

2018 Metrobank-MTAP-DepEd Math Challenge Elimination Rounds Grade 7

Name: _____ School: _____ Score: _____

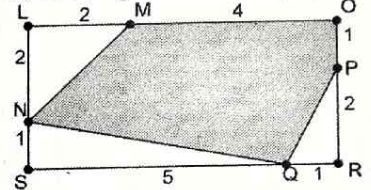
Instruction: Write your answer on the space provided before each item. Give all fractions and expressions in simplest form and all expressions in expanded form.

1. Arrange the following numbers from least to greatest: $\frac{3}{8}$, 0.3, $\frac{7}{25}$.

2. In a class of 40 students, 23 are studying Japanese, 18 are studying Korean and 10 are studying both Japanese and Korean. How many students are not taking any foreign languages?

3. In a Senior high school, 35% of the students are girls. If there are 300 fewer girls than boys, find the total number of students in the school.

4. In the figure on the right, find the area of the shaded region.



5. Solve for x : $\frac{x+4}{3} - \frac{x-1}{4} = 1$.

6. At a party, 75 people chose brownies and 57 people chose cookies. 25 people chose both brownies and cookies. If each person chose at least one of these desserts, how many people were in the party?

7. If the length of a rectangle is increased by 30% and the width is decreased by 20%, find the percentage by which its area changes.

8. Solve the inequality $5 - 2(x + 4) \leq 3$. Give the answer in interval notation.

9. The interior angles of a triangle are in the ratio of 4 : 5 : 6. What is the measure of the largest of these angles?

10. In rectangle $ABCD$, $AB = 3x - 2$, $BC = x + 4$, and $CD = x + 9$. What is its perimeter?

11. Find x and y so that the ordered data set below has a median of 37 and a range of 65:

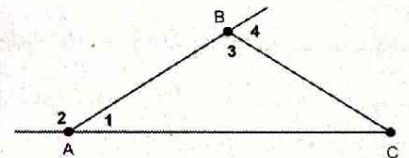
17, 22, 26, 29, 34, x , 42, 67, 70, y

12. An angle is fifteen more than twice its complement. How large is the angle?

13. The sum of the digits of a two digit number is 8. If 18 is added to the number, the digits of the number gets interchanged. Find the original number.

14. Find $m\angle 2$ in the isosceles $\triangle ABC$ if $m\angle 3 = 50^\circ$.

15. Find $m\angle 1$ in the isosceles $\triangle ABC$ if $m\angle 4 = 110^\circ$.



16. Solve the inequality $7 - |2x - 3| > 4$. Give the answer in set notation.

17. Simplify: $(\sqrt{3} + \sqrt{5})^2 - (\sqrt{3} - \sqrt{5})^2$

18. What number is halfway between $3 - \frac{1}{3}$ and $2 + \frac{4}{7}$?

19. How many positive numbers less than 300 are divisible by 7 but not 5?

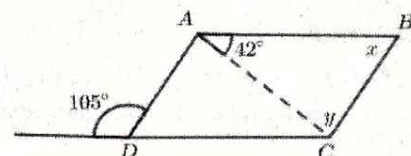
20. Find the sum in kg: 132 lbs + 750 g + 55.5 kg

21. Arrange in ascending order: 110×10^{-4} , 10.5×10^{-3} , 1.03×10^{-2} .

22. Solve the inequality $\frac{2}{7x-2} > \frac{5}{2-7x}$. Give the answer in interval notation.

23. What is the surface area of a cube that has a volume of 216 cubic units?

24. In the figure on the right, $ABCD$ is a parallelogram. What are the values of x and y ?

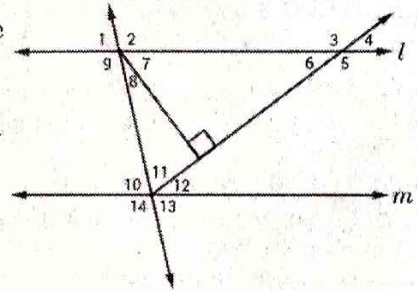


25. Dana has a 3 m of ribbon and needs 35 cm to wrap one present. How many presents will she be able to wrap?

26. How many square tiles with side 5 cm can be placed on a floor which is 6 m by 4 m?
27. What number must be subtracted from -16 to give 20?
28. A rectangular grass lawn is $3x^2y$ meters long and $4xy$ meters wide. On its edges are flower beds which are x meters wide. What is the area planted by grass only?
29. Solve the inequality $|5 - 4x| > 7$. Give the answer in set notation.
30. Each interior angle of a regular polygon measures 150° . How many sides does the polygon have?
31. By how much would an exterior angle of a triangle increase if each of its corresponding remote interior angles is increased by 16° ?
32. If the number of sides of a regular polygon is increased from 12 to 16, by how much would the measure of each of its exterior angles decrease?

