

AJHSMEs are the Pre-1999 version of the AMC8 and will be treated like an AMC8.

Accuracy is weighted, such that harder problems are given more points.

Easy Problems: 1 Point

Medium Problems: 2 Points

Hard Problems: 3 Points

Total Possible Points: 30

Category: Number Theory

1990 AJHSME (Problem 4)

Which of the following could **not** be the unit's digit [one's digit] of the square of a whole number?

Difficulty: Easy

Answered Correctly

2014 AMC8 (Problem 8)

Eleven members of the Middle School Math Club members each paid the same integer amount for a guest speaker to talk about problem solving at their math club meeting. In all, they paid their guest speaker \$1A2. What is the missing digit A of this 3-digit number?

Difficulty: Easy

Answered Incorrectly (Thought 100 and 2 were multiples of 11)

2023 AMC8 (Problem 10)

Harold made a plum pie to take on a picnic. He was able to eat only $\frac{1}{4}$ of the pie, and he left the rest for his friends. A moose came by and ate $\frac{1}{3}$ of what Harold left behind. After that, a porcupine ate $\frac{1}{3}$ of what the moose left behind. How much of the original pie still remained after the porcupine left?

Difficulty: Easy

Answered Correctly

2013 AMC8 (Problem 2)

A sign at the fish market says, "50% off, today only: half-pound packages for just \$3 per package." What is the regular price for a full pound of fish, in dollars? (Assume that there are no deals for bulk.

Difficulty: Easy

Answered Correctly

2001 AMC8 (Problem 6)

Six trees are equally spaced along one side of a straight road. The distance from the first tree to the fourth is 60 feet. What is the distance in feet between the first and last trees?

Difficulty: Easy

Answered Correctly

1999 AMC8 (Problem 13)

The average age of the 40 members of a computer science camp is 17 years. 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?

Difficulty: Medium

Answered Correctly

2017 AMC8 (Problem 14)

Chloe and Zoe are both students in Ms. Demeanor's math class. Last night, they each solved half of the problems in their homework assignment alone and then solved the other half together. Chloe had correct answers to only 80% of the problems she solved alone, but overall 88% of her answers were correct. Zoe had correct answers to 90% of the problems she solved alone. What was Zoe's overall percentage of correct answers?

Difficulty: Medium

Answered Correctly

2018 AMC 10A (Problem 2)

Liliane has 50% more soda than Jacqueline, and Alice has 25% more soda than Jacqueline. What is the relationship between the amounts of soda that Liliane and Alice have?

Difficulty: Medium

Answered Correctly

2011 AMC 10A (Problem 5)

At an elementary school, the students in third grade, fourth grade, and fifth grade run an average of 12, 15, and 10 minutes per day, respectively. There are twice as many third graders as fourth graders, and twice as many fourth graders as fifth graders. What is the average number of minutes run per day by these students?

Difficulty: Medium

Answered Correctly

2015 AMC 10B (Problem 3)

Isaac has written down one integer two times and another integer three times. The sum of the five numbers is 100, and one of the numbers is 28. What is the other number?

Answered Incorrectly; Did not account for the other possibility.

Difficulty: Medium

1990 AJHSME (Problem 21)

A list of 8 numbers is formed by beginning with two given numbers. Each new number in the list is the product of the two previous numbers. Find the first number if the last three are shown:

 ? , , , , , 16 , 64 , 1024

Difficulty: Hard

Answered Incorrectly; Only found 6 of the numbers

2003 AMC 10A (Problem 10)

What is the difference between the sum of the first 2003 even counting numbers and the sum of the first 2003 odd counting numbers?

Difficulty: Hard

Answered Correctly

2014 AMC8 (Problem 21)

The 7-digit numbers $\underline{74A52B1}$ and $\underline{326AB4C}$ are each multiples of 3. Which of the following could be the value of C ?

Difficulty: Hard

Answered Correctly

2017 AMC8 (Problem 24)

Mrs. Sanders has three grandchildren, who call her regularly. One calls her every three days, one calls her every four days, and one calls her every five days. All three called her on December 31, 2016. On how many days during the next year did she not receive a phone call from any of her grandchildren?

