OKLAHOMA SCHOOL of SCIENCE and MATHEMATICS

24th Annual OSSM Middle School Math: An Awesome Contest—Round Two

7th and 8th Grade Test A

Spring 2026

Before you begin:

1. Please write your name on your answer sheet.

2. On your name tag you have been given a three-digit OSSM student ID number. On the answer sheet, in the lower right-hand corner, there is a place to fill in the three-digit student ID number (use the first three boxes, leaving the rest blank).

3. Fill in the appropriate bubbles for your OSSM student ID.

Directions:

Use the scratch paper provided to do your work.

Choose the appropriate answer, and then fill in the corresponding bubble
ON THE ANSWER SHEET.
DO NOT MAKE ANY STRAY MARKS ON YOUR ANSWER SHEET; it may cause the
machine to misread your answer sheet and may disqualify your score.

This is a 40-question, 1-hour contest. All questions are multiple-choice. Figures are not to scale. Each question is worth one point. Your score will be the number of correct answers. There is no partial credit or penalty for wrong answers. Please continue working or reworking problems until time is called.

Do Not Open or Turn Over Until Instructed To Do So

Fill in your answers ON THE ANSWER SHEET by filling in the corresponding bubble.

DO NOT MAKE ANY STRAY MARKS ON YOUR ANSWER SHEET!

You may use this space for scratch paper.

1. Which of the following whole numbers is closest to $\frac{142}{7}$?
   a. 17
   b. 18
   c. 19
   d. 20
   e. 21

2. Which of the following operations does NOT have the property that, when performed twice in a row, you always get back the number you started with?
   a. Multiplying the number by −1
   b. Taking the absolute value of the number
   c. Evaluating one minus the number
   d. Taking the reciprocal of the (non-zero) number
   e. All of the above give the same number back whenever performed twice in a row

3. In the figure, each small square is a unit square. Which answer choice is closest to the area of the equilateral triangle?
   a. 24
   b. 25
   c. 26
   d. 27
   e. 28
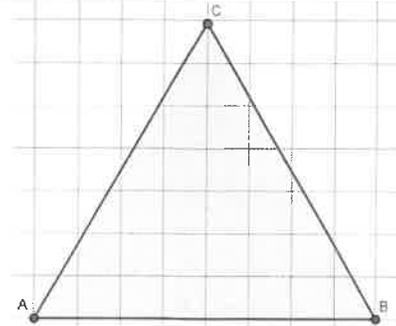
4. Rayden received the following cryptic list of numbers in the mail: {1, 3, 6, 7, 7, 8, 8, 8}. If M is the mean of the list, m is the mode, and $\mathcal{M}$ is the median, what is $M + m - \mathcal{M}$?
   a. 6
   b. 6.5
   c. 7
   d. 7.5
   e. 9

5. Suppose you have 3 line segments of certain lengths, and you try to make a triangle out of them. Which of the following sets of 3 lengths would not form a triangle?

   a. 2, 3, 3
   b. 2, 3, 6
   c. 2, 4, 5
   d. 3, 4, 5
   e. 5, 5, 5

6. If a line in the xy-plane passes through quadrants I, II, and III, then it must have
   a. negative slope and positive y-intercept
   b. negative slope and negative y-intercept
   c. positive slope and positive y-intercept
   d. positive slope and negative y-intercept
   e. slope zero and y-intercept zero

7. Prof. Bodenstein decides to go out for lunch twice a week during the 5-day school week, but she doesn't want to go out two days in a row. How many different ways can Prof. Bodenstein choose which two days she goes out for lunch?
   a. 6
   b. 7
   c. 8
   d. 9
   e. 10

8. If I can run 1000 feet in two minutes, how long does it take me to run 100 yards?
   a. 36 seconds
   b. 40 seconds
   c. 42 seconds
   d. 45 seconds
   e. 48 seconds

9. If S is at least 2 but no bigger than 3, and $S \times T = 10$, what is the difference between the largest and smallest possible value of T?
   a. 1
   b. $1\frac{1}{3}$
   c. $1\frac{2}{3}$
   d. 2
   e. $2\frac{1}{3}$

10. Which of the following equations has no real solutions?
   a. $x + 2 = 0$
   b. $x^2 - 1 = 0$
   c. $x^2 - 2 = 0$
   d. $x^2 + 2 = 0$
   e. $x^3 + 1 = 0$

