

1995 AJHSME Problems

Problem 1

Walter has exactly one penny, one nickel, one dime and one quarter in his pocket. What percent of one dollar is in his pocket?

- (A) 4% (B) 25% (C) 40% (D) 41% (E) 59%

Solution

Problem 2

Jose is 4 years younger than Zack. Zack is 3 years older than Inez. Inez is 15 years old. How old is Jose?

- (A) 8 (B) 11 (C) 14 (D) 16 (E) 22

Solution

Problem 3

Which of the following operations has the same effect on a number as multiplying by $\frac{3}{4}$ and then dividing by $\frac{3}{5}$?

- (A) dividing by $\frac{4}{3}$ (B) dividing by $\frac{9}{20}$ (C) multiplying by $\frac{9}{20}$ (D) dividing by $\frac{5}{4}$ (E) multiplying by $\frac{5}{4}$

Solution

Problem 4

A teacher tells the class,

"Think of a number, add 1 to it, and double the result. Give the answer to your partner. Partner, subtract 1 from the number you are given and double the result to get your answer."

Ben thinks of 6, and gives his answer to Sue. What should Sue's answer be?

- (A) 18 (B) 24 (C) 26 (D) 27 (E) 30

Solution

Problem 5

Find the smallest whole number that is larger than the sum

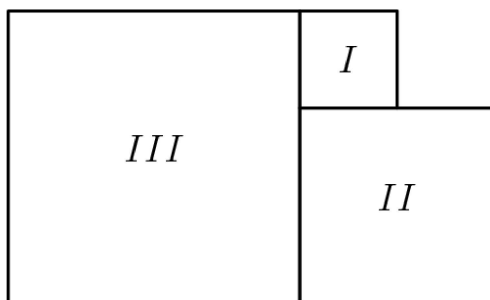
$$2\frac{1}{2} + 3\frac{1}{3} + 4\frac{1}{4} + 5\frac{1}{5}.$$

- (A) 14 (B) 15 (C) 16 (D) 17 (E) 18

Solution

Problem 6

Figures *I*, *II*, and *III* are squares. The perimeter of *I* is 12 and the perimeter of *II* is 24. The perimeter of *III* is



- (A) 9 (B) 18 (C) 36 (D) 72 (E) 81

Solution

Problem 7

At Clover View Junior High, one half of the students go home on the school bus. One fourth go home by automobile. One tenth go home on their bicycles. The rest walk home. What fractional part of the students walk home?

- (A) $\frac{1}{16}$ (B) $\frac{3}{20}$ (C) $\frac{1}{3}$ (D) $\frac{17}{20}$ (E) $\frac{9}{10}$

Solution

Problem 8

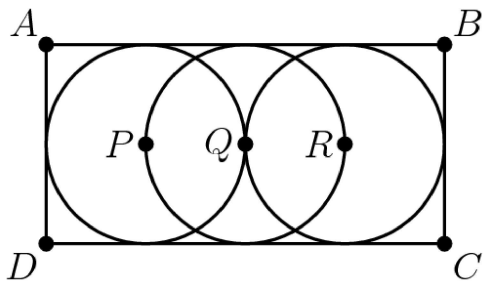
An American traveling in Italy wishes to exchange American money (dollars) for Italian money (lire). If 3000 lire = \$1.60, how much lire will the traveler receive in exchange for \$1.00?

- (A) 180 (B) 480 (C) 1800 (D) 1875 (E) 4875

Solution

Problem 9

Three congruent circles with centers P , Q , and R are tangent to the sides of rectangle $ABCD$ as shown. The circle centered at Q has diameter 4 and passes through points P and R . The area of the rectangle is



- (A) 16 (B) 24 (C) 32 (D) 64 (E) 128

Solution

Problem 10

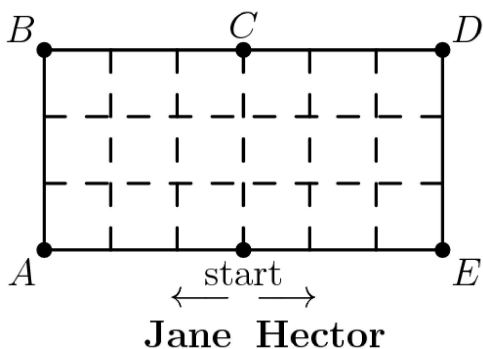
A jacket and a shirt originally sold for 80 dollars and 40 dollars, respectively. During a sale Chris bought the 80 dollar jacket at a 40% discount and the 40 dollar shirt at a 55% discount. The total amount saved was what percent of the total of the original prices?