Difficulty: Hard

Answered Incorrectly; Used Principle of Inclusion-Exclusion and LCM incorrectly.

2002 AMC 12A (Problem 2)

Cindy was asked by her teacher to subtract 3 from a certain number and then divide the result by 9. Instead, she subtracted 9 and then divided the result by 3, giving an answer of 43. What would her answer have been had she worked the problem correctly?

Answered Correctly

Difficulty: Hard

Number Theory Accuracy:

80% Easy (4/5)

80% Medium (4/5)

60% Hard (3/5)

Unweighted Accuracy: 11/15

(73.3%)

Weighted Accuracy: 21/30

(70%)

Category: Geometry

2018 AMC8 (Problem 9)

Bob is tiling the floor of his 12 foot by 16 foot living room. He plans to place one-foot by one-foot square tiles to form a border along the edges of the room and to fill in the rest of the floor with two-foot by two-foot square tiles. How many tiles will he use?

Difficulty: Easy

Answered Incorrectly; Subtracted border dimensions incorrectly.

2020 AMC8 (Problem 9)

Akash's birthday cake is in the form of a $4 \times 4 \times 4$ inch cube. The cake has icing on the top and the four side faces, and no icing on the bottom. Suppose the cake is cut into 64 smaller cubes, each measuring $1 \times 1 \times 1$ inch, as shown below. How many small pieces will have icing on exactly two sides?

Difficulty: Easy

Answered Incorrectly: Subtracted corners incorrectly, and accounted for vertical edges that did not exist.

2019 AMC8 (Problem 4)

Quadrilateral $ABCD$ is a rhombus with perimeter 52 meters. The length of diagonal \overline{AC} is 24 meters. What is the area in square meters of rhombus $ABCD$?

Difficulty: Easy

Answered Correctly

2012 AMC8 (Problem 6)

A rectangular photograph is placed in a frame that forms a border two inches wide on all sides of the photograph. The photograph measures 8 inches high and 10 inches wide. What is the area of the border, in square inches?

Difficulty: Easy

Answered Correctly

2006 AMC8 (Problem 7)

Circle X has a radius of π . Circle Y has a circumference of 8π . Circle Z has an area of 9π . List the circles in order from smallest to largest radius.

Difficulty: Easy

Answered Incorrectly; Stated that π (≈ 3.14) is less than 3.

2015 AMC8 (Problem 12)

How many pairs of parallel edges, such as \overline{AB} , and \overline{GH} , or \overline{EH} , and \overline{FG} , does a cube have?

Difficulty: Medium

Answered Incorrectly; Divided instead of multiplying and did not account for the fact that an edge has 3 parallel counterparts.

2000 AMC 8 (Problem 13)

In triangle CAT , we have $\angle ACT = \angle ATC$ and $\angle CAT = 36$. If TR bisects $\angle ATC$ then $\angle CRT =$

Difficulty: Medium

Answered Incorrectly; Mistook $\angle CRT$ for $\angle CTR$

2007 AMC8 (Problem 14)

The base of isosceles $\triangle ABC$ is 24 and its area is 60. What is the length of one of the congruent sides?

Difficulty: Medium

Answered Correctly

2012 AMC8 (Problem 17)

A square with integer side length is cut into 10 squares, all of which have integer side length and at least 8 of which have area 1. What is the smallest possible value of the length of the side of the original square?

Difficulty: Medium

Answered Correctly.

2014 AMC8 (Problem 19)

A cube with 3-inch edges is to be constructed from 27 smaller cubes with 1-inch edges. Twenty-one of the cubes are colored red and 6 are colored white. If the 3-inch cube is constructed to have the smallest possible white surface area showing, what fraction of the surface area is white?

Difficulty: Medium

Answered Correctly

2013 AMC8 (Problem 22)

Toothpicks are used to make a grid that is 60 toothpicks long and 32 toothpicks wide. How many toothpicks are used altogether?

Difficulty: Hard

Answered Correctly

2018 AMC8 (Problem 23)

From a regular octagon, a triangle is formed by connecting three randomly chosen vertices of the octagon. What is the probability that at least one of the sides of the triangle is also a side of the octagon?

