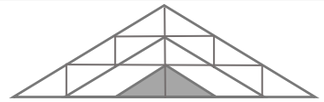
5 POINTS

1. What fraction of the figure is shaded?



A. $\frac{1}{18}$ B. $\frac{1}{9}$ C. $\frac{1}{16}$ D. $\frac{1}{8}$ E. $\frac{1}{10}$

2. Disha started to learn the Papuan language last Saturday. Every day she learned five new words, but when she woke up every morning she had forgotten two of the words she learned the day before. What day did Disha achieve her target of learning more than 15 words?

A. Monday B. Tuesday C. Wednesday D. Thursday E. Friday

3. Maria has 12 chickens in her chicken coup. Half of the chickens lay an egg every day. The other half lay an egg every other day. How many eggs do the 12 chickens lay in a period of 12 days?

A. 72 B. 108 C. 96 D. 128 E. 144

4. If the following fractions are arranged in decreasing order, which one is in the middle?

A. $\frac{5}{9}$ B. $\frac{4}{7}$ C. $\frac{3}{5}$ D. $\frac{2}{3}$ E. $\frac{1}{2}$

5. In the addition problem on the right, there are three two-digit numbers for which different letters represent different digits. What digits do QPR represent?

$$\begin{array}{r} P\ P \\ Q\ Q \\ +\ R\ R \\ \hline Q\ P\ R \end{array}$$

A. 918 B. 819 C. 178 D. 198 E. 187

6. What is the sum of all the common factors of 45 and 60?

A. 9 B. 22 C. 23 D. 24 E. 15

7. The sum of 4 numbers is 300. One of the number is 24. What is the average of the other 3 numbers?

A. 75 B. 51 C. 92 D. 100 E. Not available

8.

The figure on the left is made of identical solid cubes. They add up to a total volume of 448 in³. What is the length of the edge of each cube?

A. 4 inches B. 6 inches C. 12 inches D. 24 inches E. 8 inches

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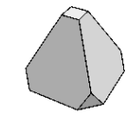
7 POINTS

9. Siddhartha has an average score of 85% on his 4 math tests. What is the lowest possible percentage score any one of the tests?

A. 50% B. 45% C. 40% D. 38% E. 35%

10. A solid square-based pyramid has all of its corners cut-off as shown in the picture. How many edges does the resulting shape have?



A. 15 B. 20 C. 24 D. 26 E. 28

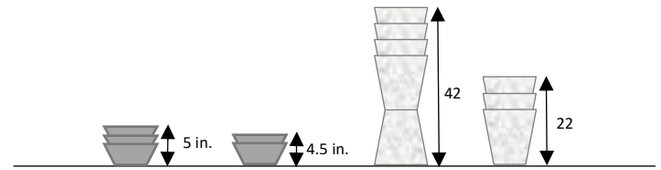
11. The product of the digits in 38 can be found by multiplying 3 to 8, which equals to 24. Notice that it is an even number. However, the product of the digits in 59, which can be written as 5 x 9 = 45 produces an odd number. How many 2-digit numbers have an odd product?

A. 46 B. 45 C. 26 D. 24 E. 25

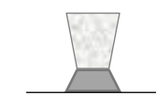
12. Nicolas is 7/12 of his dad's weight. If Nicolas weighs 140 pounds, what does his dad weigh?

A. 82 lb. B. 336 lb. C. 380 lb. D. 240 lb. E. 360 lb.

13. Five identical bowls and eight identical flower pots are stacked as shown below.

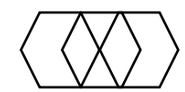


What is the total height of a bowl (upside down) and a flower pot as shown on the right?



A. 22 inches B. 14 inches C. 24 inches D. 26 inches E. 13.75 inches

14. How many hexagons are there in the diagram?



A. 8 B. 5 C. 10 D. 6 E. 12

15. Eight workers took 3 ¼ days to dig half of a tunnel. If only two workers are going to finish the tunnel, how long will it take them?

A. 26 days B. 16 days C. 13 days D. 12 days E. 6.5 days

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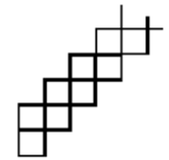
10 POINTS

16. A shape consisting of 2016 small squares is made by continuing the pattern as shown in the picture. Each small square has sides of length 1 cm. What is the length, in cm, of the perimeter of the whole shape?



A. 4032 B. 4034 C. 6048 D. 4044 E. 8064

17. Donna wrote out all counting numbers as one long string: 12345678910111213… What would be the 100th digit in the string?

A. 3 B. 7 C. 6 D. 4 E. 5

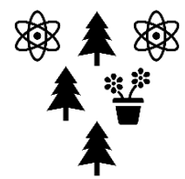
18. A rectangular fish tank measures 40 inches by 35 inches by 25 inches. 1/5 of it is filled with sand. Nick transfers some of the sand from the fish tank into a box until the box is 5/6 full. 1000 in^3 of sand is left in the fish tank. The box has a square base of side 20 inches. What is the height of the box?

A. 14 in B. 16 in C. 18 in D. 20 in E. 22 in

19. Supposed that the base of a triangle is increased by 20% and its height is increased by 30%. By what percent is the area of the triangle increased?

A. 28% B. 27% C. 54% D. 56% E. 58%

20. Assuming you have a 3-digit number, and after adding its digits together, you get a 2-digit number. After adding digits of the 2-digit number you get a one-digit number. Study the problem as shown on the picture. If different shapes stand for different digits, and the same shape stands for same digit, what digit corresponds to ?



A. 5 B. 8 C. 9 D. 6 E. 7

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MATH CHALLENGE TOURNAMENT MASTERS

MARCH 18, 2017

PROBLEM SOLVING CHALLENGE
Grade 5

Sponsored by Ellipsis Academy

Name: _____

- You may use scratch paper to do any calculation to reach final answers.
- Mark your answers in the ANSWER SHEET.
- You have 40 minutes to complete the Problem-Solving Challenge

There are 20 questions

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