

2007 AMC 8

Time limit: 40 minutes

Typeset by:
<https://live.p>

Copyright: M

1. Theresa spends
For the
many h

A

B

C 11

D 12

E 13



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Unhandled Runtime Error

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2. 650 students were surveyed about their pasta preferences. The choices were lasagna, manicotti, ravioli and spaghetti. The results of the survey are displayed in the bar graph. What is the ratio of the number of students who preferred spaghetti to the number of students who preferred manicotti?

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A $\frac{2}{5}$

B $\frac{1}{2}$

C $\frac{5}{4}$

D $\frac{5}{3}$

E $\frac{5}{2}$

3. What is the sum of the two smallest prime factors of 250?

A 2

B 5

C 7

D 1

E 1

4. A haunted house has a door that only opens if you enter the house at the hour of the hour. You must enter

A 1 >  React

B 15

C 18

D 30


E 36

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5. Chandler wants to buy a 500 dollar mountain bike. For his birthday, his grandparents send him 50 dollars, his aunt sends him 35 dollars and his cousin gives him 15 dollars. He earns 16 dollars 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 have enough money to buy the bike?

A

B

C

D

E

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6. The average cost of a long-distance call in the USA in 2000 was 17 cents per minute, and the average cost of a long-distance call in the USA in 2005 was 7 cents per minute. Find the approximate percent decrease in the cost per minute of a long-distance call.

A

7

B

17

C

34

D

41

E

80

7. The average age of 5 people in a room is 30 years. An 18-year-old person leaves the room. What is the average age of the four remaining people?

A 25

B 2

C 2

D 5

E 5

8. In trapezoid $ABCD$, $AD \parallel BC$. The height of the trapezoid is 3. The length of the base BC is 6. In

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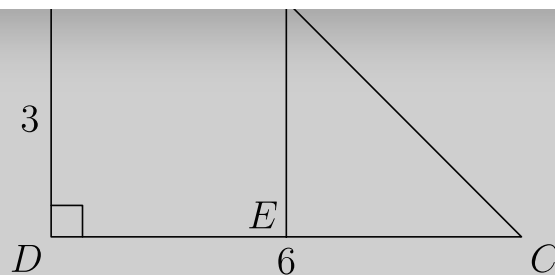
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A 3

B 4.5

C 6

D 9

E 18

9. To complete the grid below, each of the digits 1 through 4 must occur once in each row and once in each column. What number will occupy the lower right-hand square?

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A

B

C

D

E

cannot be determined

10. For any positive integer n , define \boxed{n} to be the sum of the positive factors of n . For example,

$$\boxed{6} = 1 + 2 + 3 + 6 = 12.$$

Find $\boxed{\boxed{11}}$.

A

13

B

20

C

24

D

28

E

30

11. Tiles *I*, *II*, *III* and *IV* are translated so one tile coincides with each of the rectangles *A*, *B*, *C* and *D*. In the final arrangement, the two numbers on any side common to two adjacent tiles must be the same. Which of the tiles is translated to Rectangle *C*?

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A

B

C

D

E

cannot be determined

12. A unit hexagram is composed of a regular hexagon of side length 1 and its 6 equilateral triangular extensions, as shown in the diagram. What is the ratio of the area of the extensions to the area of the original hexagon?

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A

B

C

D

E

1

6

3

2 : 1

3 : 1

13. Sets A and B , shown in the Venn diagram, have the same number of elements. Their union has 2007 elements and their intersection has 1001 elements. Find the number of elements in A .

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A

B

C

D

E

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

A

5

B

8

C

13

D

14

E

18

15. Let a, b and c be numbers with $0 < a < b < c$. Which of the following is impossible?

A $a + c < b$

B $a + b < c$

C $a + b < a + c$

D $a + c < a + b$

E $a + b < a + c$

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16. Amanda Reckonwith draws five circles with radii 1, 2, 3, 4 and 5. Then for each circle she plots the point (C, A) , where C is its circumference and A is its area. Which of the following could be her graph?

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A

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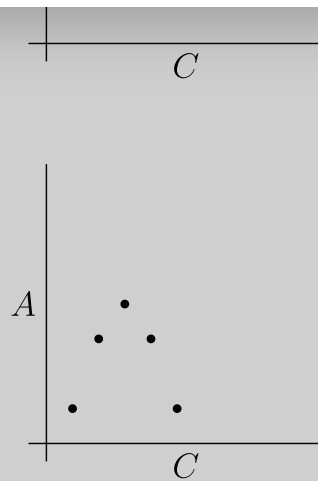
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B

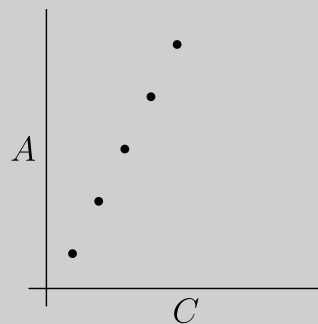
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C



D



E

A

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17. A mixture of 20 liters of water and yellow

A

B

C

D

E

water. Five percent of

18. The product of the two 99-digit numbers

303,030,303, ..., 030,303

and

has the

A

B

C

D


E

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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?

A 2

B 64

C 79

D 96

E 131

20. Before district play, the Unicorns had won 45% of their basketball games. During district play, they won six more games and lost two, to finish the season having won half their games. How many games did the Unicorns play in all?

A

B

C

D

E

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21. Two ca
green c
the sam

nd four
or two of

A

$\frac{2}{7}$

B

$\frac{3}{8}$

C

$\frac{1}{2}$

D

$\frac{4}{7}$

E

$\frac{5}{8}$

22. A lemming sits at a corner of a square with side length 10 meters. The lemming runs 6.2 meters along a diagonal toward the opposite corner. It stops, makes a 90° right turn and runs 2 more meters. A scientist measures the shortest distance between the lemming and each side of the square. What is the average of these four distances?


- A 2
- B 4
- C 5
- D 6
- E 7

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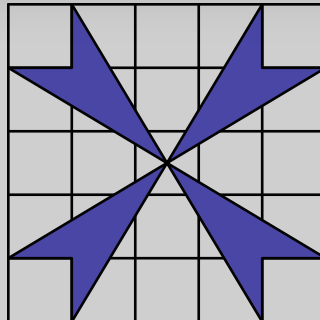
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23. What is the area of the figure below?



- A 4
- B 6
- C 8
- D 10
- E 12

24. A bag contains four pieces of paper, each labeled with one of the digits 1, 2, 3 or 4, with no repeats. Three of these pieces are drawn, one at a time without replacement, to construct a three-digit number. What is the probability that the three-digit number is a multiple of 3?

A

B

C

D

E

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25. On the dart board shown in the figure below, the outer circle has radius 6 and the inner circle has radius 3. Three radii divide each circle into three congruent regions, with point values shown. The probability that a dart will hit a given region is proportional to the area of the region. When two darts hit this board, the score is the sum of the point values of the regions hit. What is the probability that the score is 12?

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A

B

C

D

E

72

$\frac{1}{2}$

$\frac{37}{72}$

$\frac{19}{36}$

Solutions: <https://live.poshenloh.com/past-contests/amc8/2007/solutions>