11. Melody starts reading a new book of limericks at 2:11, and reads 6 limericks per minute. A little while later, Pranav begins reading the same book at a pace of 8 limericks per minute. They both finish the book at exactly 3:41. When did Pranav start reading?
    a. between 2:30 and 2:35
    b. between 2:35 and 2:40
    c. between 2:40 and 2:45
    d. between 2:45 and 2:50
    e. between 2:50 and 2:55

12. A *pizza* is a circle whose size is listed according to how large its diameter is. Which of the following pizza orders will give you the most amount of pizza area?
    1. One 12-inch pizza
    2. Two 10-inch pizzas
    3. Three 8-inch pizzas
    4. Four 6-inch pizzas
    5. Five 4-inch pizzas

13. Which is largest?
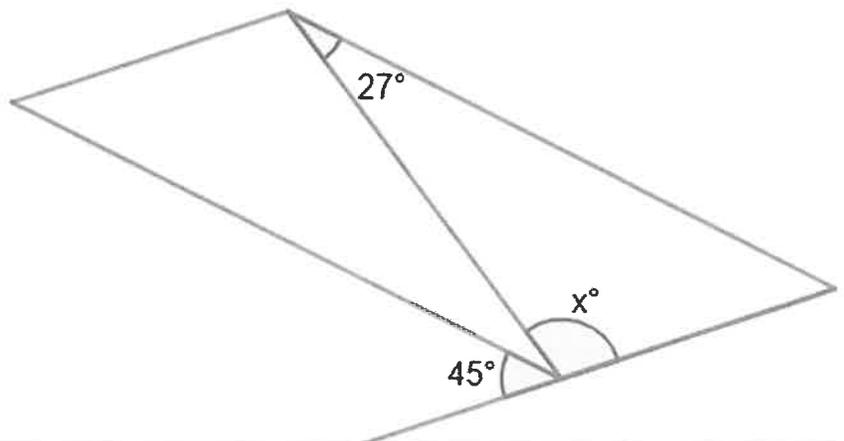   a. 2^{10}
    b. 4^8
    c. 6^6
    d. 8^4
    e. 10^2

14. A block of cheese is shaped like a rectangular prism with length 40 cm, width 10 cm, and height 30 cm. What is the surface area of the cheese?
    a. 80 square cm
    b. 1900 square cm
    c. 3800 square cm
    d. 12,000 square cm
    e. 24,000 square cm

15. The diagram shows a parallelogram with certain angles marked. What is the value of x?

    a. 96
    b. 100
    c. 104
    d. 108
    e. 112

27°

45°

$x°$

16. If 6a + 4b = 20, what is the value of 9a + 6b?
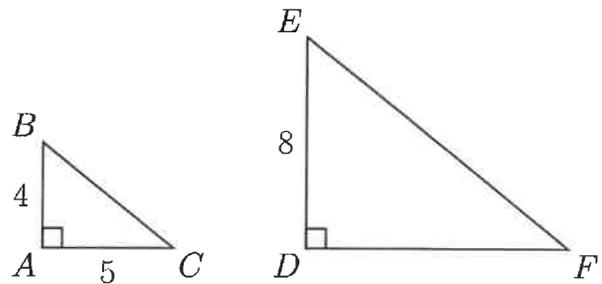   a. 24
    b. 28
    c. 30
    d. 32
    e. Cannot be determined

17. What is 10% of 20% of 30% of 40?
    a. 0.024
    b. 0.24
    c. 2.4
    d. 24
    e. None of these

18. In the following diagram, $\triangle ABC$ is similar to $\triangle DEF$. What is the area of $\triangle DEF$?
    a. 10
    b. 20
    c. 40
    d. 80
    e. 160

19. What is the sum of the first 10 prime numbers?
    a. 126
    b. 127
    c. 128
    d. 129
    e. 130

20. Wiley begins driving east on the highway at 3:00pm, at a constant speed of 60 miles per hour. Dakota begins driving east from the same point at 3:30 pm, at a constant speed of 75 miles per hour. At what time will Dakota overtake Wiley?
    a. 5:00 pm
    b. 5:15 pm
    c. 5:30 pm
    d. 5:45 pm
    e. 6:00 pm