Answered Incorrectly: Miscalculated what does not meet the condition.

Difficulty: Hard

2000 AMC8 (Problem 22)

A cube has edge length 2. Suppose that we glue a cube of edge length 1 on top of the big cube so that one of its faces rests entirely on the top face of the larger cube. The percent increase in the surface area (sides, top, and bottom) from the original cube to the new solid formed is closest to

Answered Incorrectly; Counted the area lost from the glued face wrong.

Difficulty: Hard

2000 AMC 8 (Problem 25)

The area of rectangle $ABCD$ is 72. If point A and the midpoints of BC and CD are joined to form a triangle, the area of that triangle is

Difficulty: Hard

Answered Incorrectly; Incorrectly used variables to find base and height

Correct Answer: 27

2005 AMC 8 (Problem 25)

A square with side length 2 and a circle share the same center. The total area of the regions that are inside the circle and outside the square is equal to the total area of the regions that are outside the circle and inside the square. What is the radius of the circle?

Answered Correctly

Difficulty: Hard

Geometry Accuracy:

40% Easy (2/5)

60% Medium (3/5)

60% Hard (3/5)

Unweighted Accuracy: 8/15

(53.3%)

Weighted Accuracy: 17/30

(56.6%)

Category: Algebra

2009 AMC8 (Problem 1)

Bridget bought a bag of apples at the grocery store. She gave half of the apples to Ann. Then she gave Cassie 3 apples, keeping 4 apples for herself. How many apples did Bridget buy?

Difficulty: Easy

Answered Correctly

2004 AMC8 (Problem 9)

The average of the five numbers in a list is **54**. The average of the first two numbers is **48**. What is the average of the last three numbers?

Difficulty: Easy

Answered Correctly

2010 AMC8 (Problem 8)

As Emily is riding her bicycle on a long straight road, she spots Emerson skating in the same direction $\frac{1}{2}$ mile in front of her. After she passes him, she can see him in her rear mirror until he is $\frac{1}{2}$ mile behind her. Emily rides at a constant rate of **12** miles per hour, and Emerson skates at a constant rate of **8** miles per hour. For how many minutes can Emily see Emerson?

Difficulty: Easy

Answered Correctly

2011 AMC8 (Problem 1)

Margie bought **3** apples at a cost of **50** cents per apple. She paid with a **5**-dollar bill. How much change did Margie receive?

Difficulty: Easy

Answered Correctly

2012 AMC 8 (Problem 9)

The Fort Worth Zoo has a number of two-legged birds and a number of four-legged mammals. On one visit to the zoo, Margie counted 200 heads and 522 legs. How many of the animals that Margie counted were two-legged birds?

Difficulty: Easy

Answered Correctly

2004 AMC 8 (Problem 12)

Niki usually leaves her cell phone on. If her cell phone is on but she is not actually using it, the battery will last for **24** hours. If she is using it constantly, the battery will last for only **3** hours. Since the last recharge, her phone has been on 9 hours, and during that time she has used it for

60 minutes. If she doesn't talk anymore but leaves the phone on, how many more hours will the battery last?

Difficulty: Medium

Answered Correctly

2015 AMC8 (Problem 20)

Ralph went to the store and bought 12 pairs of socks for a total of \$24. Some of the socks he bought cost \$1 a pair, some of the socks he bought cost \$3 a pair, and some of the socks he bought cost \$4 a pair. If he bought at least one pair of each type, how many pairs of \$1 socks did Ralph buy?

Answered Incorrectly; Multiplied Wrong

Difficulty: Medium

2007 AMC 8 (Problem 19)

Pick two consecutive positive integers whose sum is less than 100. Square both of those integers and then find the difference of the squares. Which of the following could be the difference?

Answered Correctly With Answer Choices

Difficulty: Medium

2009 AMC 8 (Problem 15)

A recipe that makes 5 servings of hot chocolate requires 2 squares of chocolate, $\frac{1}{4}$ cup sugar, 1 cup water and 4 cups milk. Jordan has 5 squares of chocolate, 2 cups of sugar, lots of water, and 7 cups of milk. If he maintains the same ratio of ingredients, what is the greatest number of servings of hot chocolate he can make?