For Numbers 33 to 35, refer to the figure on the right:

33. Assume that $l \parallel m$. List down all the angles which are supplementary to $\angle 13$.
34. Assume that $l \parallel m$. If $\angle 5 = 134^\circ$ and $\angle 11 = 60^\circ$, find $m\angle 1$.
35. If $\angle 10 = 78^\circ$ and $\angle 6 = 31^\circ$, what must be the measure of $\angle 8$ to ensure that l and m are parallel lines?



36. Rosa's mean score for the first five tests in her math class is 85. If the lowest score is removed, then the mean of the remaining scores becomes 88. What did Rosa score in her lowest exam?
37. Mrs. Torres conducted a survey among her students to determine their preferred pet. Fifty-five students chose dogs, fifty chose cats, ten chose rabbits, and five chose other animals. If Mrs. Torres wishes to represent these data using a pie chart, what angle would the sector for cats be?
38. The temperature of water increased from 41°F to 59°F a few minutes after it was brought out of the refrigerator. By how many degrees Celsius did the water increase in temperature?
39. A sack of rice has 15 kilograms. If this were to be divided into 24 equal servings, how many grams of rice would each serving be?
40. How many seconds are there from 8:00 AM to 3:30 PM?
41. A box contains 10 identical books with a total weight of 7 kg. How many pounds does each book weigh?
42. A car traveled 10 kilometers in 20 minutes. Find its average speed in meters per second.
43. A teacher gives every student in her class 4 candies and she is left with 22 candies. If she gives each one 5 candies, she lacks 10 candies. How many candies does she have?
44. If $a = 2$ and $b = -3$, find the value of $7 - 5(3a^2 + 2ab - b^2)$.
45. Suppose that cotton fabric costs P30 per meter. How much would 1 yard of the same cotton fabric cost? Use $1\text{ m} = 3.28\text{ ft}$, and give your answer correct to the nearest centavo.
46. Simplify the algebraic expression: $3[-4(x + 1) + 2(x^2 + 5x - 7)]$.
47. When a number is subtracted from its additive inverse, the result is 8. What is the number?
48. For what value of k is $x^2 + 2^x - 2kx + 8$ is equal to 30 when $x = 4$?

For Numbers 49 and 50, refer to the frequency distribution table below, which represents the number of calls received by a call center per day during the past month:

49. Using the given data, approximate the mean number of calls received per day.

No. of calls	Frequency
1 - 5	1
6 - 10	12
11 - 15	9
16 - 20	8

50. Treating the given data as a population, what is the approximate variance of the number of calls received per day?

Metrobank-MTAP-DepEd Math Challenge 2018
Elimination Stage, Grade 7, Answer Key

- | | | |
|-------------------------------------|--|--|
| 1. $\frac{7}{25}, 0.3, \frac{3}{8}$ | 18. $\frac{55}{21}$ or $2\frac{13}{21}$ | 34. 74° |
| 2. 9 | 19. 34 | 35. 19° |
| 3. 1000 | 20. 116.25 kg or $116\frac{1}{4}$ kg | 36. 73 |
| 4. 12.5 sq units | 21. $1.03 \times 10^{-2}, 10.8 \times 10^{-3}, 110 \times 10^{-4}$ | 37. 150° |
| 5. -7 | 22. $(\frac{2}{7}, +\infty)$ | 38. 10° Celsius |
| 6. 107 | 23. 216 sq units | 39. 625 grams |
| 7. Increased by 4% | 24. $x = 75^\circ, y = 63^\circ$ | 40. 27,000 |
| 8. $[-3, +\infty)$ | 25. 8 | 41. 1.54 lbs |
| 9. 72° | 26. 9,600 | 42. $\frac{25}{3}$ m/s or $8\frac{1}{3}$ m/s |
| 10. 48 units | 27. -36 | 43. 150 |
| 11. $x = 40, y = 82$ | 28. $12x^3y^2 - 8x^2y - 6x^3y + 4x^2$ | 44. 52 |
| 12. 65° | 29. $\{x x < \frac{-1}{2} \text{ or } x > 3\}$ | 45. P 27.44 |
| 13. 35 | 30. 12 | 46. $6x^2 + 18x - 54$ |
| 14. 115° | 31. 32° | 47. -4 |
| 15. 55° | 32. 7.5° | 48. $k = 5/4$ or 1.25 |
| 16. $\{x 0 < x < 3\}$ | 33. Angles 2, 9, 14 | 49. 12 |
| 17. $4\sqrt{15}$ | | 50. 19 |