21. Order the following quantities from least to greatest:
    A. Two times the number of edges on a square pyramid
    B. Three times the number of faces on a cube
    C. Three times the number of faces on a triangular prism
    D. Five times four

    a. A, C, B, D
    b. A, B, C, D
    c. C, A, B, D
    d. C, B, A, D
    e. C, B, D, A

22. If P is the least common multiple of 20 and 25, and Q is the least common multiple of 25 and 30, then what is the greatest common factor of the numbers P and Q?
    a. 5
    b. 10
    c. 20
    d. 25
    e. 50

23. When Dr. Givens. first started working at OSSM, the soda machine sold 12-ounce cans for 50 cents. Now, it sells 20-ounce bottles for $2.50. What is the percentage increase in the cost of soda _per unit of volume_?
    a. 200%
    b. 250%
    c. 300%
    d. 400%
    e. 500%

24. Which of the following is a factor of the number $(95)(95) - (35)(35)$?
    a. 7
    b. 11
    c. 13
    d. 17
    e. 19

25. If $|x| > |y|$ and $x < y$, then which of the following MUST be true?
   a. $xy < 0$
    b. $y < 0$
    c. $y > 0$
    d. $x < 0$
    e. $x > 0$

26. Which of the following best describes the set of points in the xy-plane that are at an equal distance from each of the two points $(-1,1)$ and $(1,-1)$?
    a. a single point
    b. three points
    c. a line
    d. two intersecting lines
    e. a circle

27. It takes Dr. Tu 5 minutes to walk from the library to his office in the MAC. However, if he's running late, he can run the same distance in 2 minutes. One day, Dr. Tu thinks he's running late and runs a third of the way to the MAC, then realizes he has plenty of time and walks the rest of the distance. How long did this entire trip take?
    a. 3 minutes, 30 seconds
    b. 3 minutes, 45 seconds
    c. 4 minutes
    d. 4 minutes, 15 seconds
    e. 4 minutes, 30 seconds

28. Eight friends are running a race. Assuming no ties, how many different ways can the top three finishers occur?
    a. 24
    b. 156
    c. 336
    d. 428
    e. 512

29. If you start with a cube, how many ways are there to choose four of its corners that are also the corners of a square or rectangle?
    a. 6
    b. 8
    c. 12
    d. 16
    e. 18
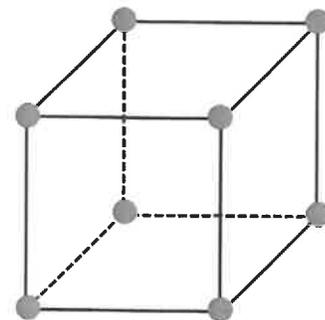
30. A *palindrome* is a number which is the same when read forwards and backwards, like 1221. How many palindromes are there between 100 and 1000?
    a. 90
   b. 100
    c. 105
    d. 110
    e. 120

31. Thomas has 4 different shirts and 5 different pairs of pants. One of Thomas's shirts and one of his pairs of pants is lucky; if he wears his lucky shirt, he must also wear his lucky pants with them, and vice versa. Otherwise, Thomas can wear any other combination of shirt and pants. If Thomas wants to wear one shirt and one pair of pants, how many ways can Thomas get dressed?
    a. 13
    b. 14
    c. 15
    d. 19
    e. 20

32. At the Build-a-Heffalump Factory, you can freely choose your Heffalump doll's color, shape, and size from the available options. The available colors are green, blue, pink, and white. The available shapes are round and square. If there are 24 different Heffalump dolls possible, which of these might be the list of Heffalump sizes you can choose from?
    a. Medium, Large
    b. Small, Medium, Large
    c. Small, Medium, Large, Gigantic
    d. Teensy, Small, Medium, Large, Gigantic
    e. Teensy, Small, Medium, Large, Gigantic, Megalithic

33. Suppose an equilateral triangle and a square both have side lengths of 10 units. Which of these is closest to the triangle's area as a percentage of the square's area?
    a. 21%
    b. 43%
    c. 65%
    d. 87%
    e. 99%

34. Triangle ABE, with sides $AB = 21$ and $BE = 13$, is inscribed in rectangle $ABCD$ as shown. If rectangle $ABCD$ has area 252, what is the length x of the altitude BF?