Difficulty: Medium

Answered Incorrectly; Did not account for fractional serving and would not understand answer choices.

AMC 8, 2010, Problem 15

A jar contains 5 different colors of gumdrops. 30% are blue, 20% are brown, 15% are red, 10% are yellow, and other 30 gumdrops are green. half of the blue gumdrops are replaced with brown gumdrops, how many gumdrops will be brown?

Difficulty: Medium

Answered Incorrectly: Subtracted incorrectly

2017 AMC8 (Problem 23)

Each day for four days, Linda traveled for one hour at a speed that resulted in her traveling one mile in an integer number of minutes. Each day after the first, her speed decreased so that the number of minutes to travel one mile increased by 5 minutes over the preceding day. Each of the four days, her distance traveled was also an integer number of miles. What was the total number of miles for the four trips?

Answered Incorrectly: Did account for possibilities it previously ruled out.

Difficulty: Hard

2014 AMC8 (Problem 24)

One day the Beverage Barn sold 252 cans of soda to 100 customers, and every customer bought at least one can of soda. What is the maximum possible median number of cans of soda bought per customer on that day?

Answered Incorrectly; Did not account for any customers after 51.

Difficulty: Hard

2010 AMC8 (Problem 24)

What is the correct ordering of the three numbers, 10^8 , 5^{12} , 2^{24} ?

Answered Correctly

Difficulty: Hard

2009 AMC8 (Problem 23)

On the last day of school, Mrs. Awesome gave jelly beans to her class. She gave each boy as many jelly beans as there were boys in the class. She gave each girl as many jelly beans as there were girls in the class. She brought 400 jelly beans, and when she finished, she had six jelly beans left. There were two more boys than girls in her class. How many students were in her class?

Answered Correctly

Difficulty: Hard

2009 AMC8 (Problem 21)

Andy and Bethany have a rectangular array of numbers greater than zero with 40 rows and 75 columns. Andy adds the numbers in each row. The average of his 40 sums is A. Bethany adds the numbers in each column. The average of her 75 sums is B. Using only the answer choices given, What is the value of A/B?

Answered Correctly

Difficulty: Hard

Algebra Accuracy:

100% Easy (5/5)

40% Medium (2/5)

60% Hard (3/5)

Unweighted Accuracy: 10/15

(66.6%)

Weighted Accuracy: 18/30

(60%)

Category: Combinatorics

2006 AMC8 (Problem 4)

Initially, a spinner points west. Chenille moves it clockwise $2\frac{1}{4}$ revolutions and then counterclockwise $3\frac{3}{4}$ revolutions. In what direction does the spinner point after the two moves?

Difficulty: Easy

Answered Correctly

2007 AMC8 (Problem 5)

Chandler wants to buy a \$500 mountain bike. For his birthday, his grandparents send him \$50, his aunt sends him \$35 and his cousin gives him \$15. He earns \$16 per week for his paper route. He will use all of his birthday money and all of the money he earns from his paper route. In how many weeks will he be able to buy the mountain bike?

Difficulty: Easy

Answered Correctly

2011 AMC8 (Problem 8)

Bag A has three chips labeled 1, 3, and 5. Bag B has three chips labeled 2, 4, and 6. If one chip is drawn from each bag, how many different values are possible for the sum of the two numbers on the chips?

Difficulty: Easy

Answered Correctly

2017 AMC8 (Problem 10)

A box contains five cards, numbered 1, 2, 3, 4 and 5. Three cards are selected randomly without replacement from the box. What is the probability that 4 is the largest value selected?

Difficulty: Easy

Answered Correctly

2012 AMC 8 (Problem 10)

How many 4-digit numbers greater than 1000 are there that use the four digits of 2012?

Difficulty: Easy

Answered Incorrectly; Mistakenly ruled out a possibility.

2008 AMC8 (Problem 17)

Ms. Osborne asks each student in her class to draw a rectangle with integer side lengths and a perimeter of 50 units. All of her students calculate the area of the rectangle they draw. What is the difference between the largest and smallest possible areas of the rectangles?