- (A) 45% (B) $47\frac{1}{2}\%$ (C) 50% (D) $79\frac{1}{6}\%$ (E) 95%

Solution

Problem 11

Jane can walk any distance in half the time it takes Hector to walk the same distance. They set off in opposite directions around the outside of the 18-block area as shown. When they meet for the first time, they will be closest to



- (A) A (B) B (C) C (D) D (E) E

Solution

Problem 12

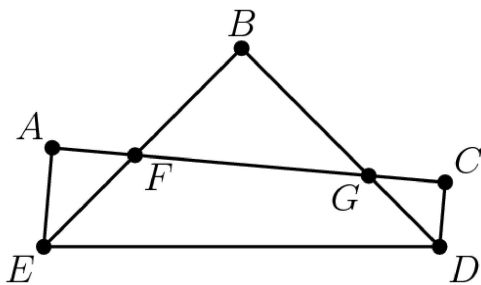
A *lucky year* is one in which at least one date, when written in the form month/day/year, has the following property: *The product of the month times the day equals the last two digits of the year.* For example, 1956 is a lucky year because it has the date 7/8/56 and $7 \times 8 = 56$. Which of the following is NOT a lucky year?

- (A) 1990 (B) 1991 (C) 1992 (D) 1993 (E) 1994

Solution

Problem 13

In the figure, $\angle A$, $\angle B$, and $\angle C$ are right angles. If $\angle AEB = 40^\circ$ and $\angle BED = \angle BDE$, then $\angle CDE =$



- (A) 75° (B) 80° (C) 85° (D) 90° (E) 95°

Solution

Problem 14

A team won 40 of its first 50 games. How many of the remaining 40 games must this team win so it will have won exactly 70% of its games for the season?

- (A) 20 (B) 23 (C) 28 (D) 30 (E) 35

Solution

Problem 15

What is the 100th digit to the right of the decimal point in the decimal form of $\frac{4}{37}$?

- (A) 0 (B) 1 (C) 2 (D) 7 (E) 8

Solution

Problem 16

Students from three middle schools worked on a summer project.

- Seven students from Allen school worked for 3 days.
- Four students from Balboa school worked for 5 days.
- Five students from Carver school worked for 9 days.

The total amount paid for the students' work was 774. Assuming each student received the same amount for a day's work, how much did the students from Balboa school earn altogether?

- (A) 9.00 dollars (B) 48.38 dollars (C) 180.00 dollars (D) 193.50 dollars (E) 258.00 dollars

Solution

Problem 17

The table below gives the percent of students in each grade at Annville and Cleona elementary schools:

	<u>K</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
Annville:	16%	15%	15%	14%	13%	16%	11%
Cleona:	12%	15%	14%	13%	15%	14%	17%

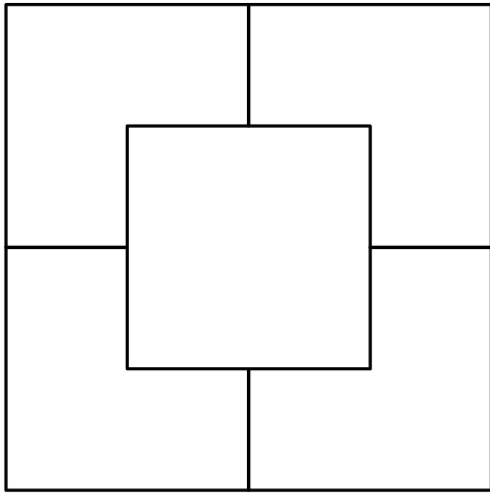
Annville has 100 students and Cleona has 200 students. In the two schools combined, what percent of the students are in grade 6?

- (A) 12% (B) 13% (C) 14% (D) 15% (E) 28%

Solution

Problem 18

The area of each of the four congruent L-shaped regions of this 100-inch by 100-inch square is $\frac{3}{16}$ of the total area. How many inches long is the side of the center square?