   a. 12
    b. 12.25
    c. 12.4
    d. 12.5
    e. 12.6
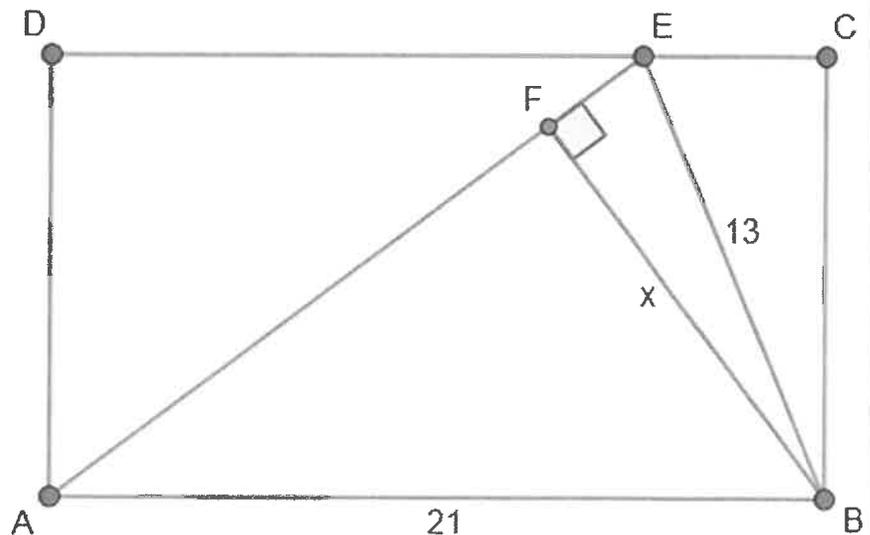
35. If two standard, six-sided dice are rolled, what is the probability that the product of the two numbers is a perfect square?

    a. 1/9
    b. 1/7
    c. 1/6
    d. 2/9
    e. 1/3

36. The first figure shows an equilateral triangle with three isosceles triangles on its sides. Xander intends to cut the figure out and fold the isosceles triangles upward to create a triangular pyramid with positive volume, as seen in the second figure. Which inequality describes the values of the angle $x°$ for which this is possible?
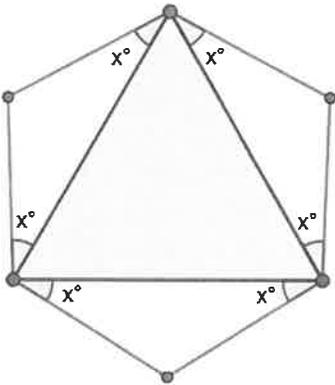
    a. $x° > 0°$
    b. $x° > 30°$
    c. $x° > 36°$
    d. $x° > 45°$
    e. $x° > 60°$
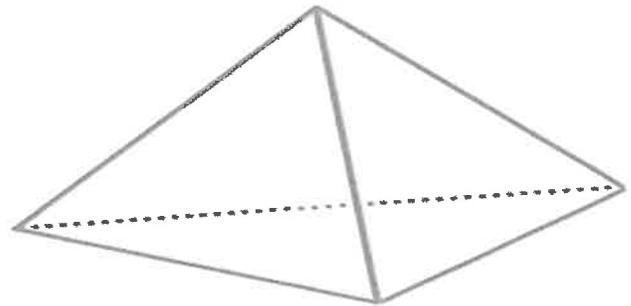
37. Two quadrilaterals are drawn so that their sides don't overlap, except possibly at a single intersection point. What is the maximum possible number of intersection points they could have?

    a. 4
    b. 6
    c. 8
    d. 12
    e. 16

38. I drew a triangle with whole-number side lengths. The longest side is exactly three times as long as the shortest side. Which of the following COULD be the perimeter of my triangle?

    a. 9
    b. 11
    c. 13
    d. 15
    e. 17

39. How many different ways are there to fill in each square in a 2x3 grid with a different digit from 1 to 6, if each row and each column must have at least one even number?
    a. 108
    b. 192
    c. 216
    d. 240
    e. 288

40. If N is the smallest whole number with exactly 100 different positive divisors (including 1 and N itself), how many digits does N have?
    a. 4
    b. 5
    c. 6
    d. 7
    e. 8

You may use this space for scratch paper.