Difficulty: Medium

Answered Correctly

2004 AMC8 (Problem 13)

Amy, Bill and Celine are friends with different ages. Exactly one of the following statements is true.

- I. Bill is the oldest.
- II. Amy is not the oldest.
- III. Celine is not the youngest.

Rank the friends from the oldest to the youngest.

Answered Incorrectly; Mentioned but overlooked a possibility.

Difficulty: Medium

2003 AMC 8 (Problem 16)

Ali, Bonnie, Carlo, and Dianna are going to drive together to a nearby theme park. The car they are using has 4 seats: 1 driver's seat, 1 front passenger seat, and 2 back passenger seats. Bonnie and Carlo are the only ones who know how to drive the car. How many possible seating arrangements are there?

Difficulty: Medium

Answered Correctly

2009 AMC 8 (Problem 13)

A three-digit integer contains one of each of the digits 1, 3, and 5. What is the probability that the integer is divisible by 5?

Difficulty: Medium

Answered Correctly

2002 AMC 8 (Problem 18)

Gage skated 1 hr 15 min each day for 5 days and 1 hr 30 min each day for 3 days. How long would he have to skate the ninth day in order to average 85 minutes of skating each day for the entire time?

Difficulty: Medium

Answered Correctly

2001 AMC 8 (Problem 22)

On a twenty-question test, each correct answer is worth 5 points, each unanswered question is worth 1 point and each incorrect answer is worth 0 points. Which of the following scores is NOT possible?

Answered Incorrectly; Mistakenly restricted windows of possibilities.

Difficulty: Hard

2019 AMC8 (Problem 25)

Alice has 24 apples. In how many ways can she share them with Becky and Chris so that each of the people has at least 2 apples?

Answered Incorrectly; Used stars and bars incorrectly

Difficulty: Hard

2016 AMC8 (Problem 21)

A top hat contains 3 red chips and 2 green chips. Chips are drawn randomly, one at a time without replacement, until all 3 of the reds are drawn or until both green chips are drawn. What is the probability that the 3 reds are drawn?

Answered Incorrectly; Counted incorrectly

Difficulty: Hard

2015 AMC8 (Problem 23)

Tom has twelve slips of paper which he wants to put into five cups labeled A , B , C , D , E . He wants the sum of the numbers on the slips in each cup to be an integer. Furthermore, he wants

the five integers to be consecutive and increasing from A to E . The numbers on the papers are 2, 2, 2, 2.5, 2.5, 3, 3, 3, 3, 3.5, 4 and 4.5. If a slip with 2 goes into cup E and a slip with 3 goes into cup B , then the slip with 3.5 must go into what cup?

Difficulty: Hard

Answered Incorrectly; Did not realize that all twelve slips of paper must be put into the 5 cups.

2012 AMC8 (Problem 22)

Let R be a set of nine distinct integers. Six of the elements are 2, 3, 4, 6, 9, and 14. What is the number of possible values of the median of R ?

Difficulty: Hard

Answered Incorrectly; Did not find all possibilities.

Combinatorics Accuracy:

80% Easy (4/5)

60% Medium (3/5)

0% Hard (0/5)

Unweighted Accuracy: 7/15

(46.6%)

Weighted Accuracy: 10/30

(33.3%)

Category: Computation

2006 AMC8 (Problem 1)

Mindy made three purchases for \$1.98 , \$5.04 , and \$9.89 . What was her total, to the nearest dollar?

Difficulty: Easy

Answered Correctly

1990 AJHSME (Problem 2)

Which digit of .12345, when changed to 9 , gives the largest number?

Difficulty: Easy

Answered Correctly

2022 AMC8 (Problem 7)

When the World Wide Web first became popular in the 1990s, download speeds reached a maximum of about 56 kilobits per second. Approximately how many minutes would the download of a 4.2-megabyte song have taken at that speed? (Note that there are 8000 kilobits in a megabyte.)

Difficulty: Easy

Answered Correctly

2023 AMC8 (Problem 1)

What is the value of $(8 \times 4 + 2) - (8 + 4 \times 2)$?