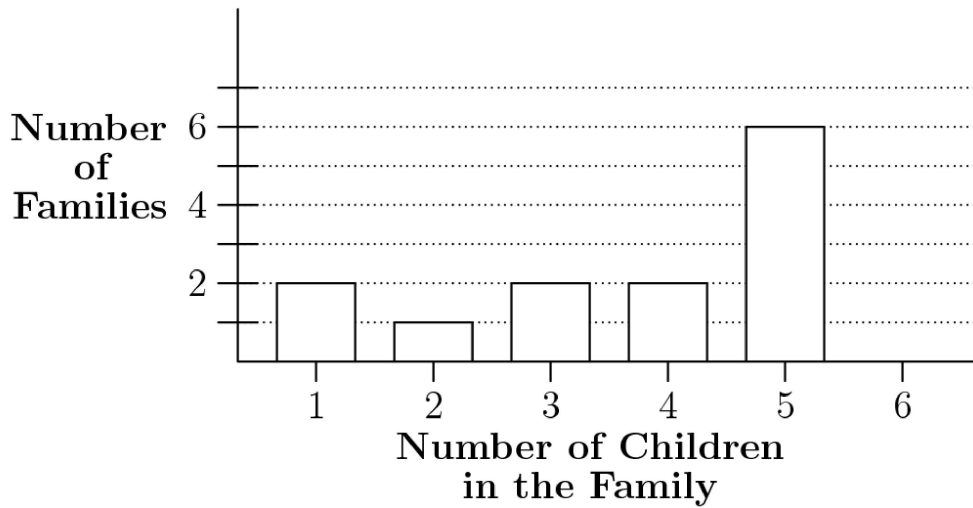


- (A) 25 (B) 44 (C) 50 (D) 62 (E) 75

Solution

Problem 19

The graph shows the distribution of the number of children in the families of the students in Ms. Jordan's English class. The median number of children in the family for this distribution is



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

Solution

Problem 20

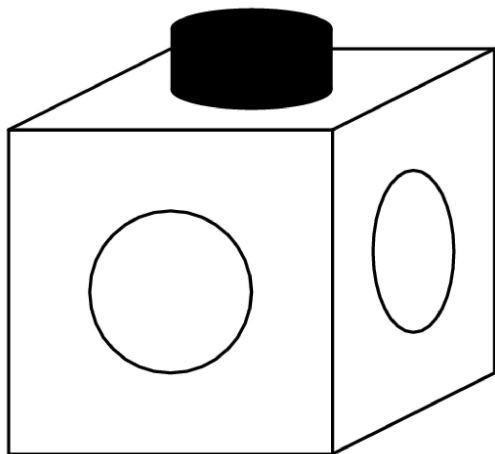
Diana and Apollo each roll a standard die obtaining a number at random from 1 to 6. What is the probability that Diana's number is larger than Apollo's number?

- (A) $\frac{1}{3}$ (B) $\frac{5}{12}$ (C) $\frac{4}{9}$ (D) $\frac{17}{36}$ (E) $\frac{1}{2}$

Solution

Problem 21

A plastic snap-together cube has a protruding snap on one side and receptacle holes on the other five sides as shown. What is the smallest number of these cubes that can be snapped together so that only receptacle holes are showing?



- (A) 3 (B) 4 (C) 5 (D) 6 (E) 8

Solution

Problem 22

The number 6545 can be written as a product of a pair of positive two-digit numbers. What is the sum of this pair of numbers?

- (A) 162 (B) 172 (C) 173 (D) 174 (E) 222

Solution

Problem 23

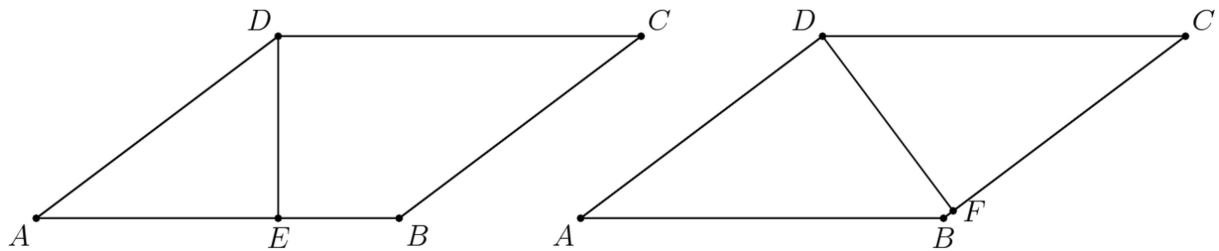
How many four-digit whole numbers are there such that the leftmost digit is odd, the second digit is even, and all four digits are different?

- (A) 1120 (B) 1400 (C) 1800 (D) 2025 (E) 2500

Solution

Problem 24

In parallelogram $ABCD$, \overline{DE} is the altitude to the base \overline{AB} and \overline{DF} is the altitude to the base \overline{BC} . [Note: Both pictures represent the same parallelogram.] If $DC = 12$, $EB = 4$, and $DE = 6$, then $DF =$



- (A) 6.4 (B) 7 (C) 7.2 (D) 8 (E) 10

Solution

Problem 25

Buses from Dallas to Houston leave every hour on the hour. Buses from Houston to Dallas leave every hour on the half hour. The trip from one city to the other takes 5 hours. Assuming the buses travel on the same highway, how many Dallas-bound buses does a Houston-bound bus pass in the highway (not in the station)?

- (A) 5 (B) 6 (C) 9 (D) 10 (E) 11

Solution

1995 AJHSME Answer Key

1. D
2. C
3. E
4. C
5. C
6. C
7. B
8. D
9. C
10. A
11. D
12. E
13. E
14. B
15. B
16. C
17. D
18. C
19. D
20. B
21. B
22. A
23. B
24. C
25. D