has 350 plants. Beds A and B share 50 plants while beds A and C share 100. The total number of plants is:



(A) 850 (B) 1000 (C) 1150 (D) 1300 (E) 1450

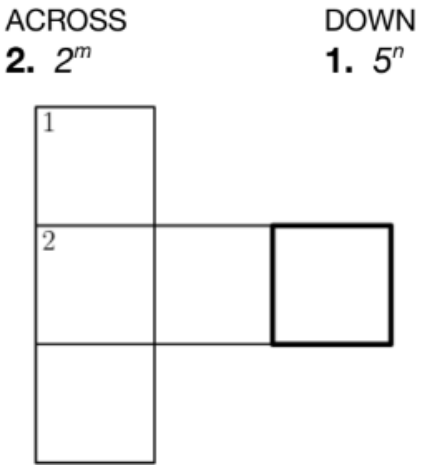
Source: AMC 8 1999 Question 9

17. A complete cycle of a traffic light takes 60 seconds. During each cycle the light is green for 25 seconds, yellow for 5 seconds, and red for 30 seconds. At a randomly chosen time, what is the probability that the light will NOT be green?

(A) $\frac{1}{4}$ (B) $\frac{1}{3}$ (C) $\frac{5}{12}$ (D) $\frac{1}{2}$ (E) $\frac{7}{12}$

Source: AMC 8 1999 Question 10

18. Three-digit powers of 2 and 5 are used in this “cross-number” puzzle. What is the only possible digit for the outlined square?



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

Source: AMC 8 2000 Question 9

19. Ara and Shea were once the same height. Since then Shea has grown 20% while Ara has grown half as many inches as Shea. Shea is now 60 inches tall. How tall in inches is Ara now?

(A) 48 (B) 51 (C) 52 (D) 54 (E) 55

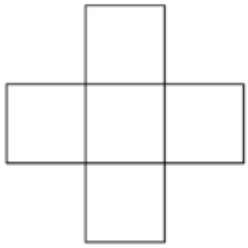
Source: AMC 8 2000 Question 10

20. The number 64 has the property that it is divisible by its units digit. How many whole numbers between 10 and 50 have this property?

(A) 15 (B) 16 (C) 17 (D) 18 (E) 20

Source: AMC 8 2000 Question 11

21. Each of the five numbers $1, 4, 7, 10$ and 13 is placed in one of the five squares so that the sum of the three numbers in the horizontal rows equals the sum of the three numbers in the vertical column. The largest possible value for the horizontal or vertical sum is:



(A) 20 (B) 21 (C) 22 (D) 24 (E) 30

Source: AMC 8 1999 Question 11

22. The ratio of the number of games won to the number of games lost (no ties) by the Middle School Middies is $\frac{11}{4}$. To the nearest whole percent, what percent of its games did the team lose?

(A) 24 (B) 27 (C) 36 (D) 45 (E) 73

Source: AMC 8 1999 Question 12

23. The average age of the 40 members of the computer science camp is 17 years old. There are 20 girls, 15 boys, and 5 adults. If the average age of the girls is 15 and the average age of the boys is 16, what is the average age of the adults?

(A) 26 (B) 27 (C) 28 (D) 29 (E) 30

Source: AMC 8 1999 Question 13

24. What is the units digit of $19^{19} + 99^{99}$?

(A) 0 (B) 1 (C) 2 (D) 8 (E) 9

Source: AMC 8 2000 Question 14

25. The third exit on a highway is located at milepost 40 and the tenth exit is at milepost 160. There is a service center on the highway located three-fourths of the way from the third exit to the tenth exit. At which milepost would you expect to find this service center?

(A) 90 (B) 100 (C) 110 (D) 120 (E) 130

Source: AMC 8 1999 Question 7