Difficulty: Easy

Answered Correctly

1985 AJHSME (Problem 1)

$$\frac{3 \cdot 5}{9 \cdot 11} \cdot \frac{7 \cdot 9 \cdot 11}{3 \cdot 5 \cdot 7} =$$

Difficulty: Easy

Answered Correctly

2008 AMC8 (Problem 12)

A ball is dropped from a height of 3 meters. On its first bounce it rises to a height of 2 meters. It keeps falling and bouncing to $\frac{2}{3}$ of the height it reached in the previous bounce. On which bounce will it not rise to a height of 0.5 meters?

Difficulty: Medium

Answered Incorrectly; incorrectly used logarithmic properties.

2012 AMC 10B (Problem 5)

Anna enjoys dinner at a restaurant in Washington, D.C., where the sales tax on meals is 10%. She leaves a 15% tip on the price of her meal before the sales tax is added, and the tax is

calculated on the pre-tip amount. She spends a total of 27.50 dollars for dinner. What is the cost of her dinner without tax or tip in dollars?

Difficulty: Medium

Answered Correctly

2011 AMC 10B (Problem 19)

What is $\frac{2+4+6}{1+3+5} \cdot \frac{1+3+5}{2+4+6}$

Difficulty: Medium

Answered Correctly

2004 AMC 10A (Problem 1)

You and five friends need to raise 1500 dollars in donations for a charity, dividing the fundraising equally. How many dollars will each of you need to raise?

Difficulty: Medium

Answered Correctly

2013 AMC 10A (Problem 2)

Alice needs $2\frac{1}{2}$ cups of sugar and each fill of the measuring cup provides $\frac{1}{4}$ cup.

First, convert $2\frac{1}{2}$ cups to an improper fraction to make it easier to work with. $2\frac{1}{2}$ cups is the same as $\frac{5}{2}$ cups.

To find out how many times she must fill the $\frac{1}{4}$ cup to make $\frac{5}{2}$ cups, divide $\frac{5}{2}$ by $\frac{1}{4}$. Remember when dividing fractions, you multiply by the reciprocal of the divisor:

$$(\frac{5}{2}) \div (\frac{1}{4}) = (\frac{5}{2}) * (\frac{4}{1}) = 10$$

So, Alice must fill the measuring cup 10 times to get the correct amount of sugar.

Difficulty: Medium

Answered Incorrectly; Wrote the proportion incorrectly.

2009 AMC 12A (Problem 1)

What is the value of $1/(3 + 1/(3 + \frac{1}{3})) + 3$

Difficulty: Hard

Answered Correctly

2022 AMC 12A (Problem 8)

The infinite product $\sqrt[3]{10} \cdot \sqrt[3]{\sqrt[3]{10}} \cdot \sqrt[3]{\sqrt[3]{\sqrt[3]{10}}} \cdots$ evaluates to a real number. What is that number?

Difficulty: Hard

Answered Correctly

2022 AMC 12B (Problem 1)

Define $x \diamond y$ to be $|x - y|$ for all real numbers x and y . What is the value of $(1 \diamond (2 \diamond 3)) - ((1 \diamond 2) \diamond 3)$?

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

Difficulty: Hard

Answered Correctly

2021 Fall AMC 12A (Problem 10)

The base-nine representation of the number N is $27,006,000,052_{\text{nine}}$. What is the remainder when N is divided by 5 ?

Difficulty: Hard

Answered Correctly

2021 Spring AMC 12A (Problem 9)

Which of the following is equivalent to $(2+3)(2^2+3^2)(2^4+3^4)(2^8+3^8)(2^{16}+3^{16})(2^{32}+3^{32})(2^{64}+3^{64})$?

Difficulty: Hard

Answered Incorrectly; Incorrectly multiplied binomials

Computation Accuracy:

100% Easy (5/5)

60% Medium (3/5)

80% Hard (4/5)

Unweighted Accuracy: 12/15

(80%)

Weighted Accuracy: 23/30

(76.6%)

Total Accuracy (NEED TO DO AGAIN):

80% Easy (20/25)

60% Medium (15/25)

52% Hard (13/25)

Unweighted Accuracy: 48/75

(64%)

Weighted Accuracy: 86/150

(57.